37th Annual Report of the

PACIFIC MARINE FISHERIES COMMISSION

FOR THE YEAR 1984

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

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PACIFIC MARINE FISHERIES COMMISSION

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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 Marine Fisheries Commission in Compliance with the State Enabling Acts Creating the Commission and Public Laws 232; 776; and 315 of the 80th; 87th; and 91 st Congresses of the United States Assenting Thereto.

Respectfully submitted,
PACIFIC MARINE FISHERIES COMMISSION

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Annual Meeting Events

SUMMARY

The Pacific Marine Fisheries Commission's 37th Annual Meeting was held on November 26-27,1984 at the Airport Hilton Hotel in Seattle, Washington and presided over by Chairman Bill Wilkerson, Director, Washington Department of Fisheries. The Annual Meeting highlights included a review and approval of revised procedures for the Annual Meeting, discussion and approval by the Commission on a number of 1984 issues, and a series of presentations and reports on various PMFC activities. In addition, a series of poster papers reviewed the status of Pacific Coast fisheries for 1984.

ANNUAL MEETING PROCEDURE

The Commission adopted revised procedures for the Annual Meeting. The new procedures replace the resolutions process of past years.

The new process which was implemented partially this year calls for the Annual Meeting to be based on an agenda which includes in part a number of important regional issues. The number of issues will be limited to allow more time to develop and implement them. Each year a limited number of issues will be selected to be discussed at the next year's Annual Meeting. The issues selected will be based on recommendations of Adyjsors and State staff. For each issue, a paper will be prepardd under the guidance of an interstate committee, which will begin work early in the year. Potential committee membership includes Commissioners, Advisors, Scientists and other experts. The issue papers will include: a statement of purpose or objective, a statement of the problem including documentation, recommendations for solving the problem, and a strategy for implementing the recommendations, including legislation if applicable. These* issue papers once adopted become the official position of the Commission.

The advantages of the issue paper procedure are basically fourfold. The number of issues are limited, thus focusing the Commission's efforts and maximizing the quality of its policies. The issue paper provides more detailed guidance and supporting rationale to the Executive Director who must implement the policy with the help of the States and Advisors. Issue papers go a step further than most resolutions by including a strategy for implementing the policy. With the issue paper process, the Advisors, Commissioners, and Scientists are more actively involved throughout the year in matters of regional concern.

1984 ISSUES

Six major, agenda items were considered at the 1984 Annual Meeting. The first two, Advisory Committee issues and legislation, each addressed a number of separate topics. The other four were individual issues which included: Magnuson Act reauthorization, vessel limitation, NMFS interjurisdictional fishery management policy, and regional fishery data collection program funding.

ADVISORS ISSUES. The Commission unanimously adopted the following positions on issues submitted by the Advisors:

1. **Uniform Tuna Tariff.** The policy of a uniform tariff was endorsed for canned tuna and secondarily for all water-packed fish. PMFC supports legislation which establishes tariffs on imported water-packed canned tuna that are equal to tariffs on tuna packed in oil. The staff is developing a paper documenting the need fora uniform tariff.
2. **Vessel Access to Midway Island.** Requests will be made of appropriate Federal agencies to make har bor facilities of Midway Island available for use by U.S. fishing vessels to facilitate fishing activities in areas adjacent to Midway Island. Adjacent harbor facilities are currently not available to albacore fishermen, who must run from Honolulu or the West Coast to the fishing grounds.
3. **Economic Cost of a Lost Fishery.** PMFC will seek financial and technical support from academic, government and industry sources to gather ex isting economic data and conduct necessary research to provide a comprehensive body of in formation on the total cost of losing a fishery. The tuna industry will be used as an example.
4. **Economic Stability in the Fishing Industry.** It was agreed to prepare an issue paper on this topic for the 1985 Annual Meeting. This topic is addressed under "1985 Issues" following this section.
5. **Joint U.S./Mexico Fishery Research and Management.** The Commission feels it is ap propriate for the U.S. to enter into negotiations with

• Mexico which have an ultimate goal of formally recognizing the need for joint research and of developing a mechanism for managing common fishery resources in the future. In order to achieve this end, the Commission encourages the Commission of the Californias to continue, and to extend its task of facilitating research links and people-to-people communication between the Californias. The Commission further requests the Pacific Fishery Management Council (PFMC) to activate its U.S./Mexico subcommittee, urges the California Department of Fish and Game (CDFG) to actively participate in the negotiation process, and requests CDFG and NMFS to advise the above bodies and fully participate in the negotiation process.

6. **Mitigation by U.S. Bureau of Reclamation and Federal Land Management Agencies.** PMFC will work with Congress, the Bureau of Reclamation, Bureau of Land Management, Forest Service and other agencies to ensure adequate mitigation and protection for fishery resources and habitats.

LEGISLATION. The Commission took the following actions relating to legislation introduced in the U.S. Congress:

1. **National Marketing Council and Marine Resources Development Bank.** These programs are opposed given Federal budget limitations. The funding

priority, given fewer Federal dollars, should be on fishery research and data collection.

2. **Fish and Wildlife Coordination Act.** The strengthening of this Act (H.R. 5755), is supported especially the provision of transferring funds from the development agency to the fishery agencies for impact studies.
3. **Mandatory Fish Inspection (H.R. 6094).** PMFC could not support this bill given the lact of details on the program, dissatisfaction with some past in spection programs and the preference for State programs.
4. **National Fish Hatchery System (H.R. 6213).** This concept is opposed as it endangers the funding base for mitigation hatcheries.
5. **Coastal Migratory Fish Conservation (S. 2667).** The Commission reaffirmed its comments submitted in September, 1984, that a new management system for regional fisheries is not needed on the Pacific Coast.

MAGNUSON ACT REAUTHORIZATION. A number of proposed changes were discussed to the Magnuson Fishery Conservation and Management Act (MFCMA) which is up for reauthorization in Congress in 1985.

The Commission supported the following general concerns relating to habitat:

1. Councils shall include habitat concerns they believe to be appropriate in Fishery Management Plans (FMP's);
2. the Secretary of Commerce may condition federal permits or other federal actions affecting habitat; and
3. the Secretary of Commerce shall consider and respond to the recommendations of the Councils, if any, for these conditions.

Final comment on this issue was reserved until specific language is introduced by Congress. The Executive Director was instructed to monitor proposed habitat amendments and communicate them to the Commission. The individual States and/or the Commission will adopt positions at that time. The following other reforms to the MFCMA were supported:

1. the Secretary should bear the burden of proof (instead of the Councils) in determining that fishery management plans and regulations are not in com pliance with the National Standards and other ap plicable law; the Secretarial decision process ' "should be open to the public, and a hearing should be held in the affected region where the Secretary must defend his position to overturn a Council plan;
2. day 1 of the Secretarial review period shall start as soon as the plans and regulations are submitted by the Councils;
3. exempt fishery rulemaking from regulatory reform requirements, which frustrate attempts to imple ment plans on a timely basis. These requirements include Executive Order 12291, the Regulatory Flexibility Act and the Paperwork Reduction Act;
4. the Act should provide the Councils the authority to implement domestic fishery observer programs, and the Councils would have the discretion to determine whether the programs should be volun tary or mandatory;
5. Fees should be assessed joint venture processors which are comparable to those assessed domestic processors, and the revenue from the assessment must be earmarked for research and management of resources harvested by joint ventures. These funds would supplement, not replace, existing research funds.

IV. **VESSEL LIMITATION.** The Commission reviewed a request for a study of fishing effort limitation pro grams and adopted this topic as an issue paper sub ject for the 1985 Annual Meeting. A review of the basic topics to be covered is included under the section of this report on 1985 issues.

V. **NMFS POLICY FOR MANAGEMENT OF INTERJURISDICTIONAL FISHERIES.** It was recommend ed that NMFS publish the Policy in the Federal Register for public comment, and that NMFS schedule hearings in California, Oregon, Washington and Alaska to receive State and public comment on the Policy. The Commission also directed the Staff to prepare a State-Federal Action Plan to demonstrate that no additional management arrangements are needed on the Pacific coast, and to document the need for long-term, stable funding.

VI. **FUNDING FOR REGIONAL FISHERY MANAGEMENT PROGRAMS.** The Executive Director was asked to work with the Administration and Congress as nec essary to ensure continued funding for commercial and sport fishery research and data collection. The Commission identified this issue as the number one priority for 1985.

VII. **COMMISSION PRIORITIES FOR IMPLEMENTING 1984 ACTIONS.** Priorities for implementing 1984 actions of the Commission were established at the close of the Annual Meeting to give the Executive Director guidance. Priorities are:

1. adequate funding for research, data collection and management
2. monitor and comment on national legislation with high priority on Magnuson Act reauthorization.
3. other actions taken by the Commission in 1984.

ISSUE PAPER TOPICS FOR 1985

The Commission chose three major issue paper topics for the 1985 Annual Meeting in Juneau, Alaska on October 1-2, 1985. Chairmen were appointed to organize committees to develop a paper on these issue topics during the coming year for presentation at the 1985 Annual Meeting. The three issue topics are as follows:

1. **Effort Limitation.** The Commission will prepare an issue paper on effort limitation which shall include:
   a. an identification of limited entry programs coastwide and worldwide;
   b. limited entry alternatives;
   c. the pros and cons of each limited entry program;
   d. an identification of fisheries for which limited entry is being considered;
   e. coordination of limited entry programs coastwide; and
   f. recognition of potential effort transfer between fisheries when effort limitation is instituted.
2. **Economic Stability in the Fishing Industry.** This issue paper will evaluate the need and feasibility of a program designed to provide economic stability for the fishing industry given significant fluctua tions in resource abundance. The Commission did not support the implementation of such a program, but directed preparation of a detailed analysis of it.
3. **Full Domestic Utilization.** The Commission passed a resolution in 1983 encouraging full domestic utilization of fishery resources in the U.S. EEZ (Resolution No. 1). The Commission reaffirmed the thrust of this resolution and adopted this issue as a major effort for 1985. The Commission will explore means of encouraging and supporting the growth

of domestically caught and processed Pacific Coast seafood products. The Executive Director was directed to write the Pacific and North Pacific Councils requesting their help in this effort, particularly with regard to foreign purchase of domestically processed products.

STATUS REPORTS OF PMFC ACTIVITIES

Progress of the Water Budget Center in Facilitating Downstream Migration in the Columbia River, *Mark Maher, Water Budget Center*

A relatively new concept in fisheries management is the use of a water budget. The water budget is a volume of water dedicated for augmenting spring flows to assist migrating juvenile salmon and steelhead moving through the Snake and Columbia system of reservoirs in a biologically timely manner.

When the Northwest Power Planning Council was formed, they were given two initial charges. The first was to develop a comprehensive power plan for future energy development. Before they could do that task they had to develop and adopt a Fish and Wildlife Program, which as Congress stated, will be a program to protect, mitigate and enhance fish and wildlife. Pursuant to this mandate, the Northwest Power Planning Council in June of 1981 solicited recommendations from the Fish and Wildlife Agencies. In cooperation with the Corps of Engineers and the Bonneville Power Administration, a work group was formed. The work group began developing recommendations for the Fish and Wildlife Plan. The recommendations dealing with flow came out as a water budget in the final analysis.

The Columbia River with its current development is a series of seasonal and run-of-the-river reservoirs. The seasonal reservoirs such as Libby, Hungry Horse, Arrow, Dworshak, etc. are on an annual cycle. They are usually full in July, are drafted through the fall and winter, and refilled in the spring. The run- of-the-river projects such as Bonneville, the Dalles, Ice Harbor, Rocky Reach and so on, pass flows discharged from upstream projects plus any flow added from the tributaries. ,* .„

The impacts to fish are that the seasonal reservoirs have taken the peak off the traditional spring hydrograph, shifting much of the spring freshet into the fall and winter for flood control and power generation purposes. The run-of-the-river projects on the other hand have increased the river's cross- sectional area, causing increased travel time for.the fish to pass down the river. The dams have made the river into large lakes, with the water flowing through much slower. These combined factors have greatly impacted the salmon and steelhead resources in the Northwest. However, they are not the only factors. Chief Joseph and Hell's Canyon dams have blocked access to substantial upriver spawning habitat.

The goal of the water budget is to remedy the travel time problems experienced by young migrant salmonids caused by these water storage projects. It aims to reduce the out-migrant travel time by shifting some of the releases of stored water from the fall and winter months into the springtime when the young salmonids are migrating to the ocean.

Development of the Fish and Wildlife Agencies' recommendations to the Power Planning Council on how to quantify this change in storage releases forced the Agencies to use only the data at hand because there was no time to develop and implement studies designed to address this question. Several years of research were reviewed to determine a possible relationship between flow and survival. There was no clear relationship between flow and survival, but the data did indicate that increased survival with increased flow occurs up to a point. This was the starting point used to develop the water budget. It would be desirable to have such a relationship. If it was known what survival benefit there was from an increment of flow, the river could be managed in a very judicious fashion and benefit fish and power. The problem is that flow-survival information is not available.

Other information available was historical runoff. There is a range of known annual runoffs that are associated with the Columbia River. The volume of runoff varies from about 60 million acre feet a year for the January-July period up to around 140 million acre feet. Other data used in the formulation of the recommendations was the historical minimum and optimum flow recommendations developed by the Columbia River Fisheries Council. These minimum and optimum flows were used with the hydro-system regulator models that existed at the Corps of Engineers and at Bonneville Power Administration. These models look at all the uses of the Columbia River—power, flood control, navigation and irrigation. The new components for fisheries added. These were the optimum and minimum flows.

In modeling the Columbia River to include minimum flows for fish all year, there was quite an impact on the power system which showed up immediately. If only the minimum flows were asked for the hydro-portion of the electric generating capability of the Northwest dropped about 20%, or 3600 megawatts. This seemed very unrealistic and the recommendations were modified. Since there was a range of runoffs that had occurred historically, the recommendations were tuned such that in a dry year, the water budget would ask for less of a minimum flow. This would impact the power system somewhat less but still provide flows for fish. In the drier years there would be a decrease in the minimum flow recommendation, and in the wetter years, the budget would ask for an increase in flows to take advantage of the increased runoff.

The Power Planning Council took these recommendations and did their own analysis. The Council quantified the Agencies' recommendations and presented their Water Budget in terms of a volume of water. This volume of water is called the Water Budget.

The water budget, in terms of volume at Priest Rapids, is about three-and-a-half million acre feet and at Lower Granite is about 1.2 million acre feet. The release of this water is at the discretion of the Fish and Wildlife Agencies and Tribes during the period April 15th to June 15th to aid the out-migration of salmon and steelhead.

The goal of the Water Budget is to decrease the travel time and fish survival. Travel time prior to dams on the Snake and Columbia Rivers was on the order of two to four days down through the Snake River. After the dams, the travel times through the Snake River increased, given the water year, up to as much as 30 days. At most federal dams we now have traveling screens and bypass systems associated with the turbine intakes. These systems try to intercept fish before they enter the turbines and safely bypass them pass the project. Hopefully the Water Budget, in combination with bypass facilities and a transportation system of fish collected at upriver dams, such as on the Snake at Lower Granite and Little Goose, can substantially increase the number of adults returning to the Columbia River. That is the essence of the Water Budget.

The problems that are occurring in implementing the Water Budget are numerous. They fall into two basic categories. First is the operational components. There are problems with who actually controls the Water Budget. While this is a body of water dedicated for fish and it resides in reservoirs such as Hungry Horse and Dworshak, the release of that water is still contested by the Corps of Engineers and by Bonneville Power Administration. It is particularly a problem when the Water Budget managers ask for flows for fish on a daily basis or to augment a low flow period over a weekend, when the power system is shutting down the river to conserve for midweek high energy demand. The Water Budget managers would like to bring the weekend flows to a higher level and try to keep a

more constant flow during the peak of the migration. It isn't known what these short-term perturbations in the river flow are doing to the migrating salmon and steelhead.

The power interests want to continue to drop these flows on weekends to conserve water for power. The Fish and Wildlife Program apparently is ambiguous enough to some people to allow an argument such that Corps, of Engineers only have to deliver water on either a weekly or a monthly average basis.

The theoretical problems are that Water Budget managers are being asked to gather information as to how flow relates to travel time and to survival of migrating salmon and steelhead.

Designing experiments to address this question is very difficult. For instance, on the Snake River an element of moving fish downstream has been the collection and transporting of fish by barge or truck. When you remove fish in this manner from a population under study, accounting for that removal, in addition to trying to determine what the mortalities are between projects, becomes a statistical nightmare. It is a real challenge to try to put together the types of studies that will yield meaningful answers while continuing to manage the flows for migrating salmon and steelhead.

Electrophoresis as a Salmon Stock Identification Tool, Progress and Future Plans, *Rich Lincoln, Washington Department of fisheries*

This paper covers the work that has been underway in Washington during the last several years on: (1) the use of electrophoresis as a Chinook salmon management tool; (2) how this work has evolved in 1984 into a joint agency study; (3) a description of several other fisheries management applications; (4) and some insights into where genetic stock identification may be headed in the future as a fisheries management tool.

About three years ago, the Department was asked why it was not using electrophoresis to gather information on stock composition in Washington's May troll fishery. The Department sorely needed some, new information about the contribution of various Columbia River Chinook stocks to the fishery. The idea was a challenge because the Department was looking at the capability of finding a tool to do something that previously had not been done — specifically to measure the impact of fisheries on stocks, both hatchery and natural, during or after the season by sampling real fish from the catch, as opposed to a variety of technical analyses that required numerous extrapolations.

Like other salmon managers, Washington staff had a fairly negative preconceived notion about electrophoresis limitations that had surfaced during its developmental stages. However, in evaluating the potential to do an analysis of the May troll fishery, it was discovered that the tool had evolved dramatically in the five or ten years of research since these impressions were formed. The NMFS staff at Manchester had developed an extensive genetic baseline data for Columbia River Chinook stocks, and also had a significant number of samples from other Chinook stocks ranging all the way from California to southern British Columbia. Their baseline data represented over 50 stocks. These data can be thought of as a collection of fingerprints for those stocks based on gene frequency which are displayed in various protein enzyme systems taken from tissue samples. The number of enzyme systems which had been developed to display variability between salmon stocks had more than doubled in the five or ten years that work has been ongoing. In addition, NMFS had 'done validation tests in the Columbia River Basin.

In 1982, with the cooperation of NMFS, the application of the genetic technique as a practical salmon management tool was begun. In the spring of 1982, with the cooperation of 15 salmon trollers, observers at sea collected over 2,000 heart and liver samples. The analytical result of this work was that for the first time ever, a specific estimate of the contribution of different Chinook salmon stocks to the May fishery was obtained. This estimate was derived by actually sampling fish, rather than by simulating stocks through various data and computer simulations.

The work was continued in 1983 with the aid of Council programmatic funds and the genetic stock identification (GSI) sampling was expanded over the entire ocean salmon season for both the sport and troll fisheries. Before the 1983 season, the genetic baseline for Chinook was reviewed with NMFS to identify unsampled stocks which contributed to the fishery and that should be added to the baseline.

Another important effort undertaken in 1983 was an attempt to develop a dockside sampling technique for GSI. If the tool was to be developed as a practical technique for salmon management that provided representative data on the fisheries, it could not rely on expensive observer sampling. In 1983 the tissues that were collected were changed from heart and liver to eye fluid and muscle tissue which could be collected at the docks. With this tissue change, only a minor loss of resolution in the stock composition estimates was experienced. The tissues collected on the docks from commercial trip boats that had been out at sea from two to seven days and had their fish stored on ice were found to be usable for electrophoretic analysis.

In 1984, through the help of NOAA, Sea Grant, Anadromous Fish Act and state funds, the genetic stock identification efforts in Washington State evolved into a joint agency project with the California Department of Fish and Game, Oregon Department of Fish and Wildlife, the Washington Department of Fisheries, NMFS and the University of California at Davis. Informal coordination meetings between the agencies developed goals for the project which will probably provide a foundation for future efforts with GSI. The first goal of the current study between the different agencies was to develop an expanded Chinook baseline data set for Oregon and California Chinook stocks. The number of stocks in the baseline as well as the number of enzyme systems that are used to distinguish the stocks would be increased. The second goal of the current study was to conduct a pilot genetic survey of coho salmon stocks ranging from California to Southern British Columbia. A maximum number of enzyme systems would be screened to evaluate what potential GSI will have for fisheries management applications to coho salmon. The third goal of the study was to continue the mixed stock fisheries sampling off Washington, as well as undertake a small pilot application off the Oregon Coast. The fourth goal was to validate the technique and to provide credibility to the estimation process so that when it is more generally applied, it will have the credibility of scientists and user groups. To achieve this goal computer simulations will be used to evaluate the relationship between sample sizes and the level of stock aggregation in the estimates and in the variance of the estimates that are produced with a electrophoretic analysis. A second option available would be to perform specific genetic analysis of blind samples from known stock origin to validate the application for fisheries management. The fifth goal in the study was to review the mathematical estimation procedures that are used by NMFS and others in applying GSI for stock composition estimates. This goal would validate the computational processes as well as recommend improvements for future applications. The last goal in the study was to coordinate efforts between the NMFS and U.C. Davis Genetic Labs to standardize procedures that are currently used for baseline analyses, so that the data that these different labs process can be interchanged and be used for mixed fishery application and avoid costly duplication in different areas. This joint agency effort in

1984 will go a long way towards developing GSI as an operational management tool.

There are several other recent examples of the use of GSI in applied fisheries management. First, a joint U.S./Canada research effort on sockeye salmon has been conducted the last several years in the Alaska and Northern British Columbia area under the auspices of the treaty negotiation process. Another application recently has been by Canada where fishery managers are using GSI to make stock composition estimates in commercial net fisheries in Johnstone Strait. Along these same lines, in the last two years the Nooksack Indian Tribe has undertaken a pilot project through test fishing of chum salmon in North Puget Sound to get information on the U.S./Canadian mixed stocks in that area. A number of inland states and the National Park Service have also used GSI rather extensively to both identify and maintain native fish populations as a part of their ongoing fish management plans.

