

19th and 20th Annual Reports of the

**PACIFIC MARINE
FISHERIES COMMISSION**

FOR THE YEARS 1966 AND 1967

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

In Memoriam

Milton C. James

19th and 20th Annual Reports of the

PACIFIC MARINE FISHERIES COMMISSION

FOR THE YEARS 1966 AND 1967

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

Respectfully submitted,

PACIFIC MARINE FISHERIES COMMISSION

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FRANK CULLEN (Resigned 1967)	J. PAT METKE
TALLANT GREENOUGH (Resigned 1967)	WAYNE E. PHILLIPS
LEONARD N. HALL	WALTER T. SHANNON
DWIGHT S. HAWLEY (Appointed 1967)	JOSEPH W. SMITH
GEORGE L. HIBBARD (Appointed 1967)	McKEE A. SMITH (Appointed 1967)
RAY J. HOLMES (Appointed 1967)	VINCENT THOMAS
EDWARD G. HUFFSCHMIDT	THOR C. TOLLEFSON
ARLIE JOHNSON •	JOHN H. WEDIN (Resigned 1967)
DICK J. KINK (Resigned 1967)	RAY WELSH (Appointed 1966)
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19th Annual Report — 1966

INTRODUCTION

Two subjects dominated fishery discussions on the Pacific Coast in 1966: 1) Phenomenal capital expansion in the Pacific Coast fishing industry, and 2) Alarming extension of Soviet fishing activities from Alaska and British Columbia coastal waters to the waters off Washington, Oregon and California, where for the first time Soviet vessels were readily visible to the general public, just beyond the 3-mile limit.

The last Yearbook published by *The Pacific Fisherman*, before its inclusion in the *National Fisherman*, reported 1966 as "a year of almost unprecedented capital investment in the fishing industry of the Pacific Coast. From plants to vessels, and from Bering Sea to San Diego, the fishing industry committed large sums of money to building and expanding. King crab, bottomfish and tuna were the notable leaders in this expansion." It also stated that the recent strong upward trend shown in North American canned salmon production continued in 1966 with the largest case-pack in more than a decade largely due to record runs of pink salmon to areas from central British Columbia to western Alaska. Quantities of chum and coho salmon sold fresh or frozen were the largest in history.

Pacific Protein, Inc., built a million-dollar plant at Aberdeen, Washington, and began operation in July to convert hake to meal and oil. But by that time, the Soviet fleet had increased to 108 or more vessels, including mother and other support ships as well as large trawlers. The large Soviet fishing vessels pre-empted the fishing area, and the small U.S. vessels caught only 3.7 million pounds of hake while the Soviets caught 291 million pounds off Oregon and Washington during the year. Between November 1965 and June 1966, a small number of U.S. vessels caught 6.3 million pounds from an independent hake population in Puget Sound. The latter hake were processed locally at LaConner, Anacortes and Everett, Washington.

Although the operations of Russian vessels off Alaska had been a matter of increasing concern for almost a decade, it was not until they extended their operations southward to waters off Canada in 1965 and to waters off Washington, Oregon and California in 1966 to fish for hake and other groundfish, that the citizenry and news media were "aroused to action.

The Pacific Marine Fisheries Commission issued two news releases on the subject in June of 1966, and the Bureau of Commercial Fisheries appointed an Ad Hoc Surveillance Committee to observe foreign fishing. The Executive Director of PMFC became a member of that committee. Actual surveillance was very difficult that summer because of the paucity of State and Federal surface vessels available for that purpose. Most of the initial observations were therefore made by aerial survey.

Senators and fishery scientists from the Pacific Coast flew to Moscow to confer with the Soviets on the problems thus created. The Congress moved rapidly to add a 9-mile contiguous fishing zone to the existing 3-mile territorial limit thus providing a 12-mile offshore U.S. fishing zone. The 12-Mile Bill, S. 2218, and the Fish Protein Concentrate Bill, S. 2720,

were signed by President Johnson in late 1966 and became Public Laws 89-658 and 89-701 respectively. Only time will tell what impact this foreign fishing fleet will have on our fishery resources and industry.

An innovation at the 1966 PMFC Annual Meeting was the assignment of one member of the Research Staff to each Working Team of the Advisory Committee during preliminary deliberations on proposals to be voted on as resolutions by the Commissioners. The following changes were recorded in the roster of personnel in 1966: Governor Brown of California appointed Ray Welsh of Fort Bragg to replace William O. Riley who died October 4, 1965. Mr. Paul McKeehan of Santa Clara replaced Mr. Welsh on the Advisory Committee, and Mr. J. T. Barnaby was appointed Consultant to replace Milton C. James who resigned on account of poor health.

ADMINISTRATION

Personnel

The following served as Commissioners during 1966:

Washington

Dick J. Kink, Bellingham Thor C.
Tollefson, Olympia John H. Wedin,
Seattle, Chairman

Oregon

John P. Amacher, Winchester
Tallant Greenough, Coquille
Leonard N. Hall, Charleston
Edward G. Huffs Schmidt, Portland
» Herman P. Meierjurgan, Beaverton
J. Pat Metke, Bend, First Vice-Chairman Wayne E.
Phillips, Baker Joseph W. Smith, Klamath Falls

California

Walter T. Shannon, Sacramento, Second Vice-Chairman
Vincent Thomas, San Pedro
Ray Welsh, Fort Bragg, successor to William O. Riley, deceased

Idaho

Frank Cullen, Coeur d'Alene
Arlie Johnson, Boise
John R. Woodworth, Boise, Secretary

Mr. Welsh joined Messrs. Amacher, Hall and Wedin as Commissioners who were initially members of the Advisory Committee.

The Advisory Committee, which functioned under new rules and procedures approved at the 1964 meeting (Resolution #27), consisted of the following members:

Washington

Robert E. Colwell, Seattle
Earl Engman, Tacoma
Harold E. Lokken, Seattle
Charles F. Mechals, Seattle, Chairman
Nick Mladinich, Tacoma
Bjarne Nilsen, Westport
John N. Plancich, Anacortes

Oregon

David B. Charlton, Portland
Charles S. Collins, Roseburg
Harold C. Gramson, Warrenton
Charles F. Henne, Winchester
J. F. Hoagland, Astoria
Andrew J. Naterlin, Newport, Section Chairman
Arthur Paquet, Astoria

California

Charles R. Carry, Terminal Island, Section Chairman
Clifton D. Day, San Francisco
Thomas R. Gardiner, Oakland
John P. Gilchrist, San Francisco <
Paul McKeehan, Santa Clara, replaced Ray Welsh
Anthony Nizetich, Terminal Island
Charles V. Williams, Crescent City

■ Idaho

William B. Dutbon, Moscow, Section Chairman
Ray J. Holmes, Twin Falls
Glenn Stanger, Idaho Falls*

Alternates approved for those members who were unable to attend the Annual Meeting are listed under Commission Action. These alternates serve only during the designated meeting.

The staff comprised:

Leon A. Verhoeven, Executive Director
Gerald L. Fisher, Treasurer
Mrs. Evelyn Korn, Office Secretary

They were assisted for short periods by:

Alphonse Kemmerich, Consultant
J. Thomas Barnaby, Consultant
Temporary clerical employees were utilized as needed.

Conferences and Meetings

The intergroup relationships of the Pacific Marine Fisheries Commission call for frequent participation in conferences and meetings. In furtherance of this function, the Executive Director attended the following as a representative of the Commission from November 1965 through 1966:

Oregon Wildlife Federation's First Oregon Conservation Awards Banquet, Portland, November 13, 1965.

Columbia Basin Inter-Agency Committee, Portland, December 14, 1965 regarding a study of water needs of Columbia-North Pacific Region.