As to the future of GSI, one can look to several important areas to which this tool can contribute. First and maybe most important, GSI will be a valuable tool to measure mixed stock fishery impacts on weak salmon stocks, both during and after the fishing season. At present much time has been invested in developing coded-wire tag data and computer simulation models. This has provided excellent data for pre-season management planning where harvest quotas or seasons are set to maintain a certain allowable impact on weak stocks. However, during or after the season there has been very little accountability to detrmine how good a job has been done at meeting management objectives. Quotas have been set that basically assume a certain impact on one or more stocks. Little capability exists to measure, especially with natural stocks, those impacts. The measurement of those impacts with coded-wire tag data would require all natural and hatchery stocks to be tagged each year. This would not only be prohibitively expensive, but likely would be logistically impossible in many cases with natural stocks. Another important future application will be harvest management allocation accounting for both U.S./Canadian interceptions as well as for treaty Indian requirements. A third use will be run size reconstruction, where GSI can provide a replacement for current theoretical approaches. Finally, GSI will undoubtedly be an important tool to help establish stock transfer policies for natural stock rehabilitation and enhancement.

In all these potential applications, a good way to look at'GSI is as a new technique that will compliment other current stock identification techniques, such as* scales and coded-wire tags. The U.S./Canadian Sockeye Research Program is a good example of this concept. In this particular case scales, adult tagging and GSI have all been used together to make estimates of stock composition in mixed fisheries.

We should look for further development of the tool in salmon management in several areas. The first would be continued joint work off California, Oregon and Washington following the 1984 efforts. The application of GSI to U.S./Canadian interception problems will be a likely topic of discussion after current negotiations end this year. The Northwest Power Planning Council has also put a measure in its fish and wildlife plan for BPA to share in funding of a five-year demonstration project to use GSI to improve ocean salmon management of upper Columbia River Chinook stocks. Finally, Washington plans to make GSI an integral part of its stock identification program.

The diligent efforts of many researchers in genetics have provided us with a valuable new tool. A clear challenge lies ahead of us in making sure that application and use of this tool is preceded by proper planning. Hopefully, lessons have been learned from delaying ten years or more in properly planning the application of coded-wire tags to fisheries management. The recent work done will provide an excellent foundation to get GSI work off on the right foot.

Coastwide Stock Identification Plan, *Roy Wahle, Pacific Marine Fisheries Commission*

A number of meetings and findings led to the request for the development of a Coastwide Stock Identification Plan. In 1982 the Pacific Marine Fisheries Commission conducted two workshops on coded-wire tagging. One addressed experimental design. The other focused on tag recovery and estimation procedures. Participants were from state, federal, Canadian and private groups coastwide. A general conclusion from these workshops was that fish representing production releases of important groups contributing to mixed stock fisheries are not tagged. In other words, management agencies are trying to answer important fishery management questions by using fish tagged for the purpose of evaluating hatchery practices. These experimental fish usually have had different treatment than the production fish.

The first workshop on experimental design established a number of recommendations. Longer range experimental and recovery planning is needed to meet information requirements of fishery management. Fishery management agencies should implement a coordinated marking program with a specific objective of setting the geographical range of stocks and their importance to various fisheries. Representative hatchery stocks should be identified and marked. The contribution of wild or non-hatchery spawning stocks should be assessed.

The second workshop further addressed the matter of a coordinated marking effort, and made such a recommendation. The U.S./Canada Informal Chinook and Coho Committee, or some relevant interagency technical group, should be charged with identifying stocks appropriate for characterizing regional stock contributions and escapement. The proposed U.S./Canada Interception Treaty has wording which recommends that indicator stocks representative of the natural spawning population of Chinook salmon should be identified as part of a program to stabilize the rebuilding of stocks.

There is a long-range goal and a short-range goal to this study. The stated long-range goal is to improve the coded-wire tag base so that it will provide key information needed for fishery management. This would include the contribution estimates of specific stocks, or groups of rejated stocks, to the various fisheries by discreet time and area intervals. The short-range goal is to develop a coastwide plan for tagging key stocks for fishery management purposes.

Tasks assigned for development of the Coastwide Stock Identification Plan were:

1. Identify hatchery and natural stocks of Chinook and coho salmon coastwide.
2. Identify established management units and define the assumption and criteria used.
3. Determine coded-wire tagging efforts to date, looking at both hatchery and natural stock tagging.
4. Make recommendations concerning future needs for stock identification requirements for hatchery and non-hatchery stocks.
5. Describe problems not resolved with coded-wire tagging.
6. Identify alternatives to coded-wire tagging.

When the Coastwide Stock Identification Plan is complete it will contain a number of sections. It has a section which lists and describes existing Chinook and coho management areas or units, fishery by fishery. In the next section each stream from Alaska to California that enters salt water and produces Chinook or coho salmon is enumerated. This list contains estimates of the average number of spawners in these streams in recent years. Hatchery facilities are identified with the respective production in millions of fish. The lists are broken down in areas which

can be separated by important geographical landmarks with the streams listed from north to south. The most northerly in the Kukbuk River which enters marine waters in Alaska where the Chukchi Sea ends and the Arctic Ocean starts. The most southerly is the San Lorenzo River which enters Montery Bay, California. Alaska is divided into ten areas, Washington five areas, one for Oregon coastal streams and two for California streams.

The study contains an analysis of binary coded-wire tagging from year one, which was 1971. This section contains a summary by agency of marked hatchery and non-hatchery fish. It also reports on studies with potential to be used for stock identification purposes. Two extremely promising methods of stock identification (the genetic stock identification method using electrophoresis (GSI) and the scale pattern analysis using a microcomputer) are also reviewed.

The GSI method is a two-stage process. The first stage involves obtaining genetic profiles of populations that are potential contributors to a particular mixed stock fishery. This is the baseline data. The second step uses a computer program to obtain actual estimates of mixed stock contributions through a statistical procedure called maximum likelihood.

The scale pattern analysis method of stock separation is based on the assumption that fish from a particular region, or stock, grow in a characteristic manner. This characteristic manner is reflected in the number and spacing of the circuli on scales. This method, like the GSI method, is a two-stage process. First, scales are collected from known stocks of fish, either the standards or a learning sample. The number and spacing of the circuli of these standards are then put into a computer readable format by employing a digitizer and encoder. The encoder is connected to the digitizer to make it easier to enter measurements by remote control. The second stage of scale pattern analysis consists of comparing scales from the standards, or known stock scales, to that of scales of unknown stock origin. This is accomplished by using a discriminate function model.

Much of the development of both the genetic and scale pattern method of stock separation has been accomplished while agencies and/or universities have gathered and analyzed data independently. This approach often results in non-standardized collection and analysis techniques. Nevertheless, both methods of stock separation have much potential for inseason management of mixed stock fisheries. Furthermore, both methods can be complimentary to each other, as well as to the coded-wire tag. They can also be useful in wild or natural spawning stock identification. However, to realize the full potential of both methods, baseline data, collection and cataloging should be carried out under a coordinated systematic coastwide program.

Finally the Plan will contain recommendations as to future needs and stock identification for both hatchery and non-hatchery fish from Alaska to California. This will be accomplished by going through the inventory tables and the estimates of spawners and hatchery production of all Chinook and coho streams coastwide.

Replicating Coded-Wire Tag Hatchery Studies, *Frank de Libero, Pacific Marine Fisheries Commission*

Mark Twain once wrote that there's something fascinating about science. One gets such returns of conjecture out of such a trifling investment of fact. As part of a coastwide effort to improve the fact to conjecture ratio in fisheries science this research centered on the method of replicating coded-wire tag codes to improve salmon stock studies.

The coded-wire tag is indeed important. Over 20 million coho and Chinook are tagged every year and this effort has been going on since 1976. The total annual cost for tagging and recovery is about 6 to 10 million dollars. Information from this study is important. It forms in part the basis of U.S./Canada negotiations. It helped in the development of resident Puget Sound Chinook and coho.

The coded-wire tag is the basic information unit in salmon management. It is difficult to imagine a salmon program without the microtag. But in order to keep estimates derived from the coded-wire tag in perspective, we need to know something about their reliability.

As an example, suppose fingerlings were tagged and released in two groups each representing identical procedures at the same hatchery, except for diet. Suppose the fingerlings reared on these diets survived at different rates and are sampled in the fishery. First, if the recoveries observed during sampling are correctly expanded to account for not sampling the total catch over all fishing periods and areas, then the data provides information not only about the difference between diets, but about absolute survival. This is very important to salmon managers and to fishermen. Second, the relevant recovery rates may be reasonably accurate because the fish were raised in the same hatchery under the same conditions. However, because there was only one coded-wire tag per diet, the data are limited and give limited grounds for determining whether the difference in recovery of the two groups is too small to be meaningless, or large enough to be important.

A measure of reliability could have been built in to the experiment to help reach a firmer decision. The way to do this is to replicate the tag codes within each diet. Edward Teller has written a fascinating book on the science called, "The Pursuit of Simplicity". In the book he has a thesis which is that rarely are explanations in science obvious and complex. As science advances, explanations become simple and surprising. Replicating coded-wire tag studies, though this technique has been around for a long time in other areas, is a simple and surprising solution to estimating variability.

Consider the alternative to replication. The problems with estimates of variability that are derived from theory alone is that the data cannot really tell its own message. Previous estimates of coded-wire tag statistics tend to be complex, even cryptic, as if they came out of a black box.

A recent paper showed some input and sample results, including a relative error of 62% of an estimate based on two observed tag recoveries. It is doubtful that two recoveries can yield a relative error as low as 62%. Nor can estimates derived from complex formulae compete with esti-. mates that are built into the study and don't require untested, and sometimes unreasonable assumptions.

The method of internal variance estimation or replication is sometimes called interpenetrating subsampling. This method has been used extensively by Deming. Deming was hired by the Japanese shortly after the war to improve quality control. Obviously he has succeeded. Doug Chapman has used replication in fisheries. An example is in a very clear paper by Chapman and Johnson published in 1968. Chapman has used it just recently also.

Take an example, the release of 55,000 1977 brood coho from the Big Creek Hatchery which was a replicate sample. Half of the fish, roughly 27,500 were tagged with one code and half with another. The fish in both groups had been treated alike and were a single release group, except for the tag codes. Thus this release group had two replicates. The harvested rate of the one group of 27,500 was about 2.4% and for the other, about 3.4%. The relative error ended up being about 23% and that was with 253 observed recoveries.

The coded-wire tag data base consists of coastwide releases and recoveries, and this file does contain potential replicates somewhere in the order of about 10%, in terms of observed recoveries. Many of these have been boiled down after about six months of work into a smaller group of "true" replicates. The criteria used for determining replicates was the same stock, the same release date and site, the same fish size at release and no known or sus-

pected factors such as different diets or pond densities. Incidental effects such as being reared in different ponds, was considered acceptable as long as it represented normal hatchery practices.

The present phase of this coded-wire tag research is based on these replicates that have been identified. There are two sets of replicates that deserve special attention. One involves fall Chinook from the Abernathy Hatchery and the other involves coho from Big Creek. The Big Creek study was similar to Abernathy. At Abernathy for four brood years, 1974 through 1977, 50 females were sequestered and each female's eggs were fertilized by the sperm of a single male. The egg take was divided equally and the fry that developed from each half were tagged with a unique tag code. The within-female, or between egg lot, variability can then be estimated. Because the protocol at Abernathy strongly indicates that the egg lots were all raised under the same conditions, any variability associated with those groups would represent the pure error associated with the use of the coded-wire tag.

These replicates can be grouped in successive stages. Originally we start out with 50 females and each female has a pair of tag codes. Then we can group those into draws of four and do that successively until all 100 females are used up. There are some caveats here because some females die and so on, but the results are not affected. The idea is to find how samples of different size change the estimated variability, or error, associated with the survival statistics using coded-wire tags. An important finding so far is that variability within the females (pure error) is five or six times greater than the variability between females. This emerged from the data from both hatcheries. Evidently most of the variation is associated with the coded-wire tag recovery and estimation process and the forces of nature that act on salmon after they are released. The between-female component, which is basically the hatchery effect, was 10% of the total. And if this is representative, it is important. Variability within a hatchery may be just a small part of the total. A reasonable hypothesis is that on the average the major source of variability in the salmon experiments occurs after the fish are released.

The Abernathy and Big Creek'replicates were also used to try and better understand the relationship between a relative error and sample size. All the data, both coho and Chinook were used from all the brood years and from both species. These fitted together reasonably well into an empirical model. Ten observed recoveries give a relative error of over 50% which is greater than what you would-expect from theory.

With a little help from statistics, the replication allowed the data to tefl its own story. Without replication assumptions would have to be made which are frequently unverifiable and methods can be complex. In order to make realistic decisions, something about the reliability of the estimates must be known. This is true whether it is a hatchery program or a management program. The coded-wire tag is a natural for replication. It is easy to use and it is comprehensible. A fisherman, for example, may not know or care what a variance is, but if you tell him that you have two independent measures of the same thing, and one measured 2.4% and the other measured 3.4%, he knows it is better than if one measured 1.5% and the other measured 6%. Replicating tag codes gives us useful tool.

A few guidelines for the planning of fish studies can be offered using the Abernathy-Big Creek model. If a 30% relative error per replicate is needed, then for a 1% survival rate and a 25% sampling rate, 10,000 salmon will have to be tagged. If you want to cut that relative error in half to 15%, you must tag about 30,000 salmon, given the same assumptions. How many replicates? Based on the research three to six replicates would be a realistic and practical number. A minimum number of three is recommended.

There is also the possibility of building replication right into the tag code as it is manufactured^ which in itself is kind of fascinating. For example, if three bits were set aside on the tag code and then as the tags are manufactured they were sequenced from zero to seven, you would have eight replicates built right into any single tag code.

Effective salmon husbandry and management is very much dependent on the accurate estimates of stock survival and distribution. Replication can help in determining accuracy and improving these statistics.

This is beginning to sound like the real estate salesman who says there are three important factors in the acquisition of a real property and that is location, location, location. For coded-wire tag studies it would be replication, replication and replication. By building into a study the key to allowing the data to tell its own story, we can go Mark Twain one better. Not only can we go from fact to conjecture, but we can go back to facts and back them up.

Progress of Regional Mark Processing Center and Regional CWT Coordination, *Ken Johnson, Pacific Marine Fisheries Commission*

The Regional Mark Processing Center has two distinct functions, but they are very closely interrelated. One is to maintain a regional coded-wire tag data base and the second is to provide regional coordination for coded-wire tag studies up and down the coast, including those in Canada. This also includes finmarks. Each year the emphasis has seemed to be either heavily in one area or the other. This past year, 1984, the emphasis has been on data processing and catching up the backlog of recovery data.

The Salmon and Steelhead Committee is no longer operational, but in its early days it established a goal of having recovery data to the Mark Center within six months after the end of the year. That is a fairly timely processing of data. This goal has never been met, but at several meetings this goal has been reaffirmed. It is highly desirable, obviously. The Mark Center was transferred to PMFC in the fall of 1977 and during the first year (1978) it helped Oregon finish up the 1976 recovery data. The next report (1977 data) was published in September 1980. In February 1982, the 1978 data was published, minus California. At that point the data was basically $3^{1}/2$ to 4 years behind. From February 1982 until January 1984 there were no recovery reports published. However, as data was submitted it was distributed and made available. The problem appeared to be primarily finalizing catch data from fish tickets. A lot of time and effort is required to work out errors and to get the finalized data needed for expansions. This seemed to be the real bottleneck. There was also, during this period of time, a shift in priorities. The agencies seemed to have other pressing needs in data processing and so a lot of effort went in other areas than coded-wire tag processing.

Workshops were held in 1982 and in 1983 to put emphasis into improving the quality and timeliness of this data. The results soon became apparent. In 1983 the data began to flow into the Mark Center on a regular basis. This past year the Mark Center published the 1979, 1980 and 1981 reports. All of those years were published without California. California was somewhat behind, but provided 1978 and 1979 recovery data. Those data sets have been published and sent out as updates to the recovery reports. The 1980 California data just arrived. The 1982 data for Alaska and British Columbia are finished, and those for Oregon and Washington are in the process of being completed. By January 1985, the 1982 data should be available.

During the recovery workshops it was pointed out that a major gap in the recovery data was the fact that it did not have escapement data (hatchery data and spawning data) in the data set. In order to get a complete picture of the success of any given tag group, all recoveries are needed,

not just those in the ocean and in the Columbia River. There has been a major effort by the agencies in providing this data. Washington has done so for the last three, possibly four, years, but they have been the leader. NMFS in Alaska and the U.S. Fish and Wildlife Service are now reporting hatchery data. Oregon is rapidly approaching the time when they can provide all of their data. As this data comes in, the Mark Center is putting it out with the other recovery data.

There are also some miscellaneous types of data. The National Marine Fisheries Service has an extensive sampling program in the Columbia River for juvenile outmigrants. This is an extremely valuable set of data which they have been providing. The final area is high seas recoveries. The National Marine Fisheries Service with their U.S. observer program has had an increasing number of recoveries, particularly on the foreign groundfish fleets. It is not in excess of 200 to 300 recoveries, but these turn out to be quite valuable recoveries, particularly for the steelhead.

Turning to regional coordination, The Mark Center has had much more limited involvement in this area this past year. This involved some participation with the Statistical Committee which has been closely involved with Frank de Libero's work, and with the Oversight Committee for Roy Wahle's work. The value of their work should be apparent, but as time goes on it will become even more apparent. It is hard to know, for example, how many tagged fish have been released in what were fruitless efforts because the experimental design was inadequate. The facts for properly designing experiments were not available. Therefore a lot of the recovery data was probably quite useless. The time has come where this new knowledge will result in a much stronger tagging program in terms of experimental design.

The Oregon Coastal Zone Management Association proposed that all hatchery fish be marked with the adipose clip. The purpose being that as hatchery fish are landed they could be kept. Those that were not clipped with the adipose mark would be considered wild and they would be released to hopefully survive and return to their spawning streams. The Mark Committee has been polled and a reaction to the proposal obtained. The Committee is unanimous in its opposition to this idea. The Committee feels that the coded-wire tags provide an invaluable research tool which is too great to jeopardize.

This coming year the Mark Committee will be spending a lot more effort to develop an on-line regional data base. At the present time, the Mark Center basically has the capacity to handle a .single year's recoveries. This* eliminates the possibility for anybody to call in and get a brood year analysis. Washington has this type of data on the University of Washington's compute*, but it has been modified for their own use. Basically what happens is a given recovery agency has a need for a rather specific fine-grained resolution of the recovery data by very small recovery areas. Outside agencies do not need this resolution and the result is recovery areas for reporting are changed, the expansion factors are changed and the data does not mesh. These are both correct approaches, but the problem of how to develop a data base that is acceptable to all agencies needs to be resolved.

Status of Marine Recreational Fishery Statistics Survey, *Russell Porter, Pacific Marine Fisheries Commission*

The Marine Recreational Fishery Statistics Survey began in 1979. It is a nationwide program to estimate catch and effort in the recreational fishery throughout the year. Field interviews identify and tabulate catch by species and gather angler information. A telephone survey estimates the fishing effort. These two surveys are combined to estimate total catch and effort in all boat modes

This particular nationwide survey has a funding level of about 1.8 million dollars, which unfortunately has remained at about that level since it began in 1979. The costs nationwide have increased each year, which has put a continuing effort on the National Marine Fisheries Service to augment this base funding to come up to the actual costs of continuing the survey.

On the West Coast, about 41,000 anglers are interviewed in the field and the telephone contractor makes 75,000 phone calls to households each year to estimate fishing effort. The expanded catch estimates for the Pacific coast for the 1979-82 survey years have been published by NMFS in their Current Fisheries Statistics series. Data for 1979-80 was published in May 1984 as "Current Fisheries Statistics Number 8321" and data for 1981-82 in November of 1984 as "Current Fisheries Statistics Number 8323". Copies of these publications are available from PMFC. The expanded catch estimates for 1983 and 1984 will be published sometime in early 1985.

A review of the total angler trips for the first three years of the Survey shows that the total non-salmon fishing trips average about 11 million after a high of about 15 million in 1980. Salmon anglers are not sampled in this Survey as the States have extension sampling efforts to estimate salmon catch and effort. The salmon catch and effor provided by the states is added to the survey data in the published reports. The salmon catch data includes incidental catch of non-salmon species. As a comparison, the coastwide marine salmon trips for these years were close to, but under 2 million trips annually.

	Southern California	Northern California	Oregon	Washington	Total
1980	8.9	3.6	0.7	1.5	14.7
1981	5.1	2.9	1.1	1.9	10.9
1982	5.7	2.6	0.9	1.7	10.9

The catch for marine recreational fishermen of non-salmon species ranged from 59-94 million as shown in the table below.

NON-SALMON CATCH (IN MILLIONS OF FISH)

	Southern California	Northern California	Oregon	Washington	Total
1980	50.0	31.1	2.9	9.8	93.8
1981	27.6	16.8	3.8	10.5	58.7
1982	34.5	12.7	3.8	10.0	60.7

NON-SALMON ANGLERTRIPS(IN MILLIONS)

As time goes on the states are becoming more involved with the use of survey data on a day-to-day basis. In addition, PMFC has computerized the data base at its office. A great deal of information has been provided from that data base. Next month a course is being given for some computer programs California has written to provide their regional managers ready access to the data base and to review the raw data on a timely basis. Presently all the data is on computer tape for 1979-84 and is available for use.

Summary of Pacific States Fishery Data Collection Projects and Costs, *Russell Porter, Pacific Marine Fisheries Commission*

The Pacific Coast Data Committee at their last meeting asked PMFC to look into the regional fishery data costs associated with management. There were a couple of goals in mind for this study. The first was to look at what state funds were involved, as compared to federal funds, and a projection for the future to determine needs, trends,

PMFC staff worked with each of the states. They were asked to fill out a sheet which provided the project title, work performed, and a four-year budget starting with fiscal year '83 for each project relating to regional management. All of these data were compiled on the PMFC computer. It was then categorized into six basic fisheries: groundfish, salmon, albacore, invertebrates (including crab and shrimp), herring and marine fish (general). A readout was provided to the states. Software has been written which produces summary tables by fishery and state.

Projects included are those associated primarily with management needs: research, field work, spawning escapements, spawning ground surveys and port sampling, and catch statistics. The data base does not include administration, enforcement or enhancement.

Status of Pacific Coast Fishery Data Committee Activities and PacFIN, *Will Daspit, Pacific Marine Fisheries Commission*

The Pacific Coast Fisheries data Committee consists of 14 members appointed by the Directors of each participating agency. The participating agencies are: the Alaska, California, and Idaho Departments of Fish and Game, the Oregon Department of Fish and Wildlife, the Washington Departments of Fisheries and Game, the two centers and three regions of the National Marine Fisheries Service, the Pacific and North Pacific Fishery Management Councils, and the Pacific Marine Fisheries Commission.