Annual Administrators' Review of Fish Passage Program, Portland, December 15, 1965; a review by the Bureau of Commercial Fisheries regarding fish passage research.

International Pacific Halibut Commission, annual meeting, Seattle, February 1, 1966.

Columbia Plateau Resources Council, organizational meeting, Spokane, February 25-26.

Oregon Fish Commission, news conference on Indian Fisheries, Portland, March 4.

Washington Department of Fisheries, seminar on seed oyster hatcheries, Olympia, March 8.

U.S. Fish and Wildlife Service, meeting regarding Anadromous Fish Conservation Act, Portland, March 10.

Washington Legislative Interim Committee on Water Resources meeting, Vancouver, Washington, March 12.

U.S. State Department meeting on troll-caught pink salmon * and Noyes Island-Dixon Entrance controversy, Seattle, March 14.

California Resources Agency, "Resources Balance 1966, A Report to the Governor," Coronado, March 17-19.

U.S. Senate Commerce Committee, hearing on S. 2720 (Fish Protein Concentrate), Aberdeen, April 25.

Columbia Basin Inter-Agency Committee, Seattle, June 15, regarding water quality.

Bureau of Commercial Fisheries and Oregon Governor's Surveillance Committee, meeting to discuss fishing by foreign nations off Oregon and Washington, Astoria, July 21.

Pacific Section of National Shellfish Association and Pacific Coast Oyster Growers Association, joint meeting, Tumwater, Washington, attended research session only on August 25.

Oregon State Sanitary Authority, Portland, November 30, hearing on water quality standards for the Columbia River.

Oregon Wildlife Federation's Second Annual Conservation Achievement Banquet, Portland, December 3.

(Oregon) Governor's Committee on Natural Resources, Salem, December 6.

Bureau of Commercial Fisheries' Ad Hoc Committee on Surveillance (on foreign fishing), Seattle, December 8.

Administrative and Service Activities

In compliance with the annual request of the Office of International Relations, U. S. Fish and Wildlife Service, PMFC again secured specific statistics concerning the salmon, herring and halibut fishery landings, the propagation of salmon, commercial fishing regulations and enforcement of those regulations concerning salmon and halibut in the States of Washington, Oregon and California. After consolidation, this material was forwarded through proper channels — U. S. Section, INPFC — to the Japanese government.

An annual meeting, attended by representatives from the fish and game agencies of the Pacific Coast States, the University of Washington and the U. S. Fish and Wildlife Service was held January 20, 1966, to coordinate and record the planned fin-marking programs of the various agencies for salmon and steelhead trout. Subsequently, a 43-page listing for 1966 of all salmon and steelhead trout marks authorized for use by agreement of the cooperating agencies was prepared and distributed. Memoranda advising the agencies of additions or revisions to the listing were issued from time to time.

PMFC's Executive Director, as liaison officer for the United States section of the International Trawl Fishery Committee, attended the annual meeting of the Committee's Technical Subcommittee in Portland, June 28-30. The statistics in the Bottom or Trawl*Fish section of PMFC's Data Series are furnished annually by Canadian and United States agencies represented on the Subcommittee. The Director also attended the meeting of the International Trawl Fishery Committee on November 16 in Seattle.

The Executive Director continued to serve in ex officio status as Secretary to the Pacific Salmon Inter-Agency Council and as observer on the Council's Technical Committee. In addition to compiling and distributing items regarding salmon management and research to the members of the Technical Committee, he attended a joint meeting of the Council and its Technical Committee in Portland on September 8.

Mr. Donald R. Johnson, Pacific Northwest Regional Director, Bureau of Commercial Fisheries, and PMFC's Executive Director, as the two United States members on the Informal Committee on Chinook and Coho, continued to expedite the preparation of a report on the biology, status of stocks, and recommended cooperative research programs on chinook and

coho salmon for exchange with the Canadian section of the Committee.

With the appearance of the Russian fishing fleet off the coasts of Oregon and Washington in early 1966, numerous communications between the Executive Committee and the Directors of PMFC member fishery agencies resulted in two news releases on June 9 and 22 which received wide distribution. In July the Executive Director was appointed to the Ad Hoc Surveillance Committee of the Bureau of Commercial Fisheries.

The only formal publication issued in 1966 was the 18th Annual Report of the Commission for calendar year 1965. Revised and supplemental pages of 1965 catches for the Bottom or Trawl Fish and the Crab and Shrimp sections of the Data Series were prepared and distributed.

The Executive Committee of the Commission met in Portland on June 21, 1966, and took the following action:

1. Approved the transfer of \$2,750 for printing the 1965 Annual Report from the July 1, 1965-June 30, 1966 budget to the budget for the next fiscal year;

2. Approved the operating budget for the fiscal year July 1, 1966 to June 30, 1967, but rejected the proposed budget for the next biennium July 1, 1967 to June 30, 1969, and instructed the Treasurer and Executive Director to draft a revised contribution formula and proposed biennial budget for presentation at the next meeting of the Executive Committee on November 16;

3. Approved plans for the 1966 Annual PMFC Meeting to be held in Seattle, Washington, in November;

4. Instructed the Executive Director to use all means at his disposal to urge Alaska to join the Compact.

At its second 1966 meeting, the Executive Committee took the following action in Seattle on November 16:

1. Recommended adoption of the revised proposed budget for the biennium July 1, 1967 to June 30, 1969, which provided for either 4- or 5-state membership, depending on the State of Alaska's decision to join the Compact;

2. Recommended to PMFC that it adopt a new contribution formula based on fixed percentage contributions effective July 1, 1969; (Since the necessary legislation to implement the formula recommended in 1966 was never passed; and because another formula was developed in 1967, which was subsequently implemented by legislation, the details of the 1966 formula are not recorded here.)

3. Approved the assignment of a Research Staff member to each Working Team of the Advisory Committee;

4. Recommended the time and place for the 1967 Annual PMFC Meeting, nominated candidates for election to Executive Committee offices, and approved the reports of the Executive Director and Treasurer; and

5. Recommended that the Commission charge the Executive Committee with the responsibility of ruling whether late proposals qualify as emergency proposals. (Ruling had been done previously by the Steering Group of the Advisory Committee.)

COMMISSION ACTION

The 19th annual meeting of the Commission was held in the Olympic Hotel in Seattle, Washington, on November 17 and 18, 1966. Including official participants, 144 persons registered their attendance. Two preceding days were devoted to committee meetings.

While the primary purpose of the annual meetings is to arrive at conclusions and recommend actions affecting the fisheries of the Pacific Coast, other matters of internal concern required consideration. Such subjects included:

1. The following new Commissioners were introduced, and alternates were approved for Commissioners who were unable to be present:

Ray Welsh, new Commissioner, replacing the late William O. Riley (California)

John Radovich for Walter T. Shannon (California)

Anthony Nizetich for Vincent Thomas (California) Ray Holmes for Frank Cullen (Idaho) Robert Schoning for Ed Huffs Schmidt (Oregon)

2. New Advisors were introduced and confirmed, and the following alternates were approved for members of the Advisory Committee who were unable to attend:

Paul McKeehan appointed to replace Ray Welsh (California)

Wilbert M. Chapman for Charles R. Carry (California)

James Parker for Arthur Paquet (Oregon) William S.

Gilbert for Bjarne Nilsen (Washington)

3. J. Thomas Barnaby was appointed Consultant to replace Milton C. James who had resigned.

4. Reports from the Executive' Director and Treasurer were received and approved. The Treasurer's report for calendar year 1966 is reproduced in a subsequent section of this report.

5. Executive Director Verhoeven announced that the cooperative research program set forth in Resolution No. 1 of 1965 to collect information on crabs, shrimp and bottomfish in the Brookings, Crescent City and Port Orford areas actually got underway in January 1966 and would be continued for at least two years with the aid of PMFC funds to match federal funds derived from Public Law 88-309. He also called attention to the progress report by John Glude on studies of causes of oyster mortalities on the Pacific Coast which were initiated by Resolution No. 11 of 1964. Copies of the report, "Summary of Panel Discussion of Progress of Pacific Coast Oyster Mortality Investigations" were distributed.

6. Mr. E. S. Marvich acknowledged receipt by Alaskans of the excellent letter written by Executive Director Verhoeven setting forth the advantages to Alaska, the advantages to PMFC should Alaska join the Compact, and the cost for Alaska's participation. Because the election in Alaska had been so recent, it was impossible to predict the final decision on joining PMFC.

7. Mr. Donald E. Kauffman, Director of Research, Washington Department of Fisheries, as Chairman of the Research

Staff, introduced the speakers who gave the following reports which had been prepared with the cooperation of Canada and PMFC's member States:

Henry O. Wendler — Status of the 1966 Pacific Coast Albacore Fishery
Herb C. Tegelberg — Status of the Pacific Coast Dungeness

Crab Fishery
Gene DiDonato — The Status of the Trawl Fisheries of the

Pacific Coast, 1966
Gene DiDonato — Status of the 1966 Pacific Coast Troll

Salmon Fishery
Herb C. Tegelberg — Status of the Pacific Coast Pink Shrimp Fishery

Frank Haw — Status of the Ocean Sport Salmon Fishery (prepared by Raymond M. Buckley)

None of the above 1966 status reports will be reproduced as they have been superseded by the 1967 status reports which are reproduced herein.

8. Mr. William A. Williams, Jr., Chief, Desalting Branch, U. S. Atomic Energy Commission, Gaithersburg, Maryland discussed, "Nuclear Power and Desalting." Copies of his talk were distributed at the meeting and it also appears as an appendix to this report. A summary of the questions and answers which followed his presentation was included in the minutes of the meeting.

9- Mr. Donald R. Johnson, Regional Director, Bureau of Commercial Fisheries, Seattle, lead off the panel discussion, "Fishing off the Pacific Coast of North America by Foreign Fishermen." Copies of his talk, "Foreign Fishery Activities in the North Pacific Ocean and Bering Sea," were distributed.

Other speakers on this panel and the subjects of their presentations were as follows:

Mr. M. P. Houghton, Chief of the Conservation and Protection Branch of the Department of Fisheries of Canada discussed the status of foreign fishing, surveillance and negotiations off the Pacific Coast of Canada;

Mr. Donald R. Johnson — "Status of Negotiations with the Russians";

Dr. Richard Van Cleve, Dean, College of Fisheries, University of Washington spoke of the need for good catch and effort data and other fishery information;

Mr. George Johansen, Secretary-Treasurer, Alaska Fishermen's Union, Seattle—"Negotiations with Soviet Russia on Pacific Coast Ground Fish";

Mr. Harold E. Lokken, Manager, Fishing Vessel Owner's Association, Seattle, and member of PMFC's Advisory Committee explained negotiations and international law;

Dr. W. M. Chapman, Director, Division of Resources, Van Camp Sea Food Company, Division of Ralston Purina Co., San Diego, discussed the need for adequate financing of programs to monitor fisheries;

Mr. Donald E. Kauffman, Director of Research, Washington Department of Fisheries, Olympia, "Programs to Monitor Conditions of Stocks and Effects of Fishing"; and

Mr. Don Cole, Staff Counsel, U. S. Senate Committee on Commerce, Washington, D. C. — "Status of Legislation to Conserve Fish Stocks and Encourage Fishing by American Fishermen." Since copies of these latter presentations were not available for distribution at the meeting, they were included in the minutes along with the questions and answers that followed each.

Action on 1965 Resolutions

The following information regarding the actions taken by the Commission or its staff was sent to all Commissioners, Advisers and Research Supervisors by October 20, 1966, in compliance with Resolution No. 10, "Report of Actions Taken on Last Year's Resolutions." It also appeared as Appendix A to the Report of the Executive Director on November 17, 1966. The resolutions are referred to in numerical order. Missing numbers are the result of rejecting or tabling of correspondingly numbered proposals at the 1965 Annual Meeting.

Resolution 1, Port Sampler in Crescent City-Brookings-Port Orford Area to Collect Crab, Shrimp and Bottomfish Data — Cooperative Research: The project outlined by this 1965 resolution was begun in January 1966 under the general supervision of the Menlo Park Laboratory of the California Department of Fish and Game. PMFC has pledged cooperative research funds in the amount of \$6,331 to be used as matching money for federal PL 88-309 funds (Commercial Fisheries Research and Development Act of 1964). To date, some valuable information has been collected which will be of interest to other areas where Dungeness crab and pink shrimp fisheries exist as well as to California and Oregon.

The project will be continued until some time in 1968, at which, time a final progress report will be presented in "Appendix 2—Cooperative Research" to PMFC's 1968 Annual Report.

Resolution 3, Executive Committee's Term of Office: In compliance with this resolution, the newly-elected Executive Committee members at the 1965 Annual Meeting took office on November 20, 1965, to serve until the next election on November 18, 1966.

Resolution 4, Water Diversion: Copies of this resolution were sent to:

All members of Pacific Coast Congressional Delegations

Governors of California, Idaho, Oregon, Washington and Alaska

Secretaries of the Departments of Health, Education and Welfare; Interior; and Agriculture

Office of Chief of Engineers; and Office of North Pacific Division, U.S. Army, Corps of Engineers

Commissioner and Sacramento Office of the Bureau of Reclamation

Chairmen of the Federal Power Commission, the Columbia Basin Inter-Agency Committee, CBIAC Coordinated Planning Subcommittee, and the Western States Water Council

Professor Ralph W. Johnson (University of Washington Law School)

Technical Staff on Columbia-North Pacific Study Program

State Conservationist (for Oregon) of the U.S. Soil Conservation Service

Portland Office of U.S. Public Health Service

Regional Coordinator (Portland) U.S. Department of the Interior

Senator Moss of Utah (who is interested in the NAWAPA Plan)

The many replies received in response to this resolution promised to keep the welfare of fish and wildlife in mind when diversion projects are considered. PMFC received notice of many meetings regarding water usage, some of which the Executive Director attended as follows:

Columbia Basin Inter-Agency Committee to discuss a study of the water needs of the Columbia North Pacific Region, Portland, Oregon, December 14, 1965—attended

Columbia Plateau Resources Council, Spokane, Washington, February 25-26, 1966—attended

Washington State Legislative Interim Committee on Water Resources, Vancouver, Washington, March 12, 1966—attended

California Resources Agency Conference, Coronado, California, March 17-19, 1966—attended

Columbia River Water Congress, Wenatchee, Washington, April 1-2, 1966—did not attend

Columbia Basin Inter-Agency Committee to discuss water quality, Seattle, Washington, June 15, 1966—attended

Columbia Basin Inter-Agency Committee to discuss Columbia North Pacific Study, Boise, Idaho, September 29, 1966—did not attend

Inland Empire Waterways Association, Walla Walla, Washington, October 17-18, 1966—did not attend

Notice may have been received of additional meetings regarding water usage which were not attended by the Executive Director. One can readily infer that if a person tried to attend all the numerous meetings on this subject he would have little time for other work. In fact, this is exactly the situation that many fishery agencies face when participating in studies of water-usage projects with construction agencies. Construction agencies such as the Bureau of Reclamation and the Corps of Engineers have received large appropriations to study the feasibility and to plan various water-usage projects. Meanwhile, the fishery and game agencies are requested to provide information relative to those projects or forever hold their peace. An example of such a problem is the Columbia North Pacific Study. The pertinent state fish and game agencies were only recently told that it was to their interest to supply necessary fish and game information for this study by a certain date. The bigger-staffed and better-funded federal construction agencies have known of and have had members of their staffs assigned on a full-time basis to the Columbia North Pacific Study for some time. Just where the state fish and game agencies will find the personnel and the funds to compile the data requested of them in the time allotted is a difficult question to answer. The interests of fish and wildlife in water-usage projects are being continually put in a position of default by promoters of such projects.