This Data Committee has been formed with four goals in mind. The first was to implement and manage a Pacific fisheries information network, otherwise known as PacFIN, that aggregates summarized state and federal fisheries data for use by fisheries managers and associated agencies. Secondly, to provide data management consultation and technical advice to the Council's management teams and participating agencies upon request. Thirdly, to establish priorities and coordinate plans to improve the efficiency, effectiveness and timeliness of the data acquisition and delivery, with a minimum of unnecessary duplication. And lastly, to promote the development and implementation of coastwide data collection standards to facilitate the merging of fisheries data in the PacFIN. Financial support for Data Committee activities is provided by the National Marine Fisheries Service. At present, the bulk of the funding is provided by the Northwest Regional Office.

Since 1981, the Data Committee has met eighf times. At these semi-annual meetings, a wide range of topics concerning coastwide data are discussed and decisions regarding directions and priorities are conveyed to the PacFIN system manager. The Data Committee currently provides direction to four major efforts—the PacFIN research data base, the in-season salmon reporting system, the joint venture logbook project and the PacFIN Management information system.

The PacFIN research data base consists of individual fish ticket and vessel records provided annually by California, Oregon and Washington for 1981 and 1982, with 1983 data to be added in the very near future. This data base resides at the Southwest Fisheries Center in La Jolla.

The in-season salmon reporting system consists of weekly catch and effort data provided by California, Oregon and Washington to a central data base. During the season, the National Marine Fisheries Service's Northwest and Southwest Regional Offices, the Pacific Council and the Pacific Council Salmon Team accesses this data base to retrieve the latest salmon catch and effort data.

The joint venture logbook project is a voluntary project initiated in 1983. Copies of logbooks maintained on catcher vessels, or processor vessels, are periodically mailed to the PacFIN manager's office. These data, which contain information about individual tows, are entered into a data base at the Northwest and Alaska Fisheries Center.

The PacFIN MIS, management information system, is the primary effort of the Data Committee. All of the directives concerning the MIS are implemented through the PacFIN central processing office in conjunction with designated coordinators within the agencies participating in this system. The staff of the PacFIN office consists of a systems manager and a computer aide and is located at the Northwest and Alaska Fisheries Center in Seattle. The central data base for this system consists of the latest landed catch and ex-vessel dollar value data for fish landed in the states of California, Oregon and Washington. The latest landed catch information is also provided by the Alaska Department of Fish and Game for their domestic fishery and by the Northwest and Alaska Fisheries Center (NWAFC) for all foreign and joint venture fisheries.

The data base currently contains information for groundfish species that are managed in the Pacific and the North Pacific Fishery Management Councils' Groundfish Plans. All four states submit their data on a monthly frequency, while the Northwest and Alaska Fisheries Center provides weekly updates. With this frequency of input, the central data base is refreshed with the most recent information and that information can be provided to fisheries managers as they need it. The system can provide landed catch and ex-vessel prices, where available, stratified by month, species, area of catch, gear, and port of landing.

Reports containing this management information are generated at the PacFIN office monthly and mailed to various individuals. Currently there are 34 recipients of the selection of reports that pertain to Pacific Fishery Management Council groundfish management. Thirty-two individuals receive North Pacific Fishery Management Council reports, while reports that contain information that is specific to California are distributed to 17 individuals, Oregon reports go to 7 people and 6 individuals receive reports containing data provided by the Washington Department of Fisheries.

A large selection of reports are also mailed to the PMFC office in Portland where the staff distributes copies to interested individuals upon request. Some managers use the remote retrieval facility system to obtain particular reports via computer terminals connected to the NWAFC computer system.

^Although the PacFIN MIS has been operational for some time, the system continues to be expanded and enhanced. Recent enhancements include: the implementation of a data acquisition sub-system which allows the monthly input data to be transferred directly from the California, Oregon and Washington computers to the central processing office; improved reporting capabilities to support the requirements of the North Pacific Council staff, and the development of multi-year reports which have aided the Pacific Fishery Management Council's Groundfish Team in their efforts to project annual catch for various species.

Projects that are in progress include: Expansion of the system to include an annual data feed containing landed catch, ex-vessel dollar value and effort for the salmon fishery, and merging the PMFC Groundfish Data Series system with the PacFIN MIS, including the incorporation of Canada's domestic groundfish data.

Improving Consistency of Goundfish Age Determinations, *Chuck Woelke, Pacific Marine Fisheries Commission*

One of the key pieces of information utilized in managing a stock of fish is age. Over the past several years, groundfish managers have become increasingly concerned over apparent discrepancies between rockfish age determinations provided by their staffs as compared to those reported by other agencies.

As a consequence of this situation, a subcommittee of the technical committee of the International Groundfish Committee recommended a workshop involving rockfish ageing technicians from the fishery management agencies of the northeastern Pacific rim be held to develop a standardized procedure for ageing rockfish. PMFC was asked to sponsor the workshop.

In late April 1983, a 3-day workshop attended by technicians from Alaska, British Columbia, Washington, Oregon and California fishery management agencies (both state and federal) was held at the NMFS Montlake Laboratory in Seattle. Representatives from the University of Washington and Oregon State University also participated.

The product of the workshop was a "proposed draft of a manual for ageing rockfish". This was submitted to the International Groundfish Committee for consideration at their June 1983 meeting. They approved the draft and requested a second workshop be held to:

1. Perfect the draft rockfish ageing manual
2. Develop a proposed sablef ish ageing procedure
3. Look into problems associated with ageing flatfish.

They also recommended the holding of annual technician workshops to assure uniform application of groundfish ageing techniques along the entire northeastern Pacific coast. Finally they requested development of some sort of quality control process to apply within and between agencies when ageing fish for management purposes.

This charge set the scene for a second workshop in Seattle in early August 1983 involving essentially the same participants as in April. The results of this second workshop were:

1. Refinement of the proposed rockfish ageing manual
2. A draft recommended procedure for sablefish ageing
3. Some preliminary suggestions on flatfish ageing
4. A "quality control" committee of technicians set up to develop and recommend a procedure for assuring maximum probability of uniform age readings by all participatingagencies.

The results of these efforts were reported at the December 1983 meeting of the International Groundfish Committee in Seattle and adopted and operationally implemented at their June 1984 meeting at Nanaimo, BC.

At the Nanaimo meeting they requested that PMFC publish the documents developed under a single cover for distribution to all participating agencies—which was done in August 1984. They further recommended that adequate funding be sought by all agencies to assure annual workshops and otolith exchanges between the agencies to achieve the desired goal of more uniform ageing of rockfish and sablefish for management purposes. Plans are currently underway for an "otolith exchange" followed by a workshop by age determination personnel in early 1985.

In summary, the following has been accomplished since the 1982 PMFC meeting in Monterey:

1. Development, acceptance and publication of an agreed upon procedure for ageing rockfish otoliths.
2. Development, acceptance and publication of an agreed upon procedure for ageing sablefish otoliths.
3. Suggestions on how to develop uniform flatfish ageing techniques.
4. Development and adoption of a "quality control" protocol.
5. Formalization of an "age determination" group to meet annually to continue to deal with "quality control" problems.

Finally, the following three items have been agreed to and implemented.

1. A standardized break and burn technique has been developed and adopted by all participating management agencies for ageing rockfish and sablefish—participating agencies are now geared up to carry this out.
2. Interagency otolith exchanges shall be held annually or as needed.
3. Annual workshops of the technicians involved in ageing groundfish will be held to help minimize variations in age data utilized by the various groundfish management agencies.

UPDATE OF ACTIONS TAKEN ON 1983 RESOLUTIONS

A number of the Resolutions adopted by the Commission in 1983 required continuing efforts by the Secretariat to assure that the Congress or concerned Federal agencies would provide a response that would help to further PMFC's goals and objectives.

Resolution 1 encouraged the full domestic utilization of fisheries resources in the U.S. Exclusive Economic Zone. This resolution was sent to both the Pacific and North Pacific Fishery Management Councils as well as NMFS and Congressional Committees.

Congressional reaction to a 1990 date for full domestic utilization was and continues to be mixed. While most everyone agrees with the goal of the resolution, a fixed date for all fisheries in the nation has not received broad support. This issue is being considered in the 1985 reauthorization process for the Magnuson Act. Appeals to the Administration and Congress continue to be made to divorce non-fishing issues from the foreign fishery allocation process, without success. The regional councils and others also are pursuing this change, but resistance from the Department of State is expected to continue. The purchase of U.S.-processed products by foreign nations seeking allocations is a major push of the North Pacific Fishery Management Council. A recent agreement between Japan and U.S. industries calls for Japanese purchase of 140,000 mt round weight of pollock processed into surimi, of which at least 35,000 mt is to be delivered in 1985 and the remainder in 1986. In October 1984, the Congress amended the Magnuson Act "fish and chips" provisions by stating that foreign purchase of U.S. processed products and U.S. harvested fish are expected in return for aljocations. Both the Pacific and North Pacific Councils have adopted or are in the process of adopting goals and policies that will provide a climate for full domestic utilization.

The Commission believes that this issue has not been satisfactorily resolved and therefore directed that this be one of three major issues to be addressed at the 1985 Annual Meeting. An interstate ad-hoc committee has been organized to prepare an issue paper for the Commission's consideration.

Resolution 4 expressed the concern for the effects of deep sea mining in relation to the proposed Gorda Ridge lease sale. This resolution was sent to the chairmen of the House Subcommittee on Oceanography, House Subcommittee on Fisheries, Wildlife, Conservation and the Environment, and the House Subcommittee on Energy and the Environment. PMFC's Executive Director testified at the Department of Interior's public hearing on February 14, 1984 on the Draft Environmental Impact Statement for the Proposed Gorda Ridge Mineral Lease Sale. Due to the overwhelming negative response by the public, the Minerals Management service has postponed the lease sale and formed a Technical Task Force to resolve data inadequacies. The Commission continues to monitor the Gorda Ridge Task Force meetings. Exploratory cruises in the summer of 1985 will determine the potential for type and extent of minerals present. Decisions on environmental studies await the results of these cruises.

Resolution 7 asked the State Department to prepare a list of the obstacles to U.S.-Mexico joint fishery management. This resolution was sent to the Secretary of State and a general reply was received from his office that did not enumerate the obstacles. The Commission tried a new approach in 1984 by urging continued and expanded dialogue and joint research through the Commission of the Californias.

Resolution 8 stressed that individual States, not the Federal government, should have responsibility for the development and authorization of artificial reefs. This resolution was sent to Congressman Breaux in response to his House Resolution 3474 which proposed setting up national standards for the construction and siting of artificial reefs. The bill was passed in late 1984, but does not alter the authority of the States in State waters. A committee has been established to draft a national plan. The committee includes Pacific State representatives.

Resolution 9 opposed H.R. 2965 which would set up a uniform marine recreational fishing license. This bill was introduced again in 1984, but did not move. Its author was not reelected to the 1985 Congress, and it is not expected to be introduced again. In addition, there has been some movement by Atlantic and Gulf States to establish saltwater licenses, which was the bill's primary goal.

Resolution 10 supported H. Cong. Res. 119 which would establish a national fisheries week. Copies were sent to appropriate congressional committees^n support of this resolution. Congress declared June 4-10, 1984 as National Fishing Week.

Resolution 11 requested the Federal government to complete its task of assimilating Southeast Asian refugees into the U.S. fishing industry. The resolution called for assisting refugees to find a place in the U.S. fishing industry, including alternative fisheries; to foster an understanding of local fishing regulations as well as customs; and to increase communications between refugees and local fishermen and reduce conflicts. This resolution was sent to the Federal Office of Refugee Resettlement and various regional refugee services programs and State organizations. Dialogue with some of these groups resulted in a proposal by the Vietnamese Fishermen's Association to hire a bilingual consultant for purposes of enhancing communication between Asian- and English-speaking fishermen. PMFC endorsed the proposal.

Resolution 12 asked for Small Business Administration low-interest loans for the fishing industry as a result of El Nino. PMFC, the State and the fishing industry pressed hard for timely assistance. After some setbacks and opposition by the Small Business Administration, Congress finally approved a program in 1984 to provide economic injury disaster loans fishermen affected by the El Nino of 1982-83.

ADMINISTRATIVE REPORTS AND ACTIONS

EXECUTIVE COMMITTEE ACTIONS

The Executive Committee met on April 12, September 19 and November26,1984 and took the following actions:

1. Unanimously approved the 1985 fiscal year budget of $369,612.
2. Unanimously approved the 1986-87 biennial budget of $727,802.
3. Supported Dr. John Harville's participation as chairman of the American Fisheries Society ad-hoc committee on federal organization for fisheries and approved use of PMFC clerical support for that function.
4. Unanimously approved changes to PMFC Rules and Regulations which reflect the new Annual Meeting process.
5. Revised the travel reimbursement rules to allow .. , - reasonable actual hotel costs plus $26.00 per day for meals, the total allowed per day to bs established for each* meeting location regardless of the federal daily limit.
6. Adopted the 1984 Annual Meeting agenda to reflect the newly approved Annual Meeting process.

EXECUTIVE DIRECTOR'S REPORT

Legislative Advocacy and Resolution Implementation

The Commission reviewed and formulated positions on a number of Congressional bills in 1984, and the Executive Director continued to monitor all national legislation affecting fisheries. Resolutions adopted in 1983 were pursued in 1984, and the status of these efforts are described beginning on page 10 of this report. In 1984, the Commission changed its procedure for setting policy and did not adopt resolutions. The new procedure is described later in this section.

The major legislative activities in 1984 were as follows:

Fiscal Year 1985 Appropriations—PMFC argued for level funding of NMFS programs, and for adequate funding of fishery programs in the Fish and Wildlife Service and Forest Service budgets. The Congress restored most of the cuts proposed by the Administration.

Coastal Zone Consistency—PMFC supported bills to clarify that all activities in and beyond the coastal zone (e.g. oil and gas) must be consistent with approved state coastal zone plans, and also supported an exception for fishery management plans. Our positions received support in Congress but legislation was not enacted before the end of the session. The Congress may pursue this matter in 1985.

Coastal Migratory Fish Conservation—The Executive Director argued against Senator Chafee's bill to create a new Federal management structure in the territorial sea. The bill did not move in 1984 but is expected to be reintroduced in 1985.

National Artificial Reef Act—This was the subject of a 1983 resolution which generally opposed the bill and cited the States' concerns that reef siting in State 'waters is a State matter and that development of a national reef plan must include State participation. The bill was passed in 1984. A team, which includes Pacific State representatives, has been formed recently to begin drafting a national plan. The law does not alter the authority of the States in State waters.

Marine Recreational License—PMFC opposed this bill which was addressed by a 1983 resolution. The bill was redrafted and introduced again in 1984 but did not move. It is not expected to be pursued in 1985, since its sponsor was not reelected and since there is a movement on the Atlantic and Gulf Coasts toward state saltwater licenses.

Transfer of Hatchery Funding—Legislation was introduced in 1984 to transfer funding responsibility for Columbia River mitigation hatcheries from NMFS to BPA. PMFC and other Pacific Coast entities argued against this proposal, and it was not prusued further by Congress. In fact, the Congress restored the $10 million for Columbia River hatcheries in the NMFS budget. This issue is not dead, and Congressman Breaux will pursue it in the context of a new bill, the National Hatchery System Act. This bill was introduced late in 1984 for the purpose of obtaining comments. It is being redrafted and will be reintroduced in 1985.

Clean Water Act—PMFC argued in favor of reauthorizing and strengthening this Act in 1984 but no final action was taken by Congress in 1984. This will be a major issue in 1985.

Wallop-Breaux Funds—PMFC and many other fishery agencies and sport fishing groups supported the expanded Sport Fish Restoration Program which would provide significant new revenue from taxes on fuel and tackle and duties on imported pleasure craft. This major piece of legislation was enacted by Congress and signed into law in 1984. (Note: In early 1985, the President proposed the impoundment of most of the new revenue to help offset the deficit. This is an appropriation issue now before Congress.)

El Nino Disaster Aid—After numerous attempts and considerable opposition on the part of the Small Business Administration, the Congress passed legislation providing economic injury disaster loans to fishermen affected by abnormal oceanographic conditions in 1982-83. The Commission voted in favor of such aid at its 1983 Annual Meeting (1983 Resolution 12).

Trinity River Restoration—The Congress passed and the President signed legislation authorizing expenditure of $33 million for rehabilitation of salmon and steelhead habitat and to modernize the Trinity River Fish Hatchery. This was supported by PMFC and was the subject of 1982 Resolution 21.

Facilitation of Research and Data Collection

PMFC administered over $3 million in contract funds in 1984 dedicated to numerous research and data collection programs. PMFC's payroll in 1984 included 190 individuals and totalled $1.3 million. PMFC's responsibility under these contracts varied and included the following:

1. pass Federal funds directly through to the States and provide contract services (contract services in clude preparing proposals for funding, preparing periodic reports, paying bills and travel expenses, accounting, budgeting, and fiscal responsibility);
2. use Federal funds to employ samplers to bolster State work forces;
3. provide a "parent" organization and contract services for non-State and non-Federal entities, but with no project responsibility (e.g. Columbia Basin Fish and Wildlife Council, Enhancement Planning Team and Water Budget Center);
- 4. employ headquarters and contract staff with major program responsibility (e.g. Marine Recreational Survey, Regional Tag Coordination).

A complete listing of contracts and amounts is included in the Treasurer's Report of Receipts and Disbursements in Appendix I. The status of major regional projects was described in the 1984 Annual Meeting section on "Status Reports of PMFC Activities" on page 3.

In addition to these efforts, PMFC Staff completed and published a survey of State fishery data colection projects and costs. This document describes all existing and planned projects in Alaska, Washington, Oregon, Idaho and California for fiscal years 1983-1986, the budgets and the funding sources. It was prepared to document the magnitude of State investments in data collection for regional fisheries and the need for stable federal funding assistance to meet the needs of State and Federal management. It also provides a convenient directory of projects for researchers and others. The staff plan to update this survey annually.

A New Annual Meeting Process

A major effort of the Executive Director in 1984, at the request of the Commission, was to devise an alternative means of setting policy and conducting the Annual Meeting which did not rely on resolutions. The objectives of the effort were to:

1. limit the number of issues to be addressed;
2. concentrate on the most important regional concerns;
3. involve Commissioners and Advisors more in the process throughout the year;
4. develop issue papers which more fully document the problem and include strategies for implementa tion.

At the 1984 Annual Meeting, the Commission adopted a new procedure which is described in Section XV of the revised Rules and Regulations appended to this report. (Appendix III) The 1984 Meeting served as a transition from the old to the new process in that for the first time resolutions were not adopted, and the meeting followed a specific agenda of major current issues in marine fisheries. The process will be fully implemented in 1985 when interstate ad hoc committees will be working throughout the year to develop position papers on three major issues: limited entry, full domestic utilization, and economic stability. In 1985 and future years, the Annual Meeting agenda will be composed of the major issues selected by the Commission the previous year, major legislation affecting marine and anadromous fisheries, research needs, and Advisory Committee issues which are timely and have regional implications.

Other Executive Director Actions and Responsibilties

By statute, the Executive Director sits on the Pacific and North Pacific Fishery Management Councils as a nonvoting member. By contract arrangement, Dr. John P. Harville represented PMFC On the North Pacific Council in 1984. This allowed the Director to meet Pacific Council and all other Commission responsibilities. The Executive Director is the Chairman of the Pacific Council's Legislative Committee.

The Executive Director serves as the U.S. member of the Canada-U.S. Groundfish Committee. The Canadian member is Mr. Ed Zyblut of the Department of Fisheries and Oceans. The committee serves as a forum to exchange information, propose needed research and discuss the impact of regulatory alternatives on transboundary groundfish stocks. The Committee is advised by a Technical Subcommittee. Based on the recommendation of this group in 1984, PMFC has initiated a merger of the PMFC Groundfish Data Series and PacFIN, and has published a manual on age determination for rockfish and sablefish.

The Executive Directors of the Atlantic States, Gulf States and Pacific Marine Fisheries Commissions serve as consultants to the Marine Fisheries Advisory Committee (MAFAC) which advises the Secretary of Commerce on fishery policy. MAFAC meets 3-4 times per year. Also, PMFC is represented in the International Association of Fish and Wildlife Agencies, and the Director serves on several Association committees. Finally, the Executive Director serves as Chairman of the Committee on Anadromous Fish Marking and Tagging and is a member of the Pacific Coast Fisheries Data Committee.

TREASURER'S REPORT

The Treasurer, Gerald L. Fisher, prepared the Reports of Receipts and Disbursements for the period October 1, 1983 to October 1, 1984 for the Annual Meeting in Seattle (see Appendix 1 - Financial and Audit Reports). Receipts were: (1) member States contributions of $100,700 (Idaho's $5,300 contribution received October 15, 1984; (2) external contract payments of $3,604,438; (3) interest of $11,845. Disbursements totaled $3,633,864 divided between PMFC general support of $352,997 and external contract expenses of $3,280,867. The audit report for the fiscal year ending June 30,1984 found the financial statements of the Commission to be in satisfactory condition.

PUBLICATIONS IN 1984

The PMFC document entitled *Releases of Coded-wire Tagged Salmon and Steelhead from Pacific Coast Streams Through 1983,* published in March 1984 is the eleventh in a series of reports tabulating all the various codes used by federal, state, indian and private agencies for salmonid coded-wire tags in the Pacific Coast States. The report enumerates all previously used codes, necessary corrections and all the new codes used in 1983. A report enumerating the codes released through 1984 will be published about March 1985.

The *1984 Mark List,* also published in March 1984, contains a record of all groups of salmonids that had been finmarked prior to their release.

The PMFC Mark Processing Center also published the next three coded wire tag recovery reports during the year. These included: *1979 Pacific Salmonid Coded Wire Tag Recoveries,* published in January 1984; 7980 *Pacific Salmonid Coded Wire Tag Recoveries,* published in June 1984 and *1981 Pacific Salmonid Coded Wire Tag Recover ies,* published in October 1984. The 1982 Recovery report will be published in February 1985 and it is hoped that both the 1983 and 1984 Recovery reports can also be pub lished in calendar year 1985 which will bring the Recovery reports up to date which has long been the goal of PMFC and the States.

The 36th Annual Report of the Pacific Marine Fisheries Commission for the year 1983 was published May 1984. It is the goal to publish the 1984 Annual Report in March 1985 and subsequent years' Annual Reports each March. The *Manual on Generalized Age Determination Pro cedures for Rockfish* was published in August 1984. It was prepared by the Pacific coast groundfish ageing techni cians as a result of workshops sponsored by PMFC.

Volumes 40, 41 and 42 of the *PMFC Newsletter* were published in March, August and December of 1984.

1985 ANNUAL MEETING

The 1985 Annual Meeting of the Commission will be held October 1-2, 1985 in Juneau^Alaska at the Baranof Hotel.

PERSONNEL

Commissioners

The following were Commissioners during all or part of 1984."

Alaska
Dr. Don Collingsworth, Juneau—1 st Vice Chairman
Honorable Richard I. Eliason^Sitka Charles H. Meacham, Anchorage

California
Jack Parnell, Sacramento—3rd vice Chairman
Honorable Barry Keene, Eureka Stephanie Thornton, Oakland

Idaho
Jerry Conley, Boise—Secretary
Fred A. Christensen, Nampa
E.G. Thompson, Sandpoint

Oregon
Dr. John R. Donaldson, Portland—2nd Vice Chairman
Don Christenson, Newport Phillip W. Schneider, Portland

Washington
Bill Wilkerson, Olympia—Chairman
Honorable Brad Owens, Shelton
Robert D. Alverson, Seattle

Coordinators

PMFC Coordinators facilitated all aspects of PMFC programs within their State. The following were PMFC coordinators in each State for 1984:

Alaska
Guy Thomburgh, Deputy Director,
Commercial Fisheries Division, Alaska Department of Fish and Game

California
Mel Odemar, Coordinator, State-Federal Fisheries Management Program, California Department of Fish and Game

Idaho
Monte Richards, Bureau of Fisheries,
Idaho Department of Fish and Game

Oregon
Kirk Beiningen, Executive Assistant,
Oregon Department of Fish and Wildlife

Washington
Frank Haw, Assistant Director,
Washington Department of Fisheries
Ron Westley, Assistant Director,
Washington Department of Fisheries
Sam Wright, Chief Harvest Management,
Washington Department of Game

Advisors

The Advisory Committee is made up of fishing industry representatives from each State who advise the Commission of industry matters. The following were Advisory Committee members during all or part of 1984:

Alaska
Pete Isleib, Cordova—Section Chairman
Ole Harder, Kodiak
Andy Mathisen, Petersburg
Larry Powell, Yakutat
Jev Shelton, Juneau
Gordon Williams, Angoon

California
Robert Ross, Sacramento—Section Chairman
Frank Mason, San Diego Carl Nettleton, San Diego * Charles Platt, Fort Brag Jerry Thomas, Fields Landing RogerThomas, Burlingame Tony West, San Pedro

Idaho
Keith Stonebraker, Lewiston—Section Chairman
Norman Guth, Salmon Louis F. Racine, Jr., Pocatello

Oregon
Frank Warrens, Portland—Section Chariman
Joe Easley, Astoria
John Marincovich, Astoria
Henry Pavelek, Albany
Allan Fleming, Garibaldi
Herb Goblirsch, Newport

Washington
Earl Engman, Tacoma—Committee and Section Chairman
Phillip Anderson, Westport
Barry Collier, Seattle Guy McMinds, Tahola Rudy Peterson, Seattle Richard Powell, Longview Ted Smits, Seattle

PMFC Staff

During 1984 the PMFC Secretariat was composed of:

Portland Office

Lawrence D. Six—Executive Director
Russell G. Porter—Assistant to the Executive Director Dr. J. Kenneth Johnson—Regional Mark Processing Center Data Manager
Pam Kahut—Administrative Assistant
Jan Covert—Personnel Assistant
Michelle Dodgson—Secretary

Seattle

Will Daspit—PacFIN Data Manager

Part-Time Staff (Portland):

Jerry Fisher—Treasurer
Dr. John P. Harville—External Affairs Consultant
Leon A. Verhoeven—Consultant

1985 Officers

Elections were held at the 1984 Annual Meeting to select the Commission's Offices for 1985. The following officers were elected for 1985. Chairman—
Dr. Don Collinsworth, Commissioner
Alaska Department of Fish and Game
1st Vice Chairman—
Dr. John R. Donaldson, Director
Oregon Department of Fish and Wildlife 2nd Vice Chairman-Jack Parnell, Director
California Department of Fish and Game 3rd Vice Chairman-Jerry J. Conley, Director
Idaho Department of Fish and Game
Secretary—
Bill Wilkerson, Director
Washington Department of Fisheries

APPENDIX 1 —FINANCIAL AND AUDIT REPORTS

1984 Financial Statement

The Commission receives its financial support from legislative appropriations made in accordance with Article X of the Interstate Compact (creating the Commission) in which the signatory States have agreed to make available annual funds for the support of the Commission as follows: eighty percent (80%) of the annual budget is shared equally by those member States having as a boundary the Pacific Ocean; and five percent (5%) of the annual budget is contributed by each other memberState. The balance of the annual budget is shared by those member States having as a boundary the Pacific Ocean, in proportion to the primary market value of the products of their commercial fisheries on the basis of the latest 5-year catch records.

TREASURER'S REPORT OF RECEIPTS AND DISBURSEMENTS

October 1, 1983 to October 1, 1984

CASH BALANCE October 1, 1983			
(November 1983 Treasurer's Report)			$ 111,192
RECEIPTS			
Contributions by Member States:			
Alaska (FY 1985)	$ 29,800		
California (FY 1985)	25,600		
Oregon (FY 1985)	22,200		
Washington (FY 1985)	23,100		$ 100,700
Other Receipts:			
U.S. Fish & Wildlife Service	$ 69,917		
Columbia Basin Fish & Wildlife	109,925		
National Marine Fisheries Service	2,001,465		
Oregon Department of Fish & Wildlife	27,741		
Washington Department of Fisheries	274,934		
Bonneville Power Administration	1,116,956		
Miscellaneous	3,500		$3,604,438
Interest on Saving Certificates			$ 11,845
DISBURSEMENTS:			
Annual Meeting, November 1983, Bosie			
Commissioners	$ 5,165		
Advisory Committee	9,555		
Admin. & Research Staffs	9,994		
Tape Recording & Room Rental	1,964	$ 26,678	
Salaries & Wages		126,427	
Retirement & Social Security		10,287	
Medical, Dental & Life Insurance		10,887	
Travel Expenses, Special Meetings & Unclassified		14,019	
Office Supplies & Maintenance		12,029	
Telephone & Telegraph		5,392	
Postage, Freight, Express		5,916	
Rent, Space & Equipment		15,245	
Printing & Publications		4,075	
Bond, Accident | Liability Insurance Premiums		9,603	
Library Supplies		583	
Capital Outlay		3,136	
Professional Services		15,379	
Cooperative Research: Otolith Reader, CWT Study & Regional Mark Center Projects		91,121	
Other		2,220	
Subtotal State Funded Expenditures			$ 352,997
External Contract Expenditures:			
Councils Liaison (PMFC & ODFW)	$ 39,773		
BPA & NMFS-Columbia River Smolt Coordination & Water Budget Manager	332,763		
Wash. Coastal Sampling & Evaluation	210,635		
Federal and Oregon Shares of Salmon Maturity Study	17,289		
NMFS-Salmon & Steelhead Act Coordinator	155,110		
Federal Share of Otholith Readers	29,318		
NMFS-Regional Mark Center	60,174		
NMFS-Marine Recreational Survey	585,371		
NMFS-State/Federal Relations	13,258		
NMFS-Albacore Logbook & Port Sampling	37,236		
BPA-Columbia River Tag Recovery	633,149		
NMFS-Compatible Coastwide Fisheries Info	231,037		
Columbia Basin Fish & Wildlife Council	54,660		
NMFS-West Coast Monitoring/Stats. Program	650,406		
NMFS-Enhancement Planning Team Coordinator	147,736		
Other	7,709		
Subtotal External Contr. Expenditures	$3,280,867		
Total Disbursements		$3,633,864	
CASH BALANCE, September 30, 1984		194,311	
		$3,828,175	$3,828,175

AUDIT REPORTS

CAHALL, FEIFERS & NOLAN
Certified Public Accountants
10700 S.W. Beaverton Highway, Suite 500
Beaverton, Oregon 97005
August 30,1984

The Board of Commissioners Pacific
Marine Fisheries Commission Portland,
Oregon

We have examined the statement of assets and liabilities arising from cash transactions of Pacific Marine Fisheries Commission as of June 30,1984, and the related statements of revenues collected and expenditures, changes in cash position and changes in fund balance for the year then ended. Our examination was made in accordance with the General Accounting Office "Standards for Audit of Governmental Organizations, Programs, Activities and Functions", the "Guidelines for Financial and Compliance Audits of Federally Assisted Programs" and fulfills administrative requirements of OMB Circular A-102, "Uniform Administrative Requirements for Grants-in-Aid to State and Local Governments", and OMB Circular A-122, "Cost Principles for Non-Profit Organizations" and generally accepted auditing standards and, accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As described in Note 7, the Commission's policy is to prepare its financial statements on the basis of cash receipts and disbursements, with the exception of the accrual of expenses in the General Fund. Consequently, certain revenue and related assets are recognized when received rather than when earned in all funds, and certain expenses are recognized when paid rather than when the obligation is incurred in the special projects funds. Accordingly, the accompanying financial statements are not intended to present financial position and results of operations in conformity with generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly the assets and liabilities arising from the cash transactions of the Pacific Marine Fisheries Commission as of June 30, 1984, and the revenue collected and expenditures during the year then ended on the basis of accounting described in Note 7, which basis has been applied in a manner consistent with that of the preceding year.

Cahall, Feifers & Nolan

Balance Sheet June 30,1984

	General Fund	Property Fund	Unemploy-Fund
CURRENT ASSETS			
Cash on hand and in savings	$ 4,192		$2,699
Receivables:			
Due from Washington Department of Fisheries—			
Otolith Project	9,125		
Freshwater Trapping	65,317		
Ocean Salmon Sampling	25,214		
Due from National Oceanic and Atmospheric Administration			
Contract #84-ABh-0008	3,379		
Contract #84-ABD-00006	5,000		
Contract #81-ABD-PM1C	1,012		
Contract #82-ABC-00121	1,022		
Contract #82-ABD-PM1B	663		
Contract #82-ABD-109	6,039		
Contract #82-ABH-107	12,329		
Contract #83-ABC-00090	24,791		
Contract #83-ABH-0007	1,540		
Contract #83-ABA-01845	310		
Contract #83-ABD-PM1B	1,076		
Contract #83-ABD-00017	5,519		
Contract #84-ABH-00011	2,101		
Contract #83-ABC-00303	360		
Contract #84-ABH-00009	1,174		
Due from Oregon Department of Fish and Wildlife—			
Council Support	1,475		
Due from Bonneville Power Administration—			
Smolt Monitoring Program	20,176		
Water Budget Manager	16,429		
Due from Columbia Basin Fish and Wildlife Council—	68		
Due from U.S. Fish & Wildlife	3,978		
Coded-Wire Tag Data Base	19,528		
Prepaid expense	975		
FIXED ASSETS			
Investment in furniture and equipment		$152,035	
Total assets	$390,588	$152,035	$2,699
LIABILITIES			
Accrued liabilities	$ 6,601		$1,328
Unexpended grant funds:			
National Oceanic and Atmospheric Administration			
Contract #79-ABC-00175	389		
Contract #03-78-MO2-295	2,783		
Total liabilities	$ 9,773	—	$1,328
FUND BALANCES			
General fund balance	299,815		
Property fund balance		152,035	
Unemployment fund balance			1,371

APPENDIX 2—PACIFIC COAST FISHERY REVIEW REPORTS

ALBACORE FISHERY IN 1984

The 1984 albacore catch by U.S. vessels fishing off the Pacific Coast is estimated at 28,166,000 pounds, approximately 6.8 million pounds above 1983 landings and 70% of the 25-year average. California experienced an approximate 9.5 million pound increase over last year's landings making 1984 landings the highest since 1976. Oregon landings of 1,650,500 pounds are 1,760,000 pounds below 1983 totals while Washington landings of 166,000 pounds are only a small fraction of the 25-year average.

CALIFORNIA

The California albacore fishery for 1984 began in late May with a few boats fishing south of San Diego. On June 13th the Western Fishboat Owners Association and cannery buyers from Star-Kist and Pan Pacific reached a price agreement of $1400/ton for fish greater than or equal to 9 lbs.; those less than 9 lbs. would be bought at $1125/ton. With the price agreement, and increased availability of fish outside Mexican waters, commercial fishing effort increased over the last half of June. Many boats were fishing in the vicinity of 60-Mile Bank, with catches ranging from 50 to 350 fish/boat/day. Fish ranged from 6 to 30 pounds, but the large majority were 10 to 12 pounds. June landings totalled 612,000 pounds.

Large numbers of fish were caught during the first half of July in many locations, ranging primarily between the Dumping Grounds and outside Cortes Bank. Jigboats caught 50 to 200 fish/boat/day, with occasional catches of 400 fish/boat/day. During the latter half of the month fishing slowed to 50 to 100 fish/boat/day, and became scattered at Showboat, Cortes and San Juan Banks. July landings totalled 11,868,000 pounds.

Table 1. Albacore landings in California, Oregon and Washington (in thousands of pounds).

Year	California		Washington	Total
1959	32,740	10,574	2,961	46,275
1960	35,113	4,563	526	40,202
1961	29,123	3,250	456	32,829
1962	36,622	8,949	365	45,936
1963	48,860	11,400	527	60,787
1964	42,551	4,452	1,055	48,058
1965	23,218	12,122	2,048	37,388
1966	18,189	18,041	1,101	37,331
1967	17,858	29,243	1,240	48,341
1968	15,077	37,752	3,050	55,879
1969	14,722	29,828	1,240	48,111
1970	29,932	21,782	4,390	56,104
1971	36,117	8,420	5,250	49,787
1972	21,001	23,056	16,238	60,295
1973	8,641	16,350	14,446	39,437
1974	11,806	25,225	17,983	55,014
1975	15,413	17,166	16,297	48,876
1976	27,754	5,932	7,202	40,890
1977	15,905	4,425	4,948	25,278
1978	21,000	11,248	5,008	37,256
1979	8,187	3,105	830	12,122
1980	9,500	3,250	1,299	14,049
1981	19,463	7,164	1,928	28,555
1982	9,439	1,899	572	11,910
1983	16,732	3,410	1,149	21,291
25-year average	22,599	12,904	4,484	40,080
1984	26,300*	1,650*	166*	28,116*

*Preliminary

August began with reports of scattered fish from Pt. Colnett to Heceta Head, Oregon. By mid-August, effort in southern California had decreased, and reports of increased catch from central and northern California were received. By the end of the month, boats 100 miles west of Pt. Sur reported 150 to 450 fish/boat/day, with an average weight of 11 pounds. Offshore boats from the Midway fishery started to head in due to some rough weather. The total for August landings is 3,398,000 pounds.

Most California commercial fishing in early September was located 100-150 miles offshore from Pt. Sur, Bodega Bay and Mendicino. By the second week of the month, strong winds had reduced nearly all of the fishing effort along the coast, except for occasional 100 to 200 fish/boat/day at 50 to 200 miles off of Monterey. Intermittent fishing at Guide and Davidson Seamounts continued when weather permitted, but the fleet was blown in most of the time until the last week of September. The rough weather also drove in most of the remaining offshore boats from the Midway fishery. Towards the end of September, the weather improved off central California, and boats started to fish between Guide Seamount and Pt. Arena. Landings for September are 5,818,000 pounds.

By the second week of October, most of the fishing moved up between Ft. Bragg and Cape Mendicino, with catches of up to 300 fish/day. However, strong winds reduced fishing effort considerably during the middle of the month. Fishing then resumed in the vicinity of the Gorda Sea Valley (45 miles SW of Cape Mendicino). By the end of the month, reports of very large albacore, ranging from 45 to 75 lbs., were received. They were being caught in fair ly small numbers off Morro Bay and Pt. Colnett. Landings for October are estimated to be 3,400,000 pounds.

The commercial albacore season continued to slow down during November. Early in the month, about 45 boats were fishing off Mendicino Ridge. By the end of the first week, 60 pound albacore were being reported outside of Horseshoe Kelp. These large fish were being targeted on by the recreational fishery. Landings for November are estimated to be 900,000 pounds.

Due to the surface availability of albacore this season, the southern California purse seine fleet enjoyed great success for five weeks. From July 5th through August 14th, they landed approximately 6,800,000 pounds of albacore, over one-fourth of California's estimated season landings.

The price fluctuated since the beginning of the season, in part influenced by the large influx of fish from the seiners. Ranging from an initial amount of $1,400/ton, the price dropped to $1,150/ton by the end of July, and then went back up on August 13th to$1,300/ton.

The southern California commercial passenger vessels enjoyed a very good season. Beginning in late May, these sport boats started to land about 2 fish/angler while fishing from 80 to 150 miles south of Pt. Loma. By June, the fish had moved as close as 50 to 80 miles off of Pt. Loma, but by mid-July, the sport vessels fished primarily off of Pt. Colnett. Throughut the rest of August and September, the commercial passenger vessels continued to fish with moderate, and occasionally excellent, success in the southern California area.

Season landings are estimated to be in the range of 26,000,000 to 26,600,000 pounds. This is California's best albacore season since 1976. The landings are 15% above the 25-year average of 22,600,000 pounds.

OREGON

Few fish were caught off Oregon during July and only 38,624 pounds were landed by the end of the month. Fish-

ing improved in August with scattered catches made from the Jackson Seamount to the Columbia River dumping grounds. Scores ranged from 20 to 200 fish/boat/day from 50 to 200 miles offshore, but fishing was spotty and good bites lasted only a day or two at a time. Good catches of 50 to 600 fish/boat/day were made much of the month about 800 miles offshore Southern Oregon. Catches up to 400 fish/boat/day were made about 70 to 150 miles off southern Oregon from Heceta Head to the California border. Elsewhere along the Oregon Coast fishing wa* poor. Landings in August totalled 1,181,059 pounds.

Fishing was poor during September with only spotty success off southern Oregon within 100 miles off shore. Most boats had quit for the season or had gone to California by the third week of the month and little effort was reported by the end of the month. September landings amounted to 298,990 pounds.

October and November landings totalled 131,804 pounds bringing the preliminary season landing total to 1,650,477 pounds, roughly 11,250,000 pounds below the 25-year average.

WASHINGTON

The albacore fishery off the Washington coast during 1984 was characterized by both low fishing effort and low landings. Ex-vessel price for fish delivered to the buyer was generally less than $1,000/ton. This may have discouraged some vessles from participating in the fishery and caused others to remain in port up to two or three weeks retailing their catch directly to the public for $1.00/pound.

A few recreational charter trips for albacore were made from Washington ports during August and September, however both effort and catch in this fishery was very low.

Scattered fish were reported off the Washington coast and Vancouver Island, Canada, however consistent fishing did not develop in these areas and landings in Washington were primarily from off the Oregon coast. Washington albacore landings by month were 2,029 pounds in July, 82,777 pounds in August, 43,923 pounds in September and 13,470 pounds in October. The preliminary 1984 season landing total is 166,226 pounds which is the lowest on record for the last 25 years and only 3.7% of the 25-year average.

Compiled by Brian Culver, Washington Department of Fisheries Other
Contributors:

Larry H. Hreha, Oregon Department of Fish and Wildlife

Terri Dickerson, California Department of Fish and Game

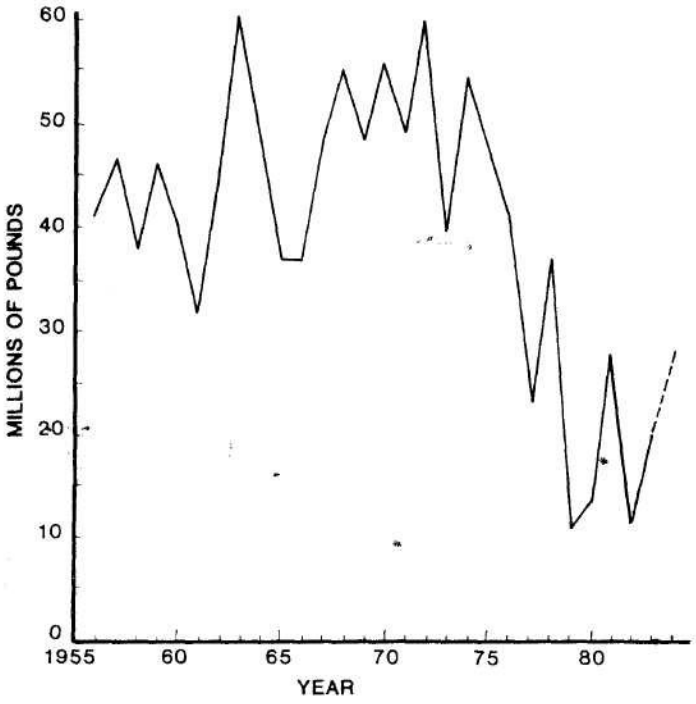

Figure 1. Combined annual landings of albacore in California, Oregon and Washington, 1956-1984.

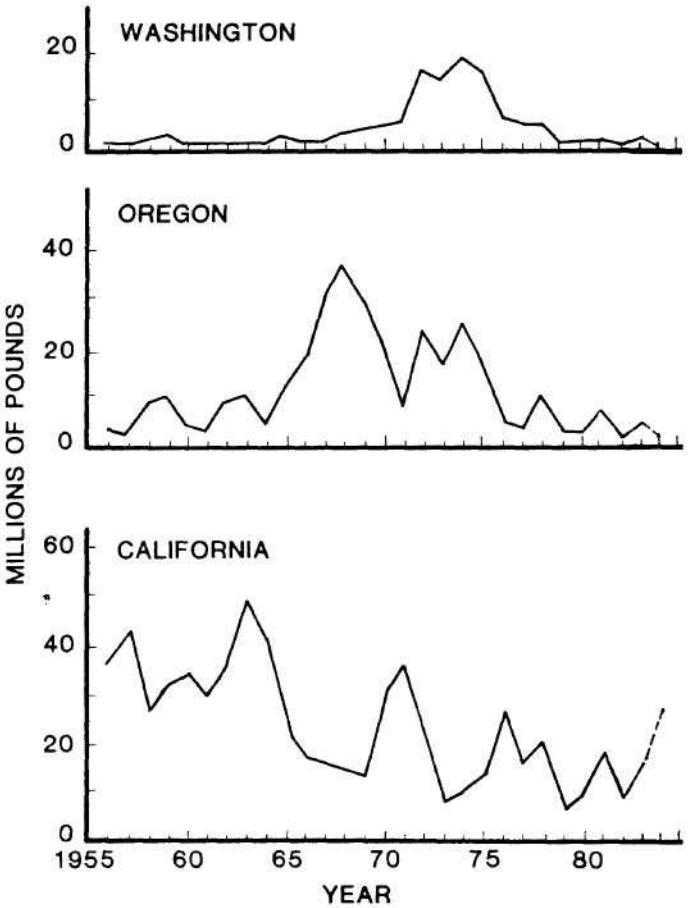

Figure 2. Annual albacore landings by State, 1956-1984.