The Washington State Department of Fisheries introduced the following resolution at a meeting of the Water Resource Council in December 1965. The Department intends to use this resolution at any and all water-use meetings such as CBIAC, legislative hearing on water resources, Corps of Engineer meetings, etc.

"Use of Water by Food Fish and Game Fish is a
Prime and Beneficial Use"

"WHEREAS, water resource conservation, enhancement, development, and utilization are pressing subjects of international, national, and state concern, and

"WHEREAS, the State of Washington has a \$100,000,-000.00 annual food fisheries value supporting a capitalized investment value of \$1,300,000,000.00 which depends on good quality and sufficient quantity of fresh water and its underlying gravel beds, and

"WHEREAS, these fishery values are subject to annihilation, destruction, and attrition if the current rate of water use for power, water storage, irrigation, and industrial development continues, and

"WHEREAS, fishery values are renewable and self-perpetuating if managed wisely, and

"WHEREAS, water and its underlying gravel are limited and not replaceable unless managed wisely,

"NOW, THEREFORE, BE IT RESOLVED, that national and state policy declared the use of water by fish as a prime use, a beneficial use, and that the fishery resources which depend on water and gravel be assigned their proper place or priority in comprehensive water development plans, usage, and concepts."

Resolution 5, Hake Fishery: Copies of this resolution were sent to the fishery agencies of California, Oregon and Washington, the U.S. Bureau of Commercial Fisheries and to research personnel on their staffs. The Bureau of Commercial Fisheries and the (California) Marine Research Committee, who have programs for hake, were asked to keep the Executive Director advised of their progress so he might act as liaison between the various States and BCF and MRC rather than establish a third group or program. The resolution was discussed at the March 29-30 meeting of PMFC's Research Staff and also at the June 28-30 meeting of the Technical Subcommittee of the International Trawl Fishery Committee.

At the March meeting it was reported that the Bureau of Commercial Fisheries had two programs in progress in the Pacific Northwest Area. One was an exploratory survey by the *John N. Cobb*, with mid-water trawls to define distribution and abundance of hake. Cruise reports on this program have been issued through September 2, 1966, and another is due on the *Cobb's* most recent cruise off Oregon, Washington and British Columbia during the approximate period September 19 to October 14. Length, sex, age (otoliths) and food (stomachs) samples have been taken during these cruises. The other program was gear research with simulated commercial fishing being conducted with the *Western Flyer* and *St. Michael*. This program is to be continued into 1967 with increasing amounts of time being devoted to anchovy. The May 1966 issue of *Pacific Fisherman* reported that the *St. Michael* was fishing hake commercially in Puget Sound. Biological data are being collected from the fishery in Puget Sound, and as of September the catch by 6 boats in the Sound totalled nearly 6 million pounds.

The Seattle and La Jolla staffs of BCF and the staff of the CDFG undertook a cooperative survey off Southern California this spring to determine the age composition and abundance of the hake spawning stock, but the undertaking was rather unsuccessful because of vessel operation and gear problems encountered by the *David Starr Jordan*, *Alaska*, *John N. Cobb*, and *Puritan*. Information on hake eggs and larvae is being collected in connection with the sardine and anchovy program of the California Cooperative Oceanic Fisheries Investigations.

The subject of limited entry into the hake fishery and a report on hake fishing in Puget Sound were discussed. A system of catch quotas rather than limitations on the numbers of boats seems to be the only acceptable device for limiting the fishery in relation to the optimum sustainable yield. The Russians have stated that their catch of hake off this coast as of July was 100 million pounds and that their goal for this season was 200 million pounds. Two hundred million pounds was BCF's estimate of the total annual maximum sustainable yield from this resource. The recent passage of the U.S. 12-mile fishing limit and further talks with the Russians may make consideration of catch quotas more meaningful than it has been to date.

At the June meeting, a coast-wide tagging program utilizing Commercial Fisheries Research and Development Act funds was suggested, but it was concluded that this should be deferred until a satisfactory tag for hake is developed and the U.S. hake

fishery is of sufficient magnitude to result in an adequate number of recoveries. BCF is searching for a satisfactory tag. The Canadian representatives reported that Canadian fishermen feel that the hake fishery would not be profitable for them. Information on the abundance of hake in the Strait of Georgia is nonexistent.

In July the plant built by Pacific Protein, Inc., at Aberdeen, Washington to process hake, began operation. The plant's production was limited by the inconsistent fishing success of its 3 to 4 vessels which only caught slightly over 3.7 million pounds due to the intense fishing effort and the pre-emption of the grounds by large Russian fishing vessels. BCF collected biological data at this plant. The U.S. Economic Development Administration approved a \$70,000 grant to help determine the economic feasibility of a hake fishery off Washington. Chartered trawlers were used to determine: (1) areas of high concentration of Pacific hake during each stage of the fishing season; (2) most productive type of gear and fishing technique; (3) best technique for removing catch from gear; (4) best method for handling catch on board vessels; (5) best method of unloading catch; (6) most desirable size and most efficient use of crews; and (7) commercial catch rates and production costs per ton of hake. The catches by the chartered trawlers were landed in Aberdeen.

Resolution 7, Losses of Anadromous Fish: Copies of this resolution were sent to members of the Congressional Delegations and to the Governors of Idaho, Oregon and Washington. Copies were also sent to Commissioner of Fish and Wildlife Service, Director of the Bureau of Commercial Fisheries, Director of the Bureau of Sport Fisheries and Wildlife, Commissioner of Bureau of Reclamation, -Secretary of the Interior, Chairman of the Federal Power Commission, and to Chief of Engineers and North Pacific Division Engineer (U.S. Army, Corps of Engineers).

In an effort to determine the causes and where the losses of anadromous fishes are occurring at Columbia River dams, the Department of the Interior contributed \$59,000 from its fiscal-year-1966 funds: \$34,000 for determination of the feasibility of marking fish with sonic tags, and \$25,000 for a tagging study related to the Indian fishery. An additional \$4,000 for the latter study was to be obtained from 1967 fiscal-year funds.

A \$249,000 supplemental appropriation for fiscal 1967 by Congress for this problem was transferred to the Bureau of Commercial Fisheries effective July 1, 1966. The Corps of Engineers will add \$50,000 and the Department of Interior will add \$63,000 to the \$249,000. The total \$362,000 was allocated as follows: \$29,000 to the effects of water supersaturated with nitrogen, \$4,000 to the study of the Indian fishery mentioned above, and the \$329,000 remainder to a sonic tag program.

The Bureau of Commercial Fisheries anticipates that its 1968 fiscal-year budget will contain another \$249,000 plus \$50,000 in FY-1968 funds from the Corps of Engineers for continuation of the investigation.

Resolution 8, Wild Rivers Legislation: Copies of this resolution were sent to the Congressional Delegates from Alaska, California, Idaho, Oregon and Washington and to the Governors of California, Idaho, Oregon and Washington. Copies were also sent to all members of the Senate Committee on Interior and Insular Affairs.