PACIFIC HALIBUT FISHERY IN 1984

Landings of Pacific halibut have increased for the fourth year in a row. All data presented in this report should be considered preliminary. The 1984 landings to date are 44.8 million pounds, 6.3 million pounds greater than the 1984 landings. The increase was brought about by larger catch limits in most regulatory areas. The overages that have occurred in recent years were prevented to a large degree by shorter open periods providing better control of the fishing fleet. The use of circle-hooks by nearly all United States and Canadian halibut vessels resulted in larger catches in shorter fishing time this year.

The Area 2 (water south of Cape Spencer, Alaska) catch was 15.2 million pounds, just slightly above the 15.0 million pound catch limit. The 300,000 pound catch limit established for Area 2A (water off California, Oregon and Washington) was exceeded by 134,000 pounds in three 12-day fishing periods. Area 2B (Canadian waters) produced 8.9 million pounds which was nearly equal to the 9.0 million pound catch limit for this area. These landings were made in two 12-day fishing periods. In 1983 two 12-day seasons produced 5.4 million pounds in Area 2B. In Area 2C (water of southeast Alaska) a single 3-day fishing period produced 5.8 million pounds, slightly over the catch limit of 5.7 million pounds.

The catch in Area 3A (waters of the Gulf of Alaska from Cape Spencer west to Cape Trinity, Kodiak Island) was 20.0 million pounds, 2.0 million pounds over the 18.0 million pound catch limit. This catch was taken in one 4-day fishing period in May plus 1-day in August. In 1983 one fishing period of 7-days produced 14.2 million pounds. The catch from Area 3B (waters between Cape Trinity and Cape Lutke, Unimak Island) was 6.4 million pounds, 0.6 million pounds less than the catch limit. Four days in May, one day in August, and one day in September were fished this year; while in 1983 two fishing periods of 7- and 3-days produced 7.8 million pounds.

Area 4 (waters of the Pacific Ocean west of Cape Lutke and the Bering Sea) was divided into five separate areas to spread fishing effort. The catch Umits for the entire area totalled 3.05 million pounds and 3.2 million pounds were landed.

In 1984, the International Pacific Halibut Commission (IPHC) initiated a total licensing system. Previously, vessels of less than 5 net tons and vessels fishing with other than setlines were not required to have an IPHC lipense. In 1983, the number of vessels that participated in the commercial fishery numbered 3,799 United States and 349 Canadian. The number of vessels fishing this year, numbered 3,385 United States and 383 Canadian.

Evidence of continued increases in the size of the fishable stock plus reductions in the incidental catch by other fisheries prompted the IPHC staff to recommend harvest levels near the annual surplus production. The increase efficiency and size of the fishing fleet offset these increases and 1984 had less fishing time than last year.

Compiled by E.A. Best, International Pacific Halibut Commission

Table 1. Catch of halibut by IPHC regulatory areas in 1984 (preliminary in 1,000's pounds).

Area	Canada	United States	Total
Area 2			
2A	—	434	434
2B	8,910	—	8,910
2C	—	5,813	5,813
Total	8,910	6,247	15,157
Area 3			
3A	—	20,049	20,049
3B	—	6,430	6,430
Total	—	26,479	26,479
Area 4	—	3,148	3,148
Grand Total	8,910	35,890	44,800

Figure 1. Pacific coast halibut landings of the United States and Canada (millions of pounds)

Year	Canada	U.S.	Total
1965	32.9	30.3	63.2
1966	31.9	30.1	62.0
1967	25.5	29.7	55.2
1968	29.4	19.2	48.6
1969	33.5	24.8	58.3
1970	29.1	25.8	54.9
1971	25.5	21.2	46.7
1972	22.5	20.4	42.9
1973	14.4	17.3	31.7
1974	7.4	13.9	21.3
1975	11.3	16.3	27.6
1976	12.0	15.5	27.5
1977	8.8	13.1	21.9
1978	8.6	13.4	22.0
1979	6.6	15.9	22.5
1980	7.6	14.3	21.9
1981	5.6	20.1	25.7
1982	5.5	23.5	29.0
1983	5.4	33.0	38.4
1984	8.9	35.9	44.8

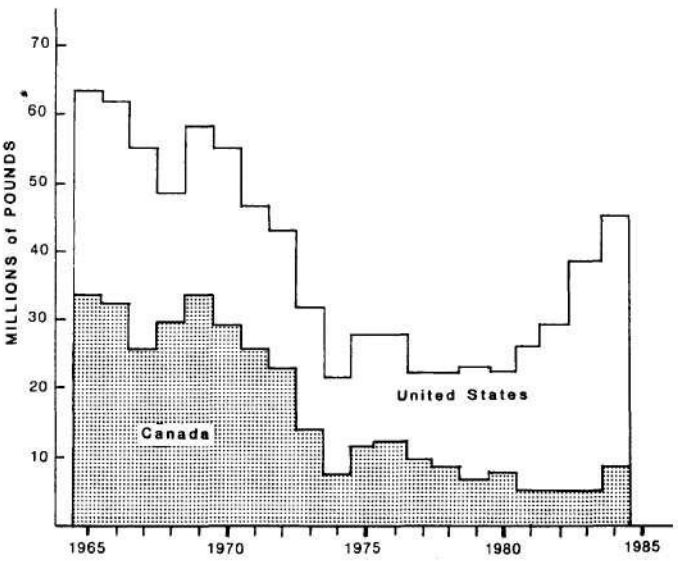

Figure 1. Division of Pacific halibut catches by Canada and the United States.

GROUNDFISH FISHERY IN 1984

Preliminary estimates of 1984 groundfish landings by North American fishermen fishing the Northeast Pacific ocean are 902,117 mt (2.0 billion pounds), including approximately 5,707 mt landed by recreational fishermen. This represents an increase of 232,316 mt (35%) over 1983 landings. U.S. fishermen accounted for 93% (838,975 mt) of the total landings, the remainder (63,142 mt) landed by Canadian fishermen. Trawl fishermen were responsible for 96% (863,265 mt) of the total landings, while pot and longline fishermen each contributed about 1% (7,480 and 12,977 mt respectively). The remaining fish (12,328 mt) were landed by miscellaneous gears including jig, troll, gillnet and shrimp trawl.

Commercial Fishery

Commercial groundfish landings increased sharply in 1984 predominately on the strength of the expanding joint venture fisheries. Coastwide landings were 896,410 mt (Table 1) representing a 36% increase over the 660,563 mt landed in 1983. Domestic landings (non-joint venture landings) increased between 1983 and 1984 in Alaska, California and Washington and decreased in British Columbia and Oregon.

Joint venture fisheries landed 688,833 mt in 1984 or 77% of the total commercial groundfish landings (Table 4). There was a 65% increase in joint venture landings from the Gulf of Alaska and Bering Sea, a 3% increase in Canadian joint venture landings and a 10% increase in the Washington-Oregon-California (WOC) region. Pollock and Pacific whiting remain principal species in these fisheries, followed by Pacific cod, Atka mackerel and yellowfin sole as the next highest contributors.

Table 1. Total commercial groundfish landings (mt) by region for 1983 and 1984 with percent change.

Region	1982 (mt)	1984 (mt)	Percent Change
Alaska	54,672	55,534	2
Washington	43,112	48,185	12
Oregon	34,925	27,956	– 20
California	39,981	41,420	4
Joint Venture	425,150	660,173	55
Total U.S.	597,840	833,268	29
Canada (B.C.)	35,010	34,482	– 2
Canada Joint Venture	27,713	28,660	3
Total Canada	62,723	63,142	1
Total U.S.-Canada	660,563	896,410	36

The domestic commercial fishery landed 207,577 mt in 1984 (Table 2), representing no change over 1983 landings. An increasing portion of the domestic harvest is being landed in Alaska, 27% in 1984, compared with 23% landed in Washington, 20% in California, 17% in British Columbia and 13% in Oregon.

The 1984 trawl fishery delivered 174,792 mt or 84% of all domestic landings, with Pacific cod, rockfish (including Pacific ocean perch) and Dover sole dominating landings (Table 3). Pacific cod landings dropped 8% between 1983 and 1984 while rockfish landings declined by 5%. The decline in rockfish landings ia attributed to the Pacific Fishery Management Council's (PFMC) continued imposition of trip limits on the fishery in the WOC region in an attempt to bring annual harvest within Acceptable Biological Catch guidlines. Dover sole landings, which had been increasing annually since 1967, were essentially unchanged in 1984 (a 1 % decline). Total domestic trawl landings decreased 2% from 1983 to 1984.

Domestic landings by gears other than trawl were 32,785 mt in 1984, representing a 15% increase over 1983 (Table 2). Principal species landed were sablefish with 18,314 mt and rockfish with 10,527 mt (Tables 5,6 and 7). Coastwide landings of sablefish by all commercial gears totaled 28,554 mt in 1984 representing a 22% increase over 1983 landings.

Federal and state regulations restricted the landings of sablefish, widow rockfish, Pacific ocean perch and other rockfish in 1984. In January, PFMC limits were 50,000 pounds per trip and one trip per week for widow rockfish coast wide. North of Cape Blanco trip limits for *Sebastes* other than widow rockfish and Pacific ocean perch were 30,000 pounds per trip with one trip per week; south of Cape Blanco *Sebastes* limits were 40,000 pounds per trip, no limit on trip frequency. Pacific ocean perch limits remained unchanged at 5,000 pounds per trip or 10% of the total trip weight which ever was larger. Landings of sablefish less than 22 inches in total length were restricted to 5,000 pounds per trip. In May the widow rockfish trip limit was reduced to 40,000 pounds per trip with one trip per week; and the *Sebastes* limit north of Cape Blanco was reduced to 15,000 pounds per trip with one trip per week or 30,000 pounds per trip at one trip every two weeks. In August north of Cape Blanco, the *Sebastes* trip limit was reduced to 7,500 pounds per week or 15,000 pounds every two weeks; the Pacific ocean perch fishery was closed in the INPFC Columbia area, and in September the widow rockfish tip limit was reduced to 1,000 pounds per week.

Alaska's preliminary 1984 estimate indicates landings have risen 2% over the last year increasing from 54,672 mt to 55,534 mt. Pacific cod provided the primary support for this fishery.

Over the past year, British Columbia's total groundfish landings have remained relatively unchanged with 62,723 mt in 1983 compared with 63,142 mt in 1984. Principal species were Pacific whiting with 31,517 mt (taken primarily in the joint venture fishery), rockfish with 14,283 mt of which 6,204 mt was Pacific ocean perch and sablefish with 3,791 mt. In addition there were marked increases in landings of English sole and Dover sole, and decreases in landings of pollock, Pacific cod and rock sole.

Table 2. Domestic groundfish landings (mt) by region for 1983 and 1984 with percent change.

	Trawl		Longline		Pot		Other Gear		Total		
Region	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984	Percent Change
Alaska	49,693	45,919	4,190	8,940	28	262	761	413	54,672	55,534	2
Washington	38,639	44,042	1,091	1,679	1,472	992	1,910	1,472	43,112	48,185	12
Oregon	31,768	25,435	625	312	1,337	1,830	1,195	379	34,925	27,956	– 20
California	30,310	30,376	1,104	765	2,620	1,106	5,947	9,173	39,981	41,420	4
Total U.S.	150,410	145,772	7,010	11,696	5,457	4,190	9,813	11,437	172,690	173,095	0
Canada (B.C.)	28,848	29,020	1,439	1,281	3,672	3,290	1,051	891	35,010	34,482	– 2
Total U.S. & Canada	179,258	174,792	8,449	12,977	9,129	7,480	10,864	12,328	207,700	207,577	0

Table 3. Domestic trawl landings (mt) for food, 1983 & 1984 (preliminary) & 10-year mean (1974-1983) by species and region with total commercial landings for all gears.

Species by group		Alaska	Washington	Oregon	California	Total U.S.	British Columbia	Total U.S. & Canada
Petrale sole	1983		525	1,105	562	2,192	439	2,631
	1984 % change		490 - 7	679 - 39	543 - 3	1,712 - 22	401 - 7	2,122 - 19
	10-yrmean		804	1,042	1,201	3,047	350	3,397
English sole	1983		749	914	1,161	2,824	532	3,356
	1984 % change		762 2	448 - 51	969 - 17	2,179 - 23	800	2,979
	10-yrmean		1,148	989	1,785	3,922	1,025	4,947
Dover sole	1983		2,949	8,459	8,401	19,809	871	20,680
	1984 % change		3,381	6,090 - 28	9,989	19,460 - 2	1,110	20,570
	10-yrmean		15	4,301	19	15,578	27 960	- 1
			1.697		9,580			15,538
Rock sole	1983		93 82	4 2 -	5 6	102	668	770
	1984 % change		- 1 2	5 0 11	20 6	90 - 12	520 - 21	610 - 21
	10-yrmean		189			206	1,359	1,565
Pacific cod	1983	44,832	10,530	81 78	0	55,443	4,496	59.939
	1984 % change	36,056	15,916	- 4	0	52,050 - 6	3,380	55,430
	10-yrmean	- 20	516,319	241	0	6,560	- 25	- 8
					0		7,755	14,315
Lingcod	1983		1,151	1,621	657	3,429	2,988	6,417
	1984 % change		1,688	977 - 40	644 - 2	3,309 - 3	2,950 - 1	6,259 - 2
	10-yrmean		47	805	1,317		1,690	4,965
			1,153			3,275		
P. ocean perch	1983	23	510	1,138	52 16	1,723	5,655	7,378
	1984 % change	1,358	1,762	753 - 34	- 70	3,889	6,240	10,129
	10-yrmean	5,804	245	633	48	126 681	10	37
							3,674	4,355
Other rockf ish	1983	1 57	10,697	13,569	12,137	36,404	6,559	42,963
	1984 % change	5,600	6,712 - 39	11,696 - 14	11,977 - 1	30,442 - 16	7,480	37,922
	10-yrmean		10,625	9,174	15,127	34,926	14	- 12
							4,035	38,961
Sablefish	1983	70	1,368	2,771	3,100	7,309	274	7,583
	1984 % change	1,112	2,425	2,770 0	2,957	9,264	190 - 31	9,454
	10-yrmean	1,489	77 663	1,182	- 5	27	307	25
					2,938	4,783		5,090
Pacific whiting	1983		6,210	58 *	979	7,247	3,122	10,369
	1984 % change		6,559 6	338 483	2,594	9,204	3,060	12,264
	10-yrmean		1,058	167	164	27	- 2	18
					471	1,696	1,306	3,002
Walleye pollock	1983	1,069	527	0	0	1,596	1,070	2,666
	1984 % change*	6,938	4,122	0	0	11,060	700 - 35	11,760
	10-yrmean	549	682	0	0	593 786		341
			786	0	0		1,360	2,146
Total above species	1983	46,342	34,309	29,720	27,053	138,424	26,674	165,098
	1984	45,521	43,899	23,831	29,695	142,660	26,850	169,510
Total all species	1983	49,693	38,693	31,768	30,310	150,410	28,848	179,258
	1984 % change	45,919 - 8	44,042 14	25,722 - 19	30,376 0	145,772 - 3	29,020 1	174,792 - 2

* Mean calculated for other rockf ish and Pacific ocean perch combined.

Table 4. Catch (mt) by species group and region of joint venture fisheries in 1984 with 1983 totals.

Species	Bering Sea	Gulf of Alaska	Total Alaska	California Oregon & Washington	Total U.S.	Canada (B.C.)	Total
Pacific Whiting	0	0	0	78,889	78,889	28,457	107,346
Pollock	237,182	207,074	444,256	0	444,256	91	444,347
Yellowfin sole	33,025	0	33,025	0	33,025	0	33,025
Other flatfish	17,906	3,441	21,347	0	21,347	0	21,347
Pacific cod	33,864	4,648	38,512	0	38,512	0	38,512
Atka mackerel	35,908	585	36,493	0	36,493	0	36,493
P. ocean perch	579	1,734	2,313	0	2,313	1	2,314
Other rockfish	44	302	346	140	486	107	593
Sablefish	348	523	871	4	875	0	875
Other fish	2,695	1,268	3,963	14	3,977	4	3,981
Total 1983	210,030	142,980	353,010	72,140	425,150	27,713	452,863
Total 1984	361,551	219,575	581,126	79,047	660,173	28,660	688,833
% change	72	54	65	10	55	3	52

Table 5. Longline landing (mt) by major species and region in 1983 and 1984.

	Sablefish		Lingcod		Rockfish		Pacific cod		Other		Total	
Region	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984
Alaska	3,697	7,929	15	38	402	754	64	217	12	2	4,190	8,940
Washington	495	882	29	51	78	116	1	6	489	624	1,091	1,679
Oregon	522	227	7	11	91	72	0	trace	5	2	625	312
California	97	20	11	3	984	729	0	0	11	13	1,104	765
Total U.S.	4,811	9,058	62	103	1,555	1,671	65	223	517	641	7,010	11,696
Canada (B.C.)	453	500	33	48	68	130	1	1	884	602	1,439	1,281
Grand total	5,264	9,558	95	151	1,623	1,801	66	224	1,401	1,243	8,449	12,977

Table 6. Pot landings (mt) by major species and region in 1983 and 1984.

	Sablefish		Lingcod		Rockfish		Other		Total	
Region	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984
Alaska	0	256	0	0	1	0	27	6	28	262
Washington	1,467	980	1	3	3	7	1	2	1,472	992
Oregon	1,330	1,828	3	1	4	1	trace	trace	1,337	1,830
California	2,608	1,090	trace	trace	12	16	0	trace	2,620	1,106
Total U.S.	5,405	4,154	4	4	20	24	28	8	5,457	4,190
Canada (B.C.)	3,672	3,290	trace	trace	trace	trace	0	0	3,672	3,290
Grand total	9,077	7,444	4	4	20	24	28	8	9,129	7,480

Table 7. Landings (mt) from miscellaneous gears by major species and region in 1983 and 1984.

	Sablefish		Lingcod		Rockfish		Pacific cod		Other		Total	
Region	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984
Alaska	0	59	23	34	16	60	714	189	10	71	763	413
Washington	237	385	457	432	674	383	74	27	476	245	1,910	1,472
Oregon	25	0	106	44	949	318	8	0	62	16	1,195	379
California	700	867	214	369	4,496	7,615	796	216	536	322	5,947	9,173
Total U.S.	962	1,311	801	879	6,180	8,376	796	216	1,075	654	9,815	11,437
Canada (B.C.)	12	1	682	560	349	326	8	4	0	0	1,051	891
Grand total	974	1,312	1,483	1,439	6,529	8,702	804	220	1,075	654	10,866	12,328

Table 8. Estimated recreational landings (mt) by major species and region in 1983 and 1984.

	Rockfish		Lingcod		Flatfish		Pacific cod		Other		Total	
Region	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984
Alaska	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	726	N/A	726	N/A
Washington	528	N/A	104	N/A	79	N/A	144	N/A	805	N/A	1,660	N/A
Oregon	542	479	82	88	6	3	0	0	24	11	,654	5,125
California	4,400	4,400	675	675	50	50	0	0	N/A	N/A	5,125	5,125
Total U.S.	5,470	4,879	861	763	135	53	144	0	1,555	11	8,165	5,707
Canada (B.C.)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand total	5,470	4,879	861	763	135	53	144	0	1,555	11	8,165	5,707

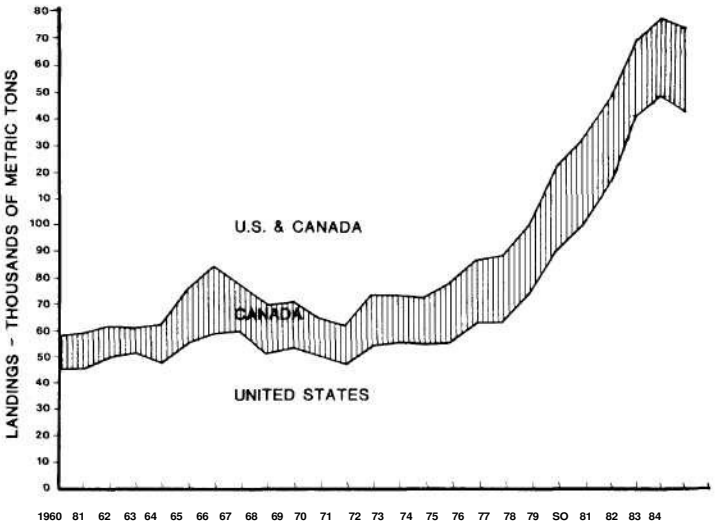

Figure 1. Pacific Coast trawl landings of the United States and Canada, excluding joint venture landings.

Washingtons's preliminary estimate of 1984 groundfish landings is 48,185 mt representing an increase of 12% over the 43,112 mt landed in 1984. The increase can be attributed to greater landings of Pacific cod, sablefish, Dover sole, lingcod and pollock. The large landings of Pacific cod and pollock are from factory trawlers fishing the Gulf of Alaska and Bering Sea. Washington's rockfish landings declined again in 1984 down 25% from 1983 landings. Washington is also seeing some increase in the landingsef sablefish from Alaskan waters.

Oregon's preliminary estimate of 1984 groundfpsh landings are down 20% from 1983, falling for the second year in a row, from 34,925 mt to 27,956 mt. The decline was due to substantial reductions in rockfish and Dover sole landings. Total rockfish landings declined despite increased landings of windown rockfish. The decline in rockfish landings is largely attributable to management restrictions on the *Sebastes* complex. The large drop in Dover sole landings, a 28% reduction from 1983 to 1984, results from some processing plant closures and a leveling off of harvest rates. In addition the "linkage" of rockfish and Dover sole sales was cited by many in industry as a source of decreased Dover sole landings. Lastly, significant shifts of vessels to Washington and elsewhere resulted in decreased Oregon landings.