The Senate passed S. 1446, "Wild Rivers Act," on January 19, 1966, but the House Committee on Interior and Insular Affairs did not act on the bill. On May 9, 1966, Congressman Saylor (Pennsylvania) introduced H. R. 14922, "Scenic Rivers Act." Wild Rivers legislation was not passed by the Eighty-ninth Congress.

Resolution 9, Willamette Falls Fishway: Members of the Congressional Delegations and the Governors of California, Idaho, Oregon and Washington were sent copies of this resolution. Copies were also sent to the Bureau of the Budget, the Secretary of the Interior, the Commissioner of the Fish and Wildlife Service, the Chairman of the Senate Appropriations Committee, the Chairman of the House Appropriations Committee, and the Chairman of the Subcommittee on Interior and Related Agencies of the House Appropriations Committee.

Phase A, the entrance structure and flume sections of the cul-de-sac leg of the fishway, is now under construction and is expected to be completed in time to pass fish in the spring and fall of 1967 with the aid of a temporary exit.

Recipients of the resolution were advised that the cost of Phase A would be \$705,338 instead of the \$600,000 provided in the 1966 federal budget for this purpose and that Portland General Electric was contributing 16.3 per cent of the phase's total cost. They were also advised that because of rising costs Phase B, the remainder of the fishway, would cost about \$2,400,000 and that PMFC was anxious that \$2,000,000 be provided in the 1967 federal budget. Private industry would pay the remainder or 16.3 per cent of the cost of this phase.

However, only \$750,000 of the needed funds for Phase B were provided in the 1967 budget of the Interior Department. This has made it necessary to divide Phase B into two increments. The first will be completion of the cul-de-sac leg and a common exit for all three legs of the fishway. The \$750,000 appropriated for fiscal year 1967 will be used for this purpose, but it will be necessary to ask for additional funds for fiscal year 1968 to permit completion of the second increment, the two main falls entrances and legs of the fishway.

Resolution 10. Report of Actions Taken on last Year's Resolutions: "Appendix A" to the Director's Annual report was distributed in October in compliance with this resolution.

Resolution 12, Urge Alaska to Join Compact: The mailing of this resolution to the Governor of Alaska was delayed pending consideration of an alternate to the present formula for calculating membership contributions. However, the Executive Committee on June 21 concluded that an acceptable alternate had not been found. The resolution with a transmittal letter, explaining the benefits to Alaska and to the Member

States of Alaska's participation in the Compact, was subsequently sent to the Governor and Department of Fish and Game of Alaska.

The State of Alaska sent Mr. Ed Marvich, Deputy Commissioner of Alaska Department of Fish and Game, to PMFC's 1966 Annual Meeting in November as an observer. Mr. Marvich reported at the meeting: Alaska was considering joining PMFC, but the disparity in membership contributions under the existing formula in the Compact was an inhibiting factor. The advantages to Alaska of membership in PMFC are obvious, and if the Governor of Alaska is kept advised of PMFC's efforts to adopt a more equitable formula Alaska's chances of joining will be improved. Alaska is most appreciative for past courtesies and excellent communications extended to it by PMFC.

Resolution 13, Oyster Drills and Oyster Seed Hatchery:

Copies of this resolution were sent to Pacific Oyster Growers Association, Oyster Institute of North America, Coast Oyster Company, Bureau of Commercial Fisheries (Seattle and Washington, D. C. offices), Washington Department of Fisheries, Oregon Fish Commission, California Department of Fish and Game, and the College of Fisheries of the University of Washington.

On March 8, 1966, the Washington Department of Fisheries held a seminar in Olympia on this subject which was attended by representatives from industry and federal and state fishery agencies. The subject was also discussed in Portland at the March 29-30 meeting of PMFC's Research Staff and again at the August 25-26 meeting in Tumwater of the Pacific Oyster Growers Association and the West Coast Division of the National Shellfisheries Association.

The consensus of the federal and state fishery agencies is that shellfish hatcheries are feasible and have a definite future in private industry, but that federal and state agencies should not attempt to produce shellfish seed for donation or sale to industry or other groups. The fishery agencies will be glad to render technical advice in the establishment and operation of hatcheries. There are four companies operating hatcheries on Long Island, New York. A fifth hatchery is in operation in Virginia with financial assistance from the Economic Development Administration. A private group is working on artificial propagation of abalone as well as oysters at Pigeon Point, California. Hatcheries are largely experimental, and there are still no "cookbook" methods which insure successful production. Both the Washington Department of Fisheries and the Bureau of Commercial Fisheries are doing research on artificial propagation of oysters. The latter agency will be glad to have oystermen and other persons receive training in artificial propagation of shellfish at its laboratory at Milford, Connecticut.

Resolution 15, To the Memory of Commissioner William O. Riley: A copy of this resolution was sent to Mrs. Riley and family.

Resolution 16, Amending the Columbia River Compact to Include the State of Idaho and Designating the Regulatory Agencies Under the Amended Compact:

Copies of this resolution, together with the statement read into the record by the Fish and Game Commissions of Oregon, were sent to Governors Evans, Hatfield and Smylie, respectively, of the States of Washington, Oregon and Idaho. Governor Evans replied that there were problems of equity involved which required study since all fishery resources of the Columbia River were not the common concern of the three States. He urged the Director of the Washington Department of Fisheries to cooperate in implementation of the resolution. Governor Hatfield remarked that inclusion of Idaho in the existing compact would be of little value since it pertains only to commercial fishing. He urged, instead, consideration of establishing a tri-state authority, involving all management agencies. Governor Smylie also acknowledged receipt of the resolution.

Aside from receipt of a copy of a letter of December 10, 1965, from Robert W. Schoning, Director, Oregon Fish Commission, to John R. Woodworth, Director, Idaho Department of Fish and Game, asking for suggestions on how to implement the resolution, plus receipt of a House Joint Memorial passed by the Idaho House of Representatives, PMFC has received little other information on this subject.

Resolution 17, Power Dam Moratorium: Copies of this resolution were sent to 538 addressees, including the President; Congressional Delegates and Legislators from California, Idaho, Oregon and Washington; Secretary of the Interior and Chairman of the Federal Power Commission.

This resolution reaffirmed the position taken by the Commission in Resolution No. 8 of 1963 which, in turn, differed from earlier resolutions or references to the general subject of power dam moratoria in that it "urged the Federal Power Commission to expedite the creation of adequate nuclear reactors to meet the electrical needs of the nation." In compliance with instructions from the Executive Committee, the Executive Director wrote the Chairman of the Atomic Energy Commission inviting him or his representative to speak on the subject of atomic-electric plants as substitutes for hydroelectric plants at the 1966 Annual PMFC Meeting. As a result, Mr. William A. Williams, Jr., Chief, Desalting Branch, Division of Reactor Development and Technology, Atomic Energy Commission, addressed PMFC on November 17, 1966, on nuclear power and desalting. The text of his talk is presented in the Special Reports section of this Annual Report.

Many recent newspaper articles describing the rapid progress and growth of nuclear energy plants for the production of electricity have pointed out that such growth will not be without problems for fish and wildlife. Conservation agencies will have to be alert to insure that adequate measures are taken to protect fish and wildlife at all pertinent installations. According to testimony before the Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries of the House of Representatives, (Miscellaneous Fisheries Legislation, Part 1, Serial No. 89-24, Committee on Merchant Marine and Fisheries, 1966,—see pages 174, 175,

190-199 and 214-219) the Atomic Energy Commission's position has been that its responsibility is to insure that the public is protected from radiation at nuclear plants, but that thermal pollution is not within its responsibility and authority. Some of these plants use large quantities of water for cooling and cause significant increases in temperature of the streams or other water systems into which the heated cooling water is discharged. On the Pacific Coast, there will be a policy to use nuclear plants for the production of firm power (electricity) and to reserve the hydroplants for peaking purposes. This could lead to large fluctuations and complicated or unusual patterns in water temperature and flow that salmon and trout cannot cope with and that fishery scientists may be unable to forecast.

The Department of Interior replied to the resolution that it would continue to evaluate the effects of projects on fish and wildlife regardless of whether the projects are energized by hydro, nuclear or fossil fuel means, but that the largest increases in electric energy production during the next 15 years would still be from fossil fuels and hydro sources. "In fact, by 1980 the Federal Power Commission estimates that only about 13 % of our electric energy will be generated by atomic power plants."

Resolution 18, Delta Facilities of the California Water Plan: Copies of this resolution, together with a transmittal letter, were sent to 187 addressees as follows:

California

Water Commission

Resources Agency Department of Water

Resources Department of Fish and Game'

« Assembly Fish and Game Committee

Natural Resources Committee Legislators

» - Governor

Other

Congressional Delegates from California, Oregon and Washington •

Chairmen of the Senate and House Committees on Appropriations

U.S. Bureau of Reclamation U.S.

Army Corps of Engineers.

At the suggestion of Governor Brown of California a second letter was sent on April 22 to the Chairman of the Senate Committee on Appropriations, and copies of the letter were sent to the Chairman of the Subcommittee on Interior and Related Agencies of the House Committee on Appropriations, and to the Congressional Delegates from California, Oregon and Washington.

The replies disclosed the following: The feasibility investigations of the plan for this project have been completed, and the Bureau of Reclamation is preparing a report. The necessary

legislation has been drafted and is ready for introduction. Congress, if it received the report, could act upon the project in 1967. The California Fish and Game Commission on January 14, 1966, adopted a resolution requesting authorization and funding of the peripheral canal.

Resolution 20, Seismic Operations: Copies of this resolution, plus the text of Resolution No. 16 of 1964, were sent to the West Coast Regional Oil and Gas Supervisor of the U.S. Geological Survey; the Pacific Southwest Regional Office, U.S. Bureau of Commercial Fisheries, and to the members of PMFC's Seismic Committee.

Resolution 21, Oil Drilling Practices: Copies of this resolution were sent to the same addressees as was Resolution No. 20, plus the following:

Director, Marine Geology and Hydrology, U. S. Geological Survey

Pacific Northwest Coordinator, U.S. Department of the Interior

Pacific Coast Outer Continental Shelf Office, U.S. Bureau of Land Management

U.S. Army District Engineers at San Francisco, Los Angeles, Seattle and Portland.

Washington State Oil and Gas Supervisor

Commissioner of Public Lands, State of Washington

Oregon State Department of Geology and Mineral Industries

Oregon State Division of Planning and Development

Oregon State Land Board

California State Division of Oil and Gas

California State Land Division

Richfield Oil Corporation

Shell Oil Company

Texaco Incorporated

Humble Oil and Refining Company

Standard Oil of California, Western Operations, Inc.

Resolution 22, Iron Canyon Dam, Sacramento River: The text of Resolution No. 19 from 1963 was appended to this resolution before copies of it were sent to the Senators and Congressmen from California, Idaho, Oregon and Washington; the Bureaus of Reclamation and Outdoor Recreation; the U.S. Departments of Agriculture and Interior; the U.S. Army Corps of Engineers; the Federal Power Commission, and the Governor of California.

On the basis of the replies, it appears that the Iron Canyon Dam is not economically justified and has been put in a deferred status. However, a large dam on the upper mainstem will continue to be an irresistible subject to water project engi-

neers. An investigation of the feasibility of alternatives, including projects on Cow and Cottonwood Creeks, was initiated in December 1964, and local interests favored the tributary projects over the Iron Canyon Project. The Corps of Engineers, Bureau of Reclamation and the State Department of Resources appear to be succeeding in obtaining funds for feasibility studies of the alternative four tributary projects. Opposition to Iron Canyon Dam and approval of the tributary projects are consistent with the Bureau of Reclamation's present and long-range plans.

Resolution 23, Commendation of News Media: The Idaho Daily Statesman and the Idaho Evening Statesman, both of Boise, were sent copies of this resolution. A copy was also sent the Boise Chamber of Commerce.

Resolution 24, Commendation to Idaho for Excellent Meeting: Copies of this resolution were sent to the Boise Chamber of Commerce and the Idaho Fish and Game Commission.

1966 Resolutions

Fourteen proposals for resolutions were received prior to or during the meeting. These were referred simultaneously to the Advisory Committee and Research Staff for their comments and recommendations to the Commission. Finally, on November 18 at the last business session, the 12 proposals cited below were adopted as resolutions by the Commission.

Proposal No. 7, "Amend Troll Fishing Season," was rejected.

Proposal No. 9, "Petrale Sole Limits," was tabled.

1. Effects of Water Usage on Water Temperature and Dissolved Oxygen Content

WHEREAS, the construction and operation of dams, irrigation projects, thermal-electric plants and other water, usage projects can modify and have in many instances modified the temperature regime and/or the dissolved oxygen content of streams containing salmon and trout, and

WHEREAS, in many instances these modifications have been detrimental to the existence of salmon and trout in those streams, as the seasonal warming of the waters in the spring has been delayed, the summer maximum water temperatures have been increased, the cooling of the waters in the fall has been delayed, and dissolved oxygen levels have been reduced, and

WHEREAS, in only a very few instances these modifications have been beneficial because the unique design or operation of certain water usage projects resulted in the abundant discharge of good quality cold water from the depths of reservoirs thereby reducing the summer maximum water temperatures of the project streams at a time when water temperatures therein might normally rise to critical values for the survival of salmon and trout, and

WHEREAS, salmon and trout are creatures whose life-history and behavior have evolved during countless eons so that migration, spawning, incubation and rearing occur at the proper times and places to permit survival and perpetuation of the species; consequently, they are creatures that cannot quickly adjust to unfavorable changes in their environment which threaten their continued existence,

THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission urges that all existing water-usage projects and all future water-usage projects on salmon and trout streams be evaluated as to their effects on the optimum water temperature regimes and dissolved oxygen requirements for the indigenous salmon and trout, so that these projects where possible, may be operated, modified, or designed to create optimum rather than critical water conditions, and

BE IT FURTHER RESOLVED, that the Federal Power Commission, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, and U.S. Soil Conservation Service require the modification and design of all dams operated or constructed under their jurisdiction to provide optimum water temperatures and dissolved oxygen levels for salmon and trout in streams containing these fish species.

2. Cooling Water from High Mountain Sheep Dam

WHEREAS, the area for the production of salmon and steelhead trout in the Snake River has been progressively reduced by the construction of dams, and

WHEREAS, dams have caused the water temperature in the portion of the river remaining accessible to salmon and steelhead trout to become in some instances unfavorably high for the survival and reproduction of salmon and steelhead trout, and

WHEREAS, the Federal Power Commission has granted a license to the Pacific Northwest Power Co., a private power company, to build and operate a hydroelectric dam at the High Mountain Sheep site on the Snake River, and

WHEREAS, a dam at this site can be designed and operated in such a manner that cool water could be discharged through the dam and powerhouse to improve water temperatures for the survival and reproduction of salmon and steelhead trout in the Snake River downstream from the dam,

THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission requests the Federal Power Commission to review the present license to insure that provision of suitably oxygenated cool water for the enhancement of existing salmon and steelhead trout runs is a definite requirement of the license, and

BE IT FURTHER RESOLVED, that if the present license is revoked, any subsequent license or authorization to build the dam shall include an unconditional requirement that the dam shall be designed and operated in such a manner that the water temperature of the Snake River downstream from the dam during the critical summer and fall months will be lowered and suitable dissolved oxygen level maintained for the enhancement of existing salmon and steelhead trout runs.