Preliminary estimates of California's groundfish landings indicate a 4% increase between 1983 and 1984, rising from 39,981 mt to 41,420 mt. Rockfish, Dover sole and Pacific whiting registered substantially increased landings. The groundfish setnet (gill and trammel net) fishery, whose landings are reported under miscellaneous gears, continued its expansion during 1984. The setnet fishery's principal target species are rockfish, California halibut and lingcod. Despite overall increases in rockfish landings the decline in widow rockfish landings continues in California. Projected 1984 sablefish landings of 4,934 mt continues the downward trend from the record 1979 landings of 11,000 mt. The mid-year departure of two trap-processor vessels contributed to the decline in sable fish landings.

Recreational Fishery

Limited data were available for the 1984 recreational fishery (Table 8). Combined 1984 landings from California and Oregon showed essentially no change between 1983 and 1984, with rockfish again the primary species.

CQmpiled by Jack V. Tagart, Washington Department of Fisheries, February 7,1985.

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DUNGENESS CRAB FISHERY, 1983-84

The 1983-84 Pacific coast Dungeness crab landings, including Canada, were 27.5 million pounds, about the same as 1982-83, and well below the long term average (1965-84) of 39.4 million pounds. Landings in Washington, (excluding Puget Sound), Oregon and California were 15.0 million pounds, up 1.6 million pounds from 1982-83, but well below the 1974-83 average of 21.2 million pounds.

Conditions Affecting the Fishery

Fishing was intense early in the season with over 50% of the catch taken during the first 30 days of the season. Prices ranged from $1.25 to $2.50 and stabilized at $1.75 for most of the season except off Oregon where an influx of poor quality crab late in the season forced the price down to 70 cents.

Alaska

Alaska landings reached 9.4 million pounds, well above the 10-year average but 2.4 million pounds less than 1983. Kodiak area landings of 5.3 million pounds have been above average for the past four years. Southeastern and Yakutat catches have declined for the past two years as the strong 1978 and 1979 year classes have passed out of the fishery and subsequent recruitment has been weaker. Ex-vessel prices in Alaska increased over 1983 and ranged from $1.20 to $1.35 per pound. Vessel effort statewide was at record high levels with approximately 421 vessels fishing.

British Columbia

Catch was estimated at 3 million pounds as no data were received at report time.

Washington

Coastal Landings were 4.7 million pounds, up from 4.0 million pounds for 1983, but still well below the long term average. Seventy percent of the harvest was landed during the first 60 days of the season. There were 121 vessels in the fishery, an increase of 19 over the previous year.

Commercial landings from Puget Sound were 1.4 million pounds which is about average. *

Oregon

Landings were 4.7 million pounds up from 4.1 million pounds last year, but still only about 50% of the long term average. Effort decreased slightly from 375 boats in 1983 to 325 boats in 1984. Late in the season a major fishery developed on softshell crab and resulted in the season being closed two weeks .early. Price was $1.75 for most of the season, but within a week after softshell crab deliveries the price plummeted to 70 cents. For at least the next four years Oregon's season will open December 1 and close August 31.

California

Landings were 5.6 million pounds, up very slightly over last year. Fishing was intense with 95% of the harvest completed in 60 days. Effort was down some at 432 boats. The northern area season was extended to August 31, but few crabs were landed.

Landings into San Francisco were 857,000 pounds, the best in 14 years. Price opened at $1.65 and climbed to $2.50 by the end of June.

Compiled by Darrell Demory, Oregon Department of Fish and Wildlife

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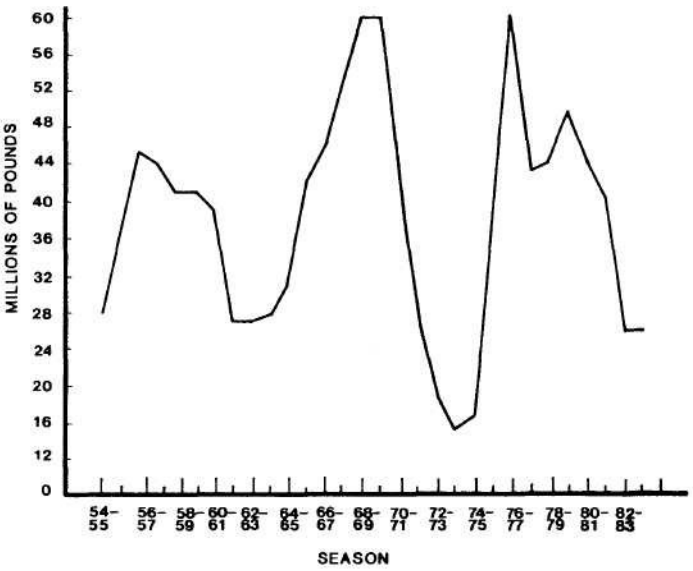


Figure 1. Pacific Coast Dungeness crab landings by season, including British Columbia, 1954-1984.

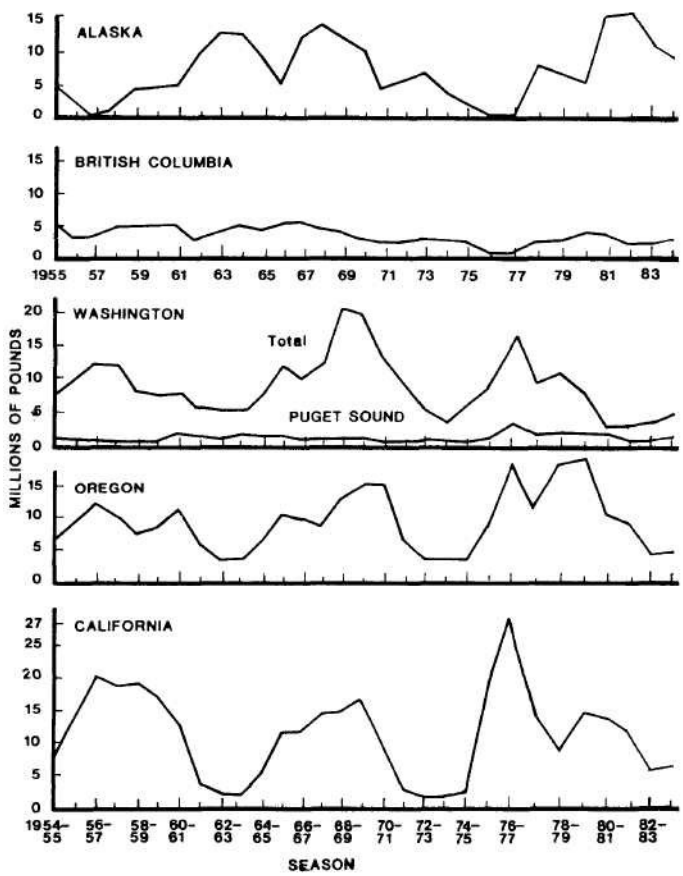


Figure 2. Dungeness crab landings by season, 1954-55 through 1983-84, except Alaska and British Columbia seasons are all in the same calendar year.

TROLL SALMON FISHERY IN 1984

ALASKA TROLL

The Alaska troll summer season of 45 days was the shortest on record. The season opening was delayed until June 5 and continued through June 30 for Chinook only. The season was opened for all species on July 11 and continued through July 29 when the season was closed for Chinook. The season continued for species other than Chinook until September 20 with the exception of a 10-day closure August 14 through August 24.

The Alaska summer troll Chinook catch was 4.2 million pounds round weight and the troll coho catch was 11.2 million pounds round weight.

WASHINGTON TROLL

Because of anticipated small run sizes and the after-effects of El Nino, Washington troll time was severely reduced during 1984. Washington trollers only fishing opportunities were a 7-day Chinook only season at the beginning of May and an all species season for 3-V2 days in August. These seasons produced record low catches of Chinook (0.2 million pounds round weight) and coho (0.3 million pounds round weight).

OREGON TROLL

The Pacific Fishery Management Council set regulations that opened the area north of Cape Falcon for Chinook fishing for the month of May. Minimum size was 28".

From Cape Falcon to Cape Blanco the Chinook fishery was open from May 1 to June 15 and from July 1 to August 31. The state extended the season inside of three miles through September 21. Minimum size was 26".

From Cape Blanco to the Oregon/California border, the Chinook fishery was open from May 16 to June 6 and from July 16 to August 22. Minimum size was 26".

The only coho fishery in Oregon was between Cape Falcon and the Columbia River. It started on August 4 and

Table 1. Estimated Landings of Troll Caught Chinook and Coho Salmon in 1984 and Ten Year (1974-1983) Average. (Round Weights in Millions of Pounds). All 1984 Data are Preliminary.

Species = Chinook		
Region	1984	Average
Alaska	4.2	5.0
British Columbia	9.8	11.6
Washington	0.2	2.6
Oregon	0.6	2.4
California	2.9	6.3
TOTAL	17.7	27.9

Species = Coho		
Region	1984	Average
Alaska	11.2	6.4
British Columbia	17.3	14.3
Washington	0.3	3.7
Oregon	0.08	4.6
California	0.4	1.3
TOTAL	29.28	30.3

Species = Chinook + Coho		
Region	1984	Average
Alaska	15.4	11.4
British Columbia	27.1	25.9
Washington	0.5	6.3
Oregon	0.7	7.0
California	3.3	7.6
TOTAL	47.0	58.2

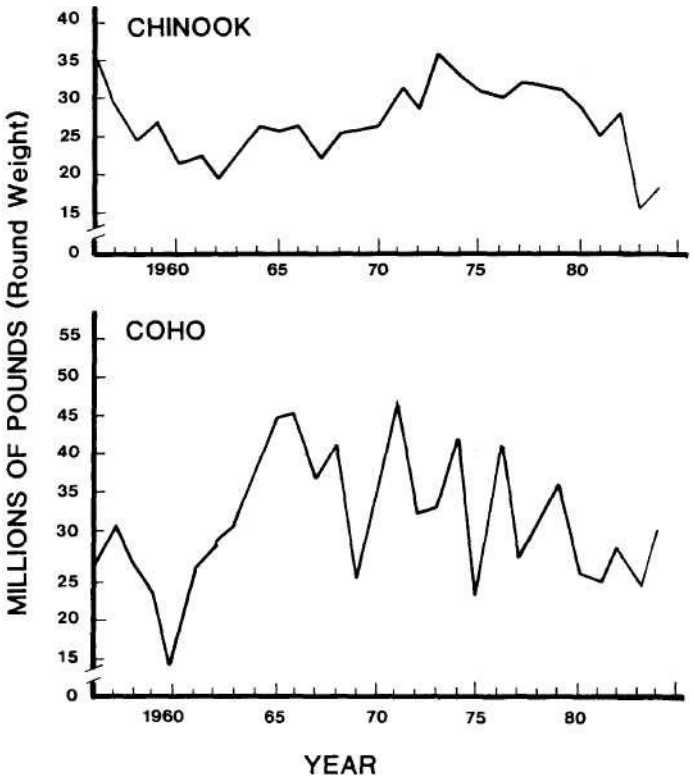


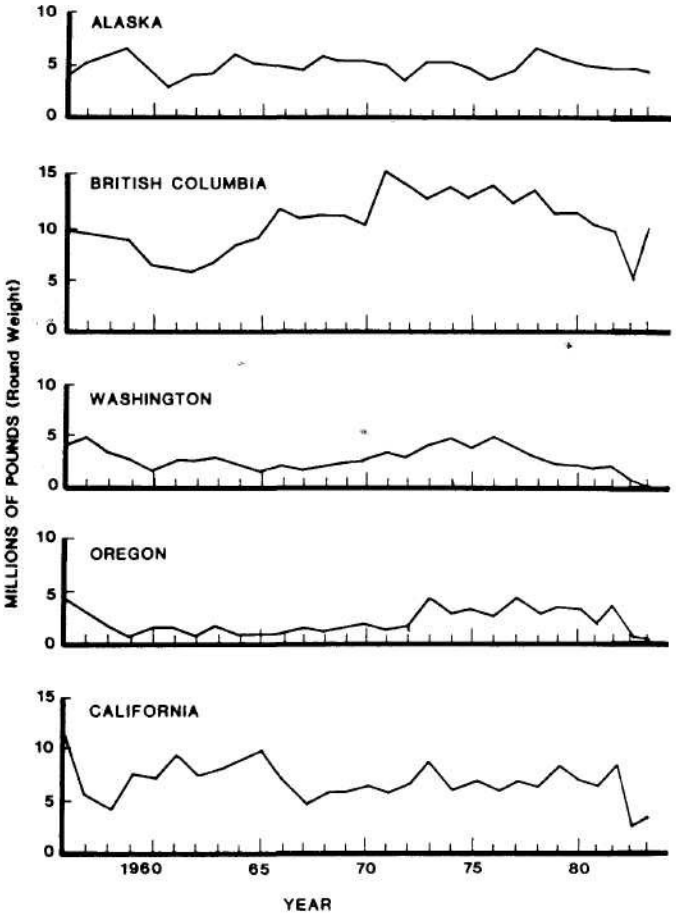
Figure 1. Pacific Coast annual landings of troll caught chinook and coho salmon, 1956-1983 and preliminary 1984.

Table 2. Pacific Coast commercial troll chinook salmon landings in millions of pounds round, 1956-84. All 1984 data are preliminary.

Year	Alaska	British Columbia	Wash-ington	Oregon	California	Total
1956	3.9	9.8	4.0	4.4	11.3	33.4
1957	5.1	9.7	4.8	3.0	5.3	27.9
1958	5.7	9.1	3.3	1.8	4.1	24.0
1959	6.7	8.7	2.7	0.5	7.5	26.1
1960	4.8	6.4	1.7	1.5	7.0	21.4
1961	2.9	6.0	2.5	1.4	9.3	22.1
1962	3.9	5.9	2.4	0.7	7.2	20.1
1963	4.1	6.8	2.8	1.6	7.9	23.2
1964	6.0	8.5	2.1	0.7	8.7	26.0
1965	5.1	8.8	1.3	0.7	9.3	25.2
1966	4.8	11.4	2.0	0.9	6.9	26.0
1967	4.3	10.4	1.7	1.3	4.4	22.1
1968	5.8	10.8	1.9	1.1	5.3	24.9
1969	5.1	10.8	2.3	1.4	5.6	25.2
1970	5.1	9.9	2.5	1.9	6.1	25.5
1971	4.9	15.2	3.1	1.2	5.7	30.1
1972	3.3	14.1	2.6	1.5	6.2	27.7
1973	5.0	12.7	3.8	4.0	8.7	34.2
1974	5.1	13.5	4.3	2.6	5.8	31.3
1975	4.4	12.6	3.3	3.0	6.6	29.9
1976	3.5	13.8	4.4	2.2	5.7	29.6
1977	4.7	12.1	3.3	4.0	6.6	30.7
1978	6.8	13.2	2.4	2.2	6.0	30.6
1979	6.0	11.1	2.0	3.0	7.9	30.0
1980	5.6	11.6	1.9	2.5	6.4	28.0
1981	4.9	10.2	1.4	1.6	6.8	24.9
1982	4.7	11.9	1.9	2.7	8.5	29.7
1983	5.0	6.5	0.8	0.8	2.4	15.5
1974-83 Mean	5.0	12.0	2.5	2.5	6.3	29.3
1984	4.2	9.8	0.2	0.6	2.9	27.9

Table 3. Pacific Coast commercial troll coho salmon landings in millions of pounds round, 1956-84. All 1984 data are preliminary.

Year	Alaska	British Columbia	Wash-ington	Oregon	California	Total
1956	3.9	12.9	5.3	3.2	0.5	25.7
1957	7.5	14.4	5.0	3.9	0.6	31.4
1958	5.2	15.6	4.7	1.3	0.1	26.9
1959	5.8	11.7	3.7	1.0	0.3	22.5
1960	2.5	9.3	1.5	0.8	0.1	14.2
1961	3.6	14.8	4.2	2.3	0.6	25.5
1962	5.2	16.4	4.7	2.2	0.4	28.9
1963	6.3	16.1	4.0	3.0	1.2	30.6
1964	5.7	20.5	4.6	4.2	2.2	37.2
1965	6.2	23.5	7.4	4.8	1.8	43.7
1966	4.7	24.3	6.1	5.2	4.0	44.3
1967	4.2	14.1	6.2	8.3	3.9	36.7
1968	5.8	22.6	4.5	5.1	2.7	40.7
1969	3.1	12.7	3.3	3.6	1.4	24.1
1970	2.2	17.3	6.1	8.7	1.5	35.8
1971	3.1	21.4	7.9	10.1	3.7	46.2
1972	5.7	15.9	3.9	5.6	1.2	32.3
1973	4.5	16.2	4.3	5.9	2.3	33.2
1974	6.7	15.6	6.4	8.3	4.3	41.3
1975	1.5	9.5	5.1	4.7	1.3	22.1
1976	4.3	15.3	7.2	10.4	3.3	40.5
1977	4.9	14.4	4.3	3.0	0.2	26.8
1978	8.0	14.9	3.2	3.2	1.5	30.8
1979	7.1	17.7	4.2	4.3	1.2	35.5
1980	5.4	15.3	2.3	2.5	0.3	25.8
1981	6.5	11.3	2.0	3.8	0.5	24.1
1982	10.0	15.8	2.2	3.1	0.6	31.7
1983	9.6	13.3	0.3	1.3	0.3	24.8
1974-83 Mean	6.4	14.3	3.7	4.5	1.4	30.4
1984	11.2	17.3	0.3	0.08	0.4	29.28



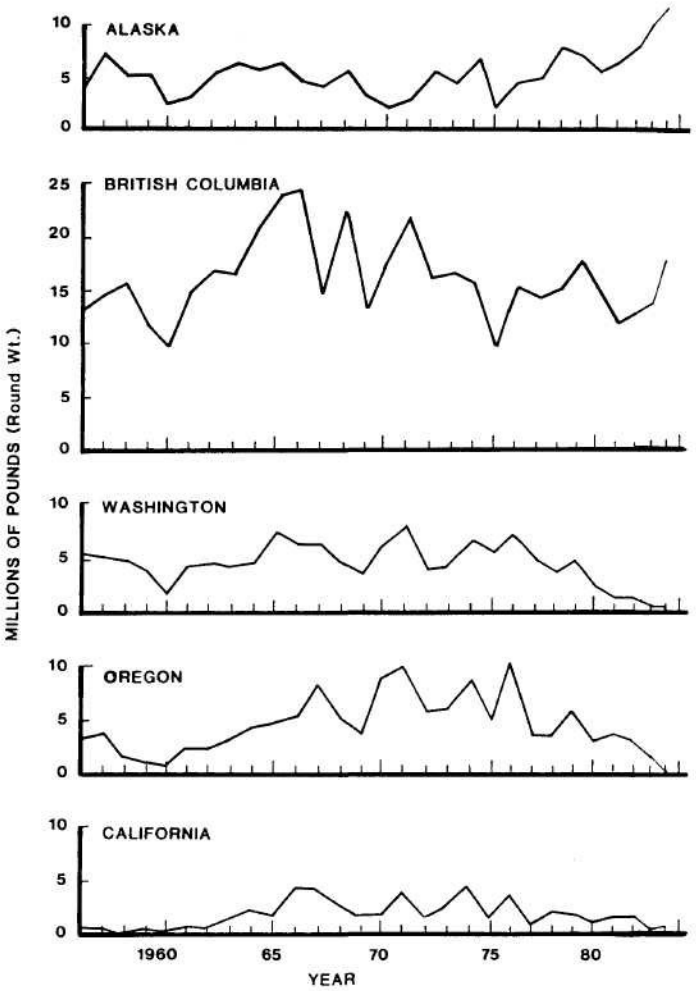


Figure 3. Annual troll coho salmon landings by area, 1956-1983 and preliminary 1984.

closed August 7 when the 12,400 fish quota was reached. Minimum size was 16".

The only gear restriction in Oregon for all areas was the requirement of a single-point barbless hook. Plugs and bait hooks were not exempt from this requirement as had been the case in previous years.

The 1984 chinook landings will be the lowest since 1959. This is in part due to poor stock conditions on the south coast and in part to regulations.

The 1984 coho landings will be the lowest ever recorded. The dismal coho situation was a direct result of the regulatory process, although the stocks are certainly not healthy.

CALIFORNIA TROLL

The season for all species except coho salmon between the Oregon/California border to Point Delgada (Shelter Cover) was open from May 16 through June 7 and again from July 1 through August 22. South of Point Delgada, the season for all species except coho salmon was open from May 1 through September 30. For 1984 there was no coho salmon troll fishery off California north of Point Arena, except in state waters between the Oregon/California border and Point Delgada from August 16 through August 22 and between Point Delgada and Point Arena from August 16 through September 30.

South of Point Arena, the coho salmon fishery was open from June 1 through September 30. The minimum size limits statewide for chinook and coho were 26 and 22 inches, total length, respectively. As in 1983, California

Chinook—California preliminary troll Chinook landings are 2.9 million pounds round weight. These are 500,000 pounds higher than 1983 landings, but represent the second lowest chinook salmon total since species landings sampling began in 1952. The 1984 landings are also 3.4 million pounds lower than the ten year average.

Coho—California preliminary landings of coho salmon are 400,000 pounds. This is approximately 33% greater than the 1983 landings, but 1.0 million pounds below the ten year average.

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SALMON AND STEELHEAD SPORT CATCHES IN 1983 IN THE PACIFIC COAST STATES

The estimated total sport catch of salmon and steelhead during 1983 in Alaska, Washington, Idaho, Oregon and California is still incomplete. Excluding the freshwater harvest of salmon in Oregon and Washington, and the steelhead harvest in Oregon, the estimated total sport catch of both salmon and steelhead was 1,770,118 fish (Table 1). This catch was composed of 1,653,919 salmon and 116,199 steelhead. While still incomplete, it is apparent that, with the exception of both salmon and steelhead catches in Alaska, and steelhead in Idaho, the 1983 sport harvests were well below the previous ten-year averages for both salmon and steelhead (Table 2).

Alaska

Alaska anglers harvested an estimated 532,519 sea-run salmon and 5,364 steelhead in 1983. The salmon harvest was the second largest on record, exceeded only by the 1982 harvest of 597,278. It was 50% above the previous ten-year average. The steelhead harvest was the largest on record, exceeding the previous record year of 1978 by 11%.