3. Fund Biological Studies as Part of Water Project Planning

WHEREAS, the North Coast and Central Valley streams of California and their tributaries are a major source of salmon which contribute to the commercial fishing industry of the entire Pacific Coast, and

WHEREAS, salmon and steelhead originating in these California streams are a major element in the multi-billion dollar recreation-tourist industry of the State of California, and

WHEREAS, the demand for salmon and steelhead by the commercial and sport fishing industries is great, and

WHEREAS, the Bureau of Reclamation of the U.S. Department of the Interior and the U.S. Army Corps of Engineers are now planning and propose to construct a massive system of dams and appurtenant facilities in the North Coast and Central Valley of California for flood control, water conservation and exportation and other purposes, and

WHEREAS, the proposed water developments would have a major impact on the salmon and steelhead resources, and

WHEREAS, little information is now available regarding the magnitude, characteristics and requirements of these resources upon which to formulate sound recommendations for their protection and enhancement, and

WHEREAS, the scope of water development planning by the Corps and the Bureau which encompasses the entire north-western part of California and the Central Valley will require a comprehensive biological investigation of these resources in order to plan properly for their protection, and

WHEREAS, it is essential that biological studies be initiated promptly to keep pace with the engineering and other aspects of project planning so that the studies may be integrated into the formulation of projects under the multiple purpose concept,

- WW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission does hereby request the U. S. Bureau of Reclamation and the U. S. Corps of Engineers to include sufficient funds in project costs to formulate and implement a comprehensive program of biological studies of the salmon and steelhead resources which would be affected by water developments now being planned by the Corps and Bureau for the North Coast and Central Valley streams of California for the purpose of providing essential information to plan for the protection and development of these resources in connection with said developments, and

BE IT FURTHER RESOLVED, that copies of this resolution be transmitted to the Secretary of the Interior; the House Committee on Merchant Marine and Fisheries; Chief of the U. S. Army Corps of Engineers, Washington, D.C.; U. S. Army Corps of Engineers, South Pacific Division, San Francisco District, Sacramento District, Los Angeles District and Portland, Oregon District; Commissioner, U. S. Bureau of Reclamation, Washington, D. C, with copies to the Bureau's branch offices in Sacramento, Eureka, and Napa, California;

Commissioner, Fish and Wildlife Service, Washington, D. C; Director of the Bureau of Sport Fisheries and Wildlife, Washington, D. C; Governor of the State of California; and Director of the California Department of Fish and Game.

4. Public Law 88-309 — Commercial Fisheries Research and Development Act of 1964

WHEREAS, the Commercial Fisheries Research and Development Act was enacted in 1964, and

WHEREAS, the primary purpose of the act is to supplement and, to the extent practicable, increase the amounts of state funds available for commercial fisheries research and development, and

WHEREAS, Section 4 (a) of the Act authorizes \$5,000,000 to be appropriated for each of the 5 fiscal years following enactment, and

WHEREAS, Congress appropriated only \$4,100,000 each year for fiscal 1966 and 1967 under Section 4 (a), and

WHEREAS, the several states have submitted many needed research and development projects requiring funding in excess of these appropriations,

BE IT THEREFORE RESOLVED, that the PMFC does hereby respectfully petition the Secretary of the Interior, the Director of the Bureau of Budget, and the Congress of the United States, and particularly the Appropriations Committees of the Senate and House of Representatives, to assure that the full allowable amount of \$5,000,000 be appropriated for fiscal 1968 and subsequent years.

The Executive Director of the PMFC shall transmit copies of this resolution to the Secretary of the Interior, the Director of the Bureau of Budget, to the members of the Congressional Delegations of the States of California, Idaho, Oregon, Washington and Alaska, the Chairmen of the Appropriations Committees, the Commissioner of the Fish and Wildlife Service, the U. S. Department of the Interior and the Governors of the aforementioned States.

5. Public law 89-304 — Anadromous Fish Act of 1965

WHEREAS, the Anadromous Fish Act was enacted in 1965, and

WHEREAS, the basic purpose of this Act is conservation, development and enhancement of the nation's anadromous fish, and

WHEREAS, Section 4 (a) of the Act authorizes to be appropriated for the period ending June 30, 1970, not to exceed \$25,000,000 to carry out the purposes of this Act, and

WHEREAS, \$5,000,000 was appropriated for this section during fiscal 1967, and

WHEREAS, the U. S. Bureau of the Budget has made available to the Department of the Interior for allocation to the States only \$2,000,000 of this sum,

BE IT THEREFORE RESOLVED, that the remainder of the appropriation of \$5,000,000 for fiscal 1967 be immediately released to the Secretary of the Interior for apportionment to the several States, and

BE IT FURTHER RESOLVED, that the PMFC hereby respectfully petition the Secretary of the Interior, the Director of the Bureau of Budget, and Congress of the United States, and particularly the Appropriations Committees of the Senate and House of Representatives to assure that a sum of 16,700,000 be appropriated for fiscal 1968 as authorized under Section 4 (a) of the Anadromous Fish Act of 1965.

The Executive Director of the PMFC shall transmit copies of this resolution to the Secretary of the Interior, the Director of the Bureau of Budget, to the members of the Congressional Delegation of the States of California, Idaho, Oregon, Washington and Alaska, the Chairmen of the Appropriations Committees, the Commissioner of the Fish and Wildlife Service of the U. S. Department of the Interior and the Governors of the aforementioned states.

6. Willamette Falls Fishway

WHEREAS, the Willamette Falls, at Oregon City, Oregon, have been historically a serious obstruction to upstream passage of salmon and steelhead, and whose ascent of the falls has been made additionally difficult by industrialization of the falls, and

WHEREAS, the necessity of providing easy and free passage for fish at the structure in their upstream trip to the under-utilized spawning and rearing areas of streams in the Willamette Basin is recognized, and

WHEREAS, the proposed fishway over Willamette Falls will improve the economies of the States of Oregon and Washington by increasing the annual escapement of adult salmon and steelhead by an estimated 240,000 fish which will produce a catch in all fisheries combined with an estimated value of nearly \$4,000,000 annually, and

WHEREAS, millions of juvenile salmon have been liberated, and thousands of adult salmon have been transplanted for natural spawning above the falls in anticipation that an adequate fish passage structure would be available to their returning progeny, and

WHEREAS, in the past the funds appropriated for an improved fishway at the falls have been insufficient to permit completion of the fishway making it necessary to accomplish the construction in phases, and

WHEREAS, construction of Phase A is complete and a contract has been awarded for Phase B, entailing combined expenses to the Bureau of Commercial Fisheries and Portland General Electric Company of \$1,700,000, and

WHEREAS, an additional appropriation of \$1,500,000 is urgently needed to complete construction of upstream passage facilities, (Phase C), and

WHEREAS, the Pacific Marine Fisheries Commission feels it is essential that these funds be provided in fiscal 1968 in order to assure that the adult salmon and steelhead returning to

the Willamette River will have maximum access to the under-utilized spawning areas,

NOW, THEREFORE BE IT RESOLVED, that the Pacific Marine Fisheries Commission does hereby respectfully petition the Secretary of the Interior, the Director of the Bureau of Budget, and the Congress of the United States, and particularly the Appropriations Committees of the Senate and the House of Representatives, to assure that the necessary funds are provided by the Congress in fiscal year 1968, so that completion of the final portion of the urgently needed Willamette Falls Fishway may be accomplished expeditiously.