The total marine harvest of 203,997 fish included 29,594 chinook salmon, 72,651 c©ho,salmon, 19,409 sockeye salmon, 76,066 pink salmon, 6,158 chum salmon, and 119 steelhead. The total freshwater harvest of 333,886 included 53,518 chinook salmon, 76,619 coho salmon, 157,352 sockeye salmon, 28,299 pink salmon, 12,853 chum salmon, and 5,245 steelhead.

Washington

Washington recreational marine (ocean and Puget Sound) salmon angler trips during the 1983 season were reduced from the 1973-1982 teji-year average (1.7 million) at 1.6 million. However, this is the second consecutive year of reported effort increase, up from 1.2 million and 1.3 million anglertrips in 1981 and 1982.

Catches of chinook salmon in Washington marine areas amounted to 243,200 in 1983, compared to a ten-year mean of 377,600 and a 1982 catch of 226,900. Coho showed a similar decrease from the ten-year mean in 1983—from 643,500 to 486,000 salmon. The 1982 coho catch was 416,200 salmon. Pink salmon also showed a decrease—from a 1973-82 odd-year mean of 43,600 salmon to 21,000 in 1983.

The minimal reduction in recreational effort as compared to catch is a reflection of the differential regulation pressure and angler success—ocean versus Puget Sound. In recent years increasingly restrictive ocean salmon recreational regulations caused some shifting of effort—from the more successful ocean waters to Puget Sound.

The estimated 1983 steelhead catch was 78,600 fish, the lowest total in recent years, reflecting weak 1982-83 winter runs and 1983 summer runs in coastal and Puget Sound areas.

Idaho

The returns of chinook salmon to Idaho in 1983 were well below spawning escapement requirements. Therefore, no chinook salmon fishery was allowed in Idaho for the fifth consecutive year and seventh of the last ten years. An estimated 34,000 anglers fished 186,000 man days to harvest 32,200 steelhead in 1983. This is the largest estimated total steelhead harvest in Idaho since statewide harvest estimates were initiated in the 1950's, and is nearly four times greater than the previous ten-year average.

Oregon

The Oregon sport catch of salmon (marine only) was estimated at 171,700 fish. No figures are yet available for the 1983 steelhead harvest. The salmon catch consisted of 24,700 chinook and 146,900 coho.

California

The 1983 ocean sport catch estimate of 89,100 salmon is down 49% from the 1982 harvest of 173,800 and down 41% from the ten-year average. There was little change in the coho salmon harvest from 1982, but the chinook salmon catch was down 58% from 1982.

Southern California species were common in sport salmon fishery landings along the entire length of the state in 1983. Principal species included Pacific mackerel and bonita, with occasional catches off San Francisco and Monterey of barracuda. The cause of the northern shift of these southern species, and the apparent depressed production of salmon in 1983, probably stemmed from the major warm water current (El Nino) event of this same year.

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Table 1. Salmon and steelhead sport catches—1983.

State	Chinook	Coho	Pink	Salmon	Steelhead	Total
Alaska	83,112	149,270	104,365	295,772[1]	5,364	587,883
Calif.[2,3]	62,200	26,900	—	—	unavail.	89,100
Idaho	0	—	—	—	32,200	32,200
Oregon[3]	24,700	146,900	100	—	unavail.	171,700
Wash.	243,200	486,000	21,000		78,635	939,235
Total	413,212	809,070	125,465	295,772	116,199	1,770,118

[1]Sockeye and chum salmon
[2]Preliminary estimates
[3]Marine catch only

Table 2. Salmon and steelhead sport catches (1,000's of fish) for the Pacific Coast states, 1973 to 1983, and 10-year (1973-1982) averages.

	Alaska		California		Idaho		Oregon		Washington		Total	
Year	Salmon	Steel-head	Salmon[1]	Steel-head	Salmon	Steel-head	Salmon	Steel-head	Salmon[2]	Steel-head	Salmon	Steel-head
1973	221.7	0.9	230.0		9.5	10.5	406.6	162.2	1,095.4	148.3	1,963.2	321.9
1974	184.9	1.0	234.0		1.5	3.0	465.0	166.8	1,320.4	110.0	2,205.8	280.8
1975	178.0	2.2	125.0	Steelhead	0.0	0.0	415.9	186.4	1,399.4	92.9	2,118.3	281.5
1976	200.6	2.3	139.0	catches	0.0	2.0	669.0	118.3	1,749.6	89.1	2,758.2	211.7
1977	381.1	3.7	154.0	are not	3.5	13.0	372.2	145.1	1,191.4	100.0	2,102.2	261.8
1978	525.4	4.3	128.0	esti-	7.0	11.5	386.9	200.6	1,107.9	163.1	2,155.2	379.5
1979	361.2	3.0	138.7	mated	0.0	5.7	278.8	122.4	1,123.9	94.8	1,902.6	225.9
1980	530.5	4.8	107.0	in Cal-	0.0	9.1	417.3	203.7	852.9	151.1	1,907.6	368.7
1981	379.5	3.3	93.4	ifornia	0.0	13.0	319.0	155.0	760.1	125.1	1,552.0	296.4
1982	596.3	3.7	173.8		0.0	20.5	213.8	[3]	736.9	104.2	1,678.7	128.4
10-year average	396.7	2.9	152.3		2.2	8.8	394.4	161.8	1,133.8	117.8	2,034.4	257.7
1983	532.5	5.4	89.1		0.0	32.2	171.7	[3]	860.6	78.6	1,653.9	116.2

[1]Ocean fishery data only. [2]Marine catches only for 1972-78. [3]Not available.

SHRIMP FISHERY IN 1984

Pacific Coast pandalid shrimp landings by the United States and Canada totalled 20.5 million pounds (Table 1), the lowest t^^ings since the 1960's developmental period of the shrimp fisheries. The 1984 landings represent a decline of 95 million pounds from the previous 10-year average. Combined landings from Oregon, Washington and California were only 9.7 million pounds. Washington landings of 3.4 million pounds were about one third of the 10-year average. California landings of 1.5 million pounds were about one fourth of the 10-year average. Alaska landings totalled 9.3 million pounds less than one seventh of the 10-year average. British Columbia landings of 1.5 million pounds were about one half the ten year average.

Conditions Affecting the Fishery

The number of trawl vessels in the Pacific Coast shrimp fishery continued to decline from the record 1980 level. The number of shrimp vessels fishing off Washington and Oregon in 1984 was less»than half that of 1983. Ex-vessel prices declined from the record 1983 levels and ranged from about 33$ per pound in Alaska to 40$ to 65c in Washington and Oregon. Scandinavian imports of lower priced pandalid shrimp were primarily responsible for the price drop. Catch rates remained low in Alaska, Oregon and Washington and small shrimp were at times a factor in lower ex-vessel prices. Most historic production areas in Alaska remained closed to promote stock rebuilding. Some new low density stocks were exploited in Alaska and this was the primary reason for the small increase in Alaska landings.

Washington

Ocean shrimp (Pandalus jordani) landings totalled 3.4 million pounds, 40% less than the 5.7 million pounds landed in 1984. A total of 20 vessels (all double-rigged) made 5 or more landings of shrimp compared to 66 such vessels in 1983. The drop in effort was a result of continued low catch rates and a decrease in the average ex-vessel price from 77c per pound in 1983 to 48c per pound during the 1984 season. The price drop was primarily due

The Destruction Island grounds (PMFC Area 72) produced 55% of the total landings, or 1.8 million pounds. Catch rates averaged 226 pounds per hour, a slight increase from the 1983 average of 177 pounds per hour. Samples of landings taken from the Destruction Island grounds had monthly count-per-pound averages ranging from 126 to 181. Landings of small shrimp generally occurred in May and June.

Grays Harbor area (PMFC Area 74) produced 1.3 million pounds or 38% of the total landings. Catch rates for double-rigged vessels average 198 pounds per hour, an increase over the 1983 average of 139 pounds per hour. In general, good quality shrimp were landed from this area and monthly count-per-pound averages ranged from 115 to 163.

Shrimp caught in Oregon waters and landed in Washington totalled 230,000 pounds.

Oregon

Ocean shrimp landings totalled 4.8 million pounds, 26% less than the 6.5 million pounds landed in 1983. Astoria suffered the largest decline in landings (48.5%), partially due to an early season decision by several Astoria vessels to deliver to Washington ports where shrimp commanded a higher price per pound. The number of vessels participating in the Oregon fishery was 59 compared to 130 in 1983. The season beginning was delayed by price negotiations and stormy weather which kept the fleet tied up until mid-April. Fishermen received 45c to 52c per pound for their catch in April. In May, ex-vessel prices for larger grade shrimp were 60c to 65c per pound. Through September some deliveries of larger grade shrimp continued to be sold for 50c to 60c but 40c to 46c was a more common price in September and October.

During the period from April through June the percentage of the total monthly shrimp catch landed from PMFC Area 86 (Cape Blanco to Cape Perpetua) declined from 92% to 55%. From July through September, monthly landings for PMFC Areas 72 and 74 combined represented 58% (400,600 lbs), 68% (465,600 lbs) and 40% (225,200 lbs), respectively of the total monthly landed catch. In October

monthly landed catch. Standardized effort and catch per unit effort (CPUE) in single rig equivalents (SRE) increased in all PMFC areas. Total effort was 32,516 SRE hours in 1984, down 47% from the 61,648 SRE hours in 1983. Overall SRE CPUE increased from 106 pounds per hour in 1983 to 149 pounds per hour in 1984.

Landings from PMFC Area 86 declined from 2.6 million pounds in 1983 to 2.2 million pounds in 1984. Production from this area comprised 46% of the total Oregon shrimp catch. Effort declined from 23,218 SRE hours in 1983 to 15,973 SRE hours in 1984. The grade of shrimp ranged from 147 to 156 shrimp per pound from April through July. Shrimp grade improved steadily from 112 shrimp per pound in August to 81 shrimp per pound by October. The percentage of 1-year-old shrimp in the catch remained high throughout the season and ranged from 78% to 98% from April through September. In October 1-year-old shrimp decreased to 51% and zero age shrimp comprised 5% of the samples.

Landings from PMFC Area 88 (Cape Blanco to California border) decreased from 73,600 pounds in 1983 to only 47,700 pounds in 1984, with all of the catch landed in September. Shrimp grade averaged 70 shrimp per pound and was caught at a rate of 440 pounds per hour SRE. Landings from PMFC Area 92 increased from about 100 pounds in 1983 to 76,800 pounds in 1984. Catches were made during August and October and the grade of shrimp was 97 and 120 shrimp per pound, respectively. In October, zero age shrimp made up 21% of the catch. The overall CPUE for this area was 227 pounds per hour SRE.

Northern Oregon (PMFC Areas 82 and 84) shrimp catches accounted for 850,100 pounds of the season total, similar to the 868,500 pounds taken in 1983. Area 84 landings of 811,500 pounds were caught at an average rate of 188 pounds per hour SRE. The monthly percentage of 1-year-old shrimp ranged from 24% to 52%, with the exception of August when 1-year-old shrimp comprised 95% of the catch. In October, zero age shrimp comprised 0.3% of the catch and shrimp landed ranged from 86 to 115 shrimp per pound. Catch rates in Area 82 averaged 131 pounds per hour SRE for the 38,600 pounds landed.

Table 1. Annual Pacific Coast pandalid shrimp landings and 10-year averages by State and Province (in 1000's of pounds; 1974-1984.

Year	Alaska	British Columbia	Wash-ington	Oregon	California	Total
1974	108,275	2,644	9,235	19,968	2,338	142,550
1975	98,535	1,728	10,167	23,893	4,993	139,316
1976	129,011	7,723	9,261	25,392	3,400	174,787
1977	116,891	6,176	11,803	48,580	15,633	199,083
1978	73,293	3,460	12,298	56,997	13,163	159,211
1979	50,916	1,578	12,135	29,579	4,922	99,130
1980	52,568	1,500	12,629	30,152	5,050	101,899
1981	28,029	1,841	10,055	25,918	4,168	70,011
1982	16,987	1,510	4,999	18,462	4,471	46,429
1983	7,458	1,600	5,700	6,500	1,130	22,383
Mean	68,196	2,976	9,837	28,544	5,926	115,475
1984*	9,300	1,500	3,400	4,800	1,500	20,500

* Near final catch for Calendar Year.

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Oceans

Oregon-based vessels fishing off Washington produced 1.0 and 0.6 million pounds in PMFC Areas 72 and 74 (Destruction Island and Grays Harbor beds). The 1983 catch from the same areas was 2.3 and 0.8 million pounds. In Area 72 the monthly percentage of 1-year-old shrimp ranged from 80% to 90%. Shrimp grade was 161 to 212 shrimp per pound during April through July, and then improved to 135 shrimp per pound for the remainder of the season. Zero age shrimp comprised 0.9% of the catch in October. The grade of shrimp available in Area 74 ranged from 118 to 126 shrimp per pound. The percentage of 1-year-old shrimp was 23% to 55% of the catch from April through June, and then increased to 84% in July and August. No market sample data was available for September and October.

No landings were reported from PMFC Area 75 (Willapa Bay) in 1984 by Oregon vessels. Area 75 produced less than 2,000 pounds in 1983.

California

Ocean shrimp landings for the 1984 season were 1.5 million pounds, with most of the catch coming from the waters off northern California. Total landings for 1983 were 1.3 million pounds with the majority of landings in the south (PMFC Area98).

Combined landings from the ports of Eureka and Crescent City totalled 1.3 million pounds. Of this total, 1.1 million pounds were from PMFC Area 92. Shrimp caught in Oregon waters and landed in California totalled 104,000 and 121,000 pounds from PMFC Areas 86 and 88, respectively.

No landings have been reported from Fort Bragg (PMFC Area 94) for the second consecutive season. This *goniurus,* are below average abundance levels. Pot shrimp fishing stocks have also declined and landings reached only 50,998 pounds.

Prince William Sound (PMFC Area 52) landings reached a new record of 1.5 million pounds, more than double the previous record set in 1980. Most of the catch was from Icy Bay and Port Bainbridge by Kodiak-based trawlers. Trawl shrimp stocks in these areas appear small and the fishery has been characterized by long tows and catch rates of less than 1,000 pounds per hour. Pot shrimp fishery landings of 173,000 pounds were nearly equal to 1983 and the previous 1982 record.

Southeastern Alaska (PMFC Area 51) landings of 1.7 million pounds were near average but well below the 2.3 million pounds landed in 1983. The pot shrimp fishery production of 213,000 pounds was above average but below the 1983 record of 253,000 pounds.

The 1985 trawl shrimp harvest in the Gulf of Alaska is expected to be similar to 1984 unless new stocks are exploited.
follows four years of low production since ti ie record landingsof 2 million pounds in 1978.

No landings were reported from Bodega Bay (PMFC Area 96). This area has remained unproductive since 1977, when 2 million pounds were landed.

Landings from the Morro Bay—Avila area (PMFC Area 98) totalled 150,000 pounds, far below the 918,000 pounds landed in 1983 and the 1.6 million pound record of 1980.

British Columbia

Pandalid shrimp landings (all species combined) totalled 1.5 million pounds, nearly the same as 1983 but well below the 10-year average of 3.0 million pounds.

Trawl fishery landings reached 865,000 pounds, all of which were from the inshore beam trawl fishery. No landings were reported from the Tofino Inlet or Nootka (PMFC Area 56) offshore otter trawl grounds.

Coastwide trap fishery landings of prawns (primarily *Pandalus platyceros)* totalled 565,350 pounds which was above average but below the 1983 record of 800,000 pounds. Landings from this fishery were previously underreported in the 1983 PMFC report.

Landings for trawl and trap fisheries represent only those landings marketed through registered plants and individual fishermen that provide sales slips for shrimp sold atdockside.

Alaska

Shrimp landings (primarily *Panadalus borealis)* totalled 9.3 million pounds, 1.8 million pounds more than 1983 but 58.9 million pounds below the previous 10-year average. Kodiak, Chignik, South Alaska Peninsula and Aleutian Island stocks remain severely depressed and most historic production areas remain closed to promote stock rebuilding. Stock assessment surveys indicate no signs of recovery from the severe declines which generally began in the mid-1970's and are thought due to both fishing and natural causes. Depression of shrimp stocks is statistically correlated with high abundance of predacious fish and warmer oceanographic conditions.

Kodiak (PMFC Area 54) landings totalled 3.0 million pounds, similar to 1983 but far below the 10-year average of 32.5 million pounds. Only one shrimp processor and 13 trawl vessels oprated in Kodiak waters in 1984. Ex-vessel prices for shrimp averaged about 33# per pound. About half of the catch came from Alitak Bay where the best catch rate (1,072 pounds/hour) occurred. All other landings came from the Alaska Mainland section and Shelikof Strait. The latter area produced about 600,000 pounds, the highest harvest on record from this sporadically explored area. Catch rates in the Shelikof Strait area averaged around 500 pounds per hour and the fishery was characterized by long tows (4-9 hours) and 24-hour fishing at depths of 100 to 200 fathoms. The Alaska Mainland section, established by the Alaska Board of Fisheries as an unrestricted fishing section in 1982, has continued to decline in production. Stock assessment surveys in the Mainland Section indicate that only the Wide Bay area has produced more catch than would have been allowed under the more conservative management plan used for other major Kodiak stocks. Although estimated shrimp biomass in Wide Bay increased in 1984, both the survey and commercial samples have increasingly been dominated by 1-year-old shrimp and the price the past season dropped to as little as 12.5c; per pound for small shrimp.

Chignik, South Alaska Peninsula and Aleutian Islands (PMFC Area 55) remained closed except for certain offshore waters. No landings were reported in 1984 and stock assessment surveys indicate severely depressed stocks. The increase in shrimp biomass indicated for Pavlof Bay stocks in 1983 was not apparent in 1984 surveys.

Cook Inlet (PMFC Area 53) landings of 3.7 million pounds were below average but double the 1983 level. Trawl shrimp quotas have been more conservative in recent years as shrimp stocks, especially *Pandalus*

FOREIGN FISHING ACTIVITIES OFF THE PACIFIC COAST IN 1984

WASHINGTON, OREGON, AND CALIFORNIA

In 1984 two foreign nations, the Soviet Union and Poland, were involved in groundfish trawl and joint venture fisheries off Washington, Oregon, and California. Fewer than 25 foreign fishing vessels (trawl, processing, or support vessels) operated in both fleets at any one time off the coast, compared with 21 in'1983,18 in 1982, and 41 in 1981. As in the past, Pacific whiting (whiting or hake) is the target species in both foreign trawl and joint venture operations.

Foreign Trawl Fishery

Sanctions against Poland (in 1981 for the imposition of martjal law) and the Soviet Union (in 1980 for the invasion of Afghanistan) prohibited fishing by these countries and effectively eliminated the major foreign trawl component off the west coast. These sanctions were lifted in the summer of 1984 and both Poland and the Soviet Union resumed small fishing operations for the remainder of the season. Of the 30,500 metric tons of Pacific whiting available for foreign harvest in 1984, 20,000 metric tons were allocated to Poland and 10,000 metric tons to the Soviet Union. Half of each allocation was initially released, the other half to be released when need and satisfactory compliance with the fishing regulations were demonstrated. The Poles were able to harvest almost 72 percent (14,310 metric tons) of their total allocation before they were closed due to reaching the 148 metric ton incidental allowance for rockfish (excluding Pacific ocean perch). The Soviets, who neither requested nor received the second half of their allocation, took less than 10 percent (462 metric tons) of their 5,000 metric ton allotment. Five hundred metric tons remained unallocated.

Although 6,600 metric tons of shortbelly rockfish were available for foreign fishing in 1984, there was no interest in this fishery.

Joint Venture Fishery

Joint venture operations in which foreign vessels prohibited by the political sanctions against Poland and the Soviet Union because U.S. fishermen benefit from the markets made available by off-shore processing. (Pacific whiting deteriorates rapidly once caught and must be processed as soon as possible in order to be suitable for human consumption.) With Poland's return to the joint venture fishery, the Soviet Union was no longer the only participant, reversing the declining trend of four foreign nations in 1981, two in 1982, and one in 1983. The 1984 receipt of Pacific whiting was 78,900 metric tons, 10 percent above the 1983 level and almost 80 percent of the 100,000 metric tons available for joint venture processing. Soviet presence dominated the joint venture, contributing 15 processors compared to Poland's five. In total, 20 foreign processing vessels received whiting from 21 U.S. trawlers in 1984, the same as in 1981 and the highest numbers on record. However, joint venture production in 1984 was over 80 percent above the 1981 level.

Although 3,400 metric tons of shortbelly rockfish and 10,000 metric tons of jack mackerel were available for joint venture processing in 1984, no interest was expressed and these fisheries did not develop.

Boardings and Violations

While enforcing the foreign fishing regulations, Special Agents of the National Marine Fisheries Service acccompanied the U.S. Coast Guard on 138 aerial and seven surface patrols. About 25 boarding inspections of foreign vessels were conducted and logbooks were scrutinized again at the end of the season. By the end of 1984, the foreign fleet was charged with two violations but investigations are not complete at the time of this printing.

(NOTE: The species amounts in this section combine reports from foreign vessels and the National Marine Fisheries Service foreign fishing observers, and are preliminary. Consequently, the amounts given here may

The Magnuson Fishery Conservation and Management Act (MFCMA) regulated foreign fishing in the 3- to 200-mile Fisheries Conservation Zone (FCZ) off Alaska for the eighth consecutive year. In 1984, six foreign nations (Japan, Korea, Poland, Portugal, the Soviet Union, and West Germany) were given allocations to fish in Alaskan waters. In addition, vessels from Taiwan and Spain also operated off Alaska but participated only in joint venture activities. Most of the foreign vessels operated under MFCMA management plans governing the Gulf of Alaska groundfish fishery, Bering Sea and Aleutian Islands groundfish fishery, and Bering Sea snail fishery. Other vessels operated in the high seas salmon fishery regulated by the International North Pacific Fishery Convention (INPFC).

A total of 592 foreign vessels operated off Alaska in 1984, 22 vessels more than 1983. Of these, 416 operated under MFCMA management plans and 176 operated in the high seas salmon fishery. The number of foreign vessels present on a monthly basis varied from 82 (in May) to 444 (in July). Total foreign catch in 1984 was 1.33 million metric tons (2.93 billion pounds) of groundfish, salmon, and snails, while U.S. vessels caught approximately 581,100 metric tons of groundfish during joint venture operations. Foreign fishing effort totalled 45,255 days, a decrease of 28 percent from 1983; however, foreign catch increased by 3 percent. Joint venture effort increased 71 percent to 6,462 days; this resulted in a 65 percent increase in joint venture catch. The Bering Sea/Aleutian Islands area accounted for 88 percent of total effort, 91 percent of foreign catch, and 62 percent of joint venture catch.

Japanese Fishing

As in past years, Japan dominated foreign fishing off Alaska in 1984. A total of 483 Japanese vessels operated during 1984, 7 vessels less than the previous year. Of these, 223 vessels operated independently under the MFCMA, including 117 stern Jrawlers, 25 longliners, 1 snail pot vessel, 78 transport vessels, and 2 tankers. Also operating under the MFCMA were 56 pair trawlers, 12 Dan ish seiners, and 10 stern trawlers that worked with 5 pol lock factoryships and 1 yellowfin sole factoryship. Addi tionally, 4 factoryships and 172 gillnetters conducted a high seas salmon fishery under INPFC regulations as in the past. The number of vessels present per month varied from 35 to 394; effort was highest in June and July during the high seas salroon fishery. *

Effort by Japanese fishing vessels was reduced considerably (from 57,780 days in 1983 to 38,585 days in 1984) in an effort to remain within their somewhat reduced quota. One measure taken to reduce effort was the voluntary absence of most medium trawlers during April and May. However, this reduced effort yielded a Japanese catch of approximately 938,400 metric tons (72 percent of total foreign catch), a decrease of only 5 percent from 1983. Pollack was the predominant species and represent ed 76 percent of Japan's catch. Other catch included flounders, Pacific cod, other groundfish species, salmon, and snails. Almost 92 percent of Japanese catch was taken from the Bering Sea and Aleutians. Joint ventures accounted for 1,650 additional vessel days. Catch taken by U.S. vessels during these operations increased substan tially over 1983. It was up by 65 percent to 350,000 metric tons.

Independent Japanese stern trawlers and longliners operated in all of Alaska's fishing grounds throughout 1984. The 117 trawlers fished 12,783 days (91 percent in the Bering Sea/Aleutians) and caught primarily pollock and flounders. Twenty-five longliners fished for Pacific cod and sablefish a total of 2,885 days; 63 percent of longline effort occurred in the Bering Sea and Aleutians. Effort by both trawlers and longliners decreased dramatically from 1983; trawler effort dropped by 54 percent and longline effort by 38 percent.

Japan's other fisheries occurred only in the Bering Sea and Aleutians. The snail fishery off Alaska was continued by one snail pot vessel that fished from June to August. The vessel operated in the Bering Sea northwest of the Pribilof Islands and landed approximately 230 metric tons in 66 days. That was a 52 percent decrease in effort, but only a 29 percent decrease in catch.

Japan's factory fleets conducted operations in the same months and areas as in previous years. Five factory fleets, with 5 factoryships and 71 catcher vessels, fished for pollock in the central Bering Sea from June to October. Another factory fleet with seven catcher vessels fished for yellowfin sole from June to November in the Bering Sea east of the Pribilof Islands. The six fleets fished a total of 10,255 days, 14 percent fewer than 1983. This reduction in effort resulted in a 7 percent decrease in catch to 426,300 metric tons. The high seas salmon fleets, consisting of 4 factoryships and 172 gillnetters, fished north and south of the western Aleutians and in the central Bering Sea during June and July. Catch (about 14,500 metric tons) was 6 percent lower than 1983, while effort (9,504 days) was 4 percent lower.

Korean Fishing

Korea continued to hold the position as the second most visible foreign nation fishing off Alaska. The 40 vessels utilized included 26 stern trawlers, 1 factoryship, and 11 transport vessels. The number of vessels present monthly ranged from 10 to 34. Korean vessels landed 20.6 percent of total foreign catch in 1984, approximately 274,500 metric tons of pollock, flounders, Pacific cod, Atka mackerel, and other groundfish. Efforts totalled 5,737 days (11 percent of total foreign effort), including 1,353 days for joint venture. Korean fishing effort declined 12 percent from 1983, while catch decreased only 2 percent. However, Korean joint ventures experienced a 26 percent increase in effort and 38 percent increase in catch. Effort in the Bering Sea/Aleutians accounted for 79 percent of Korean vessel days, 85 percent of Korean catch, and 38 percent of joint venture catch.

Soviet Fishing

As in 1980-1983, Soviet vessels conducted joint venture operations off Alaska. In addition, Soviet vessels were given an allocation and allowed to return to directed fishing in October 1984. A total of 30 Soviet vessels operated in 1984, including 16 stern trawlers, 1 factoryship, and 13 transport vessels. Fishing vessels operated only in the Bering Sea, taking approximately 22,700 metric tons of pollock, flounders, and other species. Effort by Soviet vessels totalled 2,375 days in 1984, and included a 39 percent increase in joint venture effort (1,798 days).

Polish Fishing

Poland also resumed fishing operations off Alaska in 1984, as well as continuing to participate in joint ventures. Polish vessels fished a total of 1,378 days and caught approximately 55,000 metric tons of groundfish, primarily pollock. Seventy percent of fishing effort occurred in the Bering Sea, with the remaining 30 percent in the Aleutians and Gulf of Alaska. In addition, Polish vessels operated a total of 656 days in joint ventures.

West German Fishing

As in previous years, West Germany utilized a single stern trawler off Alaska. This vessel operated during all of 1984 except for 17 days. West Germany took 1.84 percent of total foreign catch (primarily pollock), fishing 302 days

in the Bering Sea and Aleutians. In addition, the vessel participated in joint venture operations a total of 46 days.

Portuguese Fishing

Portugal deployed one side trawler to Alaska in 1984. The vessel fished in the Bering Sea for 29 days; its catch was very small and included flounders, Pacific cod, and pollock.

Joint Venture

Participation in joint ventures continued an upward trend in 1984. Seven foreign nations (Japan, Korea, Poland, the Soviet Union, spain, Taiwan, and West Germany) participated in 1984, compared to four nations in 1983. A total of 76 foreign vessels (22 Korean, 21 Polish, 18 Japanese, 10 Soviet, 3 Taiwanese, 1 West German, and 1 Spanish) worked with 80 U.S. vessels. That is 37 foreign vessels and 15 U.S. vessels more than 1983. Effort rose 71 percent from 3,771 days in 1983 to 6,462 days in 1984. Catch was 65 percent higher than the previous year, with foreign vessels receiving 581,000 metric tons of pollock, flounders, Pacific cod, and othergroundfish. About 56 percent of catch and 62 percent of effort occurred in the Bering Sea/Aleutians.

Enforcement and Surveillance

Joint NMFS-Coast Guard patrols in 1984 included 489 aerial patrols (3,140 hours) and 919 days of vessel patrols. NMFS Special Agents were present during 26 percent of the aerial patrols and 31 percent of the vessel days. Patrol units reported 6,193 sightings of foreign vessels. NMFS and Coast Guard personnel conducted 471 boardings of foreign vessels (298 Japanese, 103 Korean, 27 Polish, 25 Soviet, 6 Taiwanese, 5 West German, 2 Portuguese, 2 Spanish, and 3 Canadian).

Under the MFCMA, infractions detected during boardings or aerial patrols may result in the issuance of a citation (written warning), violation (assessment of civil penalty), or in the seizure of a vessel for flagrant violations. In 1984, enforcement effort resulted in: 96 citations and 35 violations for Japan; 23 citations and 8 violations for Korea; 10 citations and 3 violations by Soviet vessels; 6 citations and 3 violations for Poland; 2 citations and 1 violation by Taiwan; and 1 citation and 1 violation by the Portuguese vessel. In addition, three Canadian vessels were seized for fishing in U.S. waters without an MFCMA permit. Penalities and property forfeited in settlement of these cases totalled $10,441 as of February 25, 1985; however, almost 73 percent of cases involving penalties are still open.

A landmark case settlement was reached in late 1984. A Japanese transport vessel was seized in November 1983 for underlogging transfers from fishing vessels operated by the Nichiro fishing company. Records found on the transport vessel implicated 20 Nichiro vessels in a company-wide practice of underlogging fish transferred at sea to mask catches that had not been reported. In addition to the civil forfeiture action against the transport vessel, fishing permit suspensions were initiated for all Nichiro fishing vessels. A fine of $2 million and permit sanctions totalling 20 vessel years were reached in settlement of the case. The monetary fine is double the amount ever imposed previously under the Magnuson Act.

Compiled by National Marine Fisheries Service, Alaska and Northwest Regional Ofices, Anchorage and Seattle.

APPENDIX III REVISED PMFC GOALS, OBJECTIVES, RULES AND REGULATIONS

GOAL AND OBJECTIVES[2]

Mutual problems of fisheries resource management led the Pacific Coast States to form the Pacific Marine Fisheries Commission in 1947. By the late 1970's these problems has increased in number and complexity. Consequently, urgent need exists for solution of the economic, social,-political, legal, and biologicaMssues confronting fishery conservation and management. In light of present conditions, including formation of Regional Councils under FCMA, the Commission recognizes a need to redefine the goal "of PMFC and to establish objectives to guide its future activities.

Goal

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.

Objectives and Action Programs

To accomplish the goal of PMFC[3], the following objectives are established. Priority actions to accomplish these objectives are listed.

Objective I

Provide active leadership in recognizing and resolving interstate fishery problems.

Action

B. Invite all entities concerned with member States' fishery matters to participate in PMFC affairs.

C. ..Seek additional sources of funding for PMFC's programs.

D. Define and coordinate PMFC research and man agement projects.

E. Assist the federal government in international negotiations when necessary.

[2]Revised and approved by Executive Committee action on September 19,1984.

References to PMFC throughout are to its member States and not to its Staff.

Objective II

Develop PMFC policy statements and communicate them to Congress and other legislative entities, concerned agencies of federal, state, or local government, and to the private sector.

Action

A. Monitor fisheries legislation, alert member States to key issues, and if action is required, coordinate the development of a PMFC response.

B. Develop or assist member States in developing

C. Implement policy statements at all levels of government, emphasizing Congressional entities and federal agencies.

D. Develop testimony and supporting documentation as necessary.

Objective III

Facilitate research and management projects relating to interstate fisheries.

Action:

A. Maintain regional information bases and publish data reports, scientific papers, and administrative documents.

B. Coordinate marking and tagging of Pacific salmon and other species to assure high quality regional data.

C. Provide administrative, fiscal, and field coordination and support for interstate and State/Federal research and management projects.

Objective IV

Promote compatible fishery regulations for those interstate fisheries not under Regional Council jurisdiction.

Action:

A. Assist in developing fishery management plans for commercial and recreational fisheries as needed.

B. Coordinate activities in implementing plans and regulations.

Objective V

Promote the better utilization and prevention of waste of fish products.

Action:

A. Monitor fisheries development at federal, state, local, and private levels and inform PMFC membership.

B. Stimulate initiatives for fisheries development.

RULES AND REGULATIONS*

I

Authority: The Pacific Marine Fisheries commission is constituted pursuant to an act of Congress approving an Interstate compact relating to the better utilization of the marine, shell, and.anadromous fisheries of the Pacific Coast, and ratified by the signatory States.

Membership: The Commission shall be composed of three members from California, appointed by the Governor; three members from Oregon, the State Fish and Wildlife Director, and two members appointed by the State Fish and Wildlife Commission; three members from Washington, the Director of the Washington Department of Fisheries, and two appointed by the Governor; three members from Idaho, appointed by the Idaho Fish and Game Commission; and three members from Alaska, appointed by the Governor; said membership being designated by the laws of the respective signatory States.

III

Voting: Each State shall be limited to one vote regardless of the number of representatives. Three States shall constitute a quorum.

Voting shall conform to Article VI of the Compact in that a majority affirmative vote of the whole number of compacting States represented at any meeting shall constitute acceptance of the action being voted upon, but that whenever a State declares that it has no interest in a species or subject concerned in the action and therefore wishes to abstain, a majority vote shall then be defined as a majority of the remaining voting member States. However, in regard to administrative matters pertaining to the operation of the Commission, invitations to potential member States, budgets, by-laws, recommendations for change in the Compact, etc., a unanimous vote shall be required. Letters of transmittai forwarding actions by Pacific Marine Fisheries Commission shall show how each member State voted.

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"Originally approved by the Executive Committee July 14, 1971; revised 1975,1978,1980, and 1984.

Rules and regulations may be adopted or modified by unanimous vote of all the Executive Committee members.

IV

Officers and Executive Committee: The officers of the Commission shall be a chairman, second vice chairman, third vice chairman, secretary, treasurer, and executive director. The Commission may appoint additional officers. The Chairman, the three Vice Chairmen and Secretary shall constitute the Executive Committee whose members must be members of the Commission, however, no State shall be represented by more than one of these officers.

Duties of the Executive Committee: The Executive Committee members shall take office immediately following their election at the Annual Meeting of the Pacific Marine Fisheries Commission, and they shall continue to serve until the next election at the following Annual Meeting. This Committee shall act for and on behalf of the Commission on all matters necessitating such action during the interval between meetings of the Commission.

The Committee periodically shall evaluate the objectives and actions of the Commission to ascertain their adequacy for attainment of the Commission's goals.

This Committee periodically shall evaluate the role, responsibilities, and authority of the Executive Director to determine that they are clearly defined and relevant and Jthat his actions are effective in the discharge of his responsibilities and the exercise of his authority.

VI

Duties **of** the Chairman: The Chairman shall preside at all meetings of the Commission. It shall be his duty to see that all orders of the Commission are carried into effect. He shall have general supervision and direction of the other officers or appointees of the Commission and shall see that their duties are properly performed. He shall sign those contracts or written instruments requiring his signature as determined by the Executive Director.

VII

Duties of the Vice Chairmen and Secretary: The first Vice Chairman shall be vested with all the powers and perform all the duties of the Chairman in the absence or disability of the latter. The second Vice Chairman shall be vested with the powers and perform the duties in the absence or disability of the Chairman and first Vice Chairman. If need be, this transfer of power and duties will be continued to the third Vice Chairman and then to the Secretary.

VIII

Duties of the Treasurer: The Treasurer shall have custody of the funds of the Commission and shall deposit same in such bank or banks as may be designated by the Commis-

sion. He shall keep full and accurate accounts of receipts, disbursements, and othr financial transactions. Funds shall be paid out only by check and signed by the Treasurer and countersigned by the Executive Director or his designee. The Treasurer shall be required to post a bond in such amount as the Commission determines, the cost of which will be paid as an administrative expense.

IX

Duties of the Executive Director. The Executive Director shall be the chief administrative officer of the Commission. It shall be his duty, or in his absence the duty of the designated Assistant to the Executive Director, periodically to prepare budgets for Commission approval; supply copies of all appropriate reports and correspondence relating to Commission activities to each member of the Executive Committee; represent the Commission at meetings and public hearings; countersign checks drawn by the Commission's Treasurer; hire temporary employees or procure services, supplies and equipment when required to carry out the work of the Commission; direct and prescribe the duties of Commission employees and perform such other duties as directed by the Chairman. The Executive Director, except in direct administration of his office, shall take action on a significant problem only with prior approval from the Executive Committee.

The Executive Director shall, 90 days in advance of the Annual Meeting, provide to the interested public appropriate notice of the date and site of the meeting and a preliminary agenda.

Advisory Committee: An Advisory Committee of not more than seven from each State shall be appointed by the Commission, and vacancies filled as may be required upon the recommendation of the Commission members of the appropriate State and approval of the Executive Committee.

All Advisors shall be appointed for two-year terms unless an appointment is to fill an unexpired term. All full terms shall begin on January 1, 1971 and/or January 1 of each succeeding odd-numbered year. Reappointments may be made and Advisors may be replaced at the discretion of the Commission.

At least once each year the Commission shall hold a meeting with the Advisory Committee and shall discuss the proposed recommendations with said Committe"e according to Article VII of the Compact.

The Advisors of each State sha|l meet with their appropriate Commissioners and state fish and game agency personnel in their respective States in advance of the Annual Meeting.

When an Advisor is unable to attend an Annual Meeting, he shall notify the State's Executive Committee member at least three days in advance of the meeting. The Executive Committee membe may appoint an alternate who must be confirmed by the Commission.

XI

Coordinator: Each member agency shall designate a staff member to be its Coordinator for commission matters. This shall be done in writing to the Executive Director with copies to the other member states.

XII

Time, Place, and Subject of Meeting: At least one meeting shall be held during each calendar year on call by the Chairman at a place designated by him within the State in which the Chairman has his residence. The Chairman may also instruct the Executive Director to call meetings of the Commission or Executive Committee at such times and places as required for the proper conduct of Commission affairs. All meetings of the Commission and its Advisory Committee shall be open to the public.

The Commission's Annual meetings shall be devoted to discussion and consideration of broad issues of general importance to the member States.

XIII

Annual Reports: The Commission shall prepare an annual report and send it to the Congress, and to the Governors of the Legislatures of the signatory States.

XIV

Reimbursement of Travel and Subsistence Expense: All commissioners, officers, advisors, employees, coordinators and scientific and management staff performing authorized services for the Commission away from their home station shall be reimbursed for actual, reasonable transportation, lodging and meal costs. Meal costs shall not exceed a specified amount each day, as determined by the Executive Committee and specified on the expense claim form. The total of meal and lodging costs shall not exceed the amount specified in advance by the Executive Director for each meeting location. Actual expenses not to exceed the above limits may be claimed for official PMFC business in the city of residence. Reimbursement for authorized travel to Alaska will be based on reasonable lodging cots, plus actual mean expenses not to exceed the daily amount specified above as adjusted upward by the cost-of-living allowance in effect at the time of travel. Those PMFC employees hired and supervised by State agencies shall follow the travel reimbursement rules of the State in which they work.

Payment of expenses of all of a State's Advisors to an intrastate caucus within that State in advance of the Annual Meeting and to the Annual Meeting of PMFC may be authorized. Recommendation for payment of claims shall be the responsibility of the individual State.

Each State may send three Commissioners and five staff members to the Annual Meeting at Commission expense.

The per diem and transportation costs authorized herein are based upon travel times and costs by common carrier and represent the maximum allowable, not the minimum. It is the responsibility of the chief administrative officer of the Commission to see that approval of travel expense claims authorizes only such per diem allowances and other travel costs as are justified by the circumstances affecting the travel.

In case of travel by private vehicle, mileage shall be allowed at the rate per mile specified on the claim form, except that the amount claimed shall not exceed coach air face, plus limousine, and/or taxi fares. Travel by private vehicle for purposes of claiming perdiem shall be the time required for air travel.

All claims for travel expenses shall be submitted on the form prescribed and furnished by the Commission.

XV

Procedures of Setting Policy:

A. Major Issues

At each Annual Meeting and/or at an interim meeting, the Commission will adopt issues to be addressed at the following Annual Meeting, based on recommendations of Advisors and others. These issues shall be of general importance to the member States, pursuant to Rule XII. To ensure that the issues meet this standard of importance,

they should (1) be relevant to the goal and objectives of PMFC, (2) be achievable or implementable, (3) be regionally significant, (4) not duplicate or conflict with State and Regional Council policies, and (5) not repeat existing Commission policy (a restatement or slight modification of existing policy can be addressed as outlined in Section B below).

For each issue, the Commission will appoint an ad hoc committee to draft a position paper. The membership of each committee can be drawn from Commissioners, Advisors, State and/or PMFC Staff or other individuals. The Committee should include a regional mix of members knowledgeable of the issue to be addressed. A member from each State is desirable but not required.

The position papers should include (1) title; (2) brief statement of goal or purpose; (3) a detailed statement of the problem including any appropriate documentation; and (4) recommendations for resolving the problem, including a strategy and responsibilities for implementation.

The committee shall meet as necessary throughout the year with the approval of the Executive Director and subject to budget limitations. Each committee shall select its own chairman who shall be responsible for producing a finished position paper for Commission review. Paper are due in the PMFC office no later than 30 days in advance of the Annual Meeting. The Executive Director shall provide clerical and other staff support to the committees as needed, and shall distribute copies of each paper to each State delegation in advance of the Annual Meeting. Each State will review each paper at an intrastate caucus prior to the Meeting.

The Executive Director shall prepare an agenda for the Annual Meeting consisting of the major issues selected by the Commission, Advisory Committee concerns which are newly perceived or urgent, relevant legislation, and other matters which should be addressed. The Executive Director shall publish a preliminary agenda 90 days before the Annual Meeting and a final agenda 20 days before the Meeting which would incorporate additional issues.

B. Other Important Issues

Important issues may arise too late to be handled in the sequence outlined above. Position papers on these issues may be submitted prior to the meeting, for consideration by the Commission. These additional issues shall be screened by the Advisors and Executive Committee member of the originating State. Position papers on these issues shall be received in final form in the PMFC office not later than 30 days prior to the Annual Meeting. Where issues are perceived too late for this schedule, they may be submitted at any time prior to the Annual Meeting, but will only be placed on the agenda if the Executive Committee determines that they are truly of an emergency nature.

For items which do not lend themselves to position papers, the Advisors and Scientists/Managers may make simple written recommendations to the Commission for action. Examples of such items are (1) reaffirm or slightly modify past policy, (2) change an operating procedure, (3) seek funding for an activity, (4) support or oppose a bill, and (5) initiate a new data coordination activity.

XVI

Scientific and Management Staff meetings: The Coordinators or other key staff members of PMFC States may, with approval of the Executive Director, hold a meeting at the Commission's expense generally in the spring, in addition to convening at the Annual Meeting. Two staff members per State may attend such meetings at the Commission's expense. In addition when problems of mutual concern are found to exist which require extra committee or work group deliberations to expedite solutions, pertinent committees of the scientific and management staffs of appropriate States also may convene at the Commission's expense with prior approval of the Executive Director in consultation with State PMFC Coordinators. Findings and recommendations from scientific and management staff meetings shall be forwarded via the Executive Director to the Executive Committee for consideration.

XVII

Public Patricipation: All meetings of the Commission, Advisory Committee, or Scientific Staff shall be open to the public. Scientists not employed by the States and members of the public (non-Advisors) are encouraged to attend these meetings and participate in the proceedings. Chairmen of the respective Committees and Working Groups shall allow and encourage participation by such individuals. The Executive Director shall invite participation by knowledgeable individuals as necessary to ensure that the Commission benefits from the best available information.