The Executive Director of the Pacific Marine Fisheries Commission shall transmit copies of this resolution to the Secretary of the Interior, the Director of the Bureau of Budget, to the members of the Congressional Delegations of the States of California, Idaho, Oregon and Washington, the Chairmen of the Appropriations Committees, the Commissioner of the Fish and Wildlife Service of the U. S. Department of Interior, and the Governors of the PMFC member States.

8. Atomic Energy Commission's Surplus Property

WHEREAS, the Columbia River is an important contributor of salmon to the coastal fisheries of the United States and Canada, and

WHEREAS, property and equipment to be disposed of as surplus at the Hanford Atomic Energy Commission Reservation has a great potential for salmon rearing, and

WHEREAS, the property and accompanying equipment must be held for at least a year for a test group of salmon to be reared to determine that potential, and

WHEREAS, time is needed to explore financial, legal, personnel and operational problems involving both the pilot study and final acquisition,

THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission requests that the Atomic Energy Commission retain that part of the "F" area and such equipment as requested by the Washington Department of Fisheries through the calendar year of 1967 for the rearing of salmon should a pilot project prove feasible.

10. Shellfish Toxin Study

WHEREAS, the commercial and recreational uses of shellfish resources of Alaska, Washington, Oregon and California are threatened because of shellfish toxicity, and

WHEREAS, there is a strong need for an immediately escalated program of studies of ecology and shellfish toxins so that the resources can ultimately be safely utilized with resultant gains to the economy and esthetics of the States and the Nation, and

WHEREAS, there is precedent for special scientific studies by the state conservation and management agencies in conjunction with shellfish mortality studies of the United States Government,

THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission does hereby respectfully petition the Secretary of Health, Education and Welfare, the Secretary of the Interior, the Congress of the United States, and particularly the Appropriations Committees of the United States House of Representatives and the Senate to assure that, through the offices of the United States Public Health Service and the Bureau of Commercial Fisheries, necessary funds are provided for scientific studies of the marine and estuarine environment of the Pacific Coast States to determine the physical, chemical, and biological factors in the production of toxins and their accumulation and elimination in shellfish species, and

BE IT FURTHER RESOLVED, that the Executive Director of the Pacific Marine Fisheries Commission shall transmit copies of this petition to the Secretary of Health, Education, and Welfare; the Secretary of the Interior; to the members of the Congressional Delegations of the States of Alaska, Washington, Oregon, and California; and the Chairmen of the House and Senate Appropriations Committees; and Governors of PMFC member States.

11. Foreign Fishing

WHEREAS, the domestic fisheries of the Pacific Coast States form an important part of the economy of the United States as well as the coastal States, both from the standpoint of a food supply for the country and provision of a livelihood for many of its citizens, and

WHEREAS, these fisheries have been maintained over the years by severe restraints placed upon them by domestic regulations and other restrictions, and

WHEREAS, these fisheries, if they are to be preserved for the future, must be given protection to the greatest degree possible by the United States Government as well as by the individual States involved, and

WHEREAS, these fisheries now are severely threatened by foreign fishermen operating without the restraints under which the, domestic industry operates, and

WHEREAS, if emergency measures are not taken quickly by the United States Government these fisheries may be destroyed,

THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission petition the United States Government on a basis of high priority:

- a. To provide quickly the emergency funds needed by the Bureau of Commercial Fisheries and the state fishery agencies (through appropriate means) to quickly and sharply intensify the ocean research needed to assess this situation thoroughly, particularly with respect to the trawl fish resources off the Pacific States in the areas now being fished heavily by Asiatic trawl vessels,
- b. To enter at once into negotiation with the affected governments with the objective of providing international mechanism suitable to attend to these conservation problems and to which any nation fishing in this area can adhere and be bound by,

- c. To enter into negotiation at once with Russia and Japan, pursuant to the principles and provisions of the "Convention on Fishing and the Conservation of the Living Resources of the High Seas," to suspend or cut back sharply their fishing effort in this area to such a level as will not damage these resources, or these American industries, until the situation can be given adequate scientific study, and
- d. If the governments of Russia and Japan are unwilling to do so with sufficient speed, to proceed with the establishment of any regulations appropriate under the principles and provisions of the "Convention on Fishing and the Conservation of the Living Resources of the High Seas" to conserve these resources and industries, and

BE IT FURTHER RESOLVED, that the Executive Director of the Pacific Marine Fisheries Commission shall transmit copies of this petition to the Secretary of State, to the Secretary of the Interior, to the Secretary of the Navy, to the Chairman of the National Council on Marine Resource and Engineering Development, to the members of the Congressional Delegations of the States of Alaska, Washington, Idaho, Oregon and California; and to the Chairmen of the United States Senate Committee on Commerce and House Committee on Merchant Marine and Fisheries, as well as to the Governors of PMFC member States.

12. (No. 8 of 1965) Wild Rivers Legislation

WHEREAS, there are rivers in the United States which possess unique water conservation, fish, wildlife, scenic, and outdoor recreation values of present and potential benefit to the American people, and

WHEREAS, there is a need to retain access to these rivers for the American people, and

WHEREAS, there are some free-flowing rivers in the United States, and

WHEREAS, there is a need to preserve selected rivers or sections thereof in their free-flowing conditions to protect the water quality of such rivers and to fulfill other vital national conservation purposes, and

WHEREAS, the Salmon River and the Middle Fork of the Clearwater River fall in the category for "Wild Rivers," and

WHEREAS, the Salmon River is one of the major salmon spawning streams of the Columbia River system, and

WHEREAS, both the Salmon and Clearwater Rivers are major producers of steelhead in the Columbia River system, and

WHEREAS, it is necessary that these rivers be maintained in their free-flowing state to preserve these resources,

NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission recommends to the Second Session of the Eighty-ninth Congress that Senate Bill 1446 be passed, and

BE IT FURTHER RESOLVED, that the Salmon and Clearwater Rivers remain on the active list of rivers to be included in the "Wild Rivers System" and that these rivers not be placed on a list of study rivers for inclusion at a later date if approved by the study committee, and

BE IT FURTHER RESOLVED, that the Klamath River be included in the list of streams to be subsequently considered as "Wild Rivers," and

BE IT FURTHER RESOLVED, that copies of this resolution be sent to all members of the Pacific Coast Congressional Delegations including the Delegation from Idaho and to all members of the Senate Committee on Interior and Insular Affairs and to the Governors of Idaho, Oregon, Washington and California.

13. Delta Facilities of the California Water Plan

WHEREAS, during the annual meeting held in 1964, the Pacific Marine Fisheries Commission adopted Resolution No. 20 on Delta facilities, and at its 1965 annual meeting reaffirmed the Resolution as No. 18,

NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission in session at Seattle again reaffirms the position stated by the Commission in Resolution No. 20, titled "Delta Facilities of the California Water Plan" to wit:

"WHEREAS, the State of California and the Federal Government will construct engineering facilities in the Sacramento-San Joaquin Delta to carry out the California Water program and to further develop the Central Valley Project, and

"WHEREAS, the king salmon resources of the Central Valley of California must pass successfully through the Sacramento-San Joaquin Delta, and

"WHEREAS, man's activities have already done considerable damage to the salmon resources, and there is great need to protect and rebuild these resources, and

"WHEREAS, these king salmon runs are of major importance to the salmon fisheries in the ocean off California and also contribute to ocean fisheries off Oregon and Washington, and

"WHEREAS, the Peripheral Canal plan is the only known engineering plan which will protect existing king salmon resources passing through the Sacramento-San Joaquin Delta and provide opportunities for passage through the delta of increased king salmon runs thereby enhancing said salmon runs, and

"WHEREAS, existing conditions in the delta are detrimental to the San Joaquin River salmon runs,

"NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission fully support the selection of the Peripheral Canal Plan by the California Department of Water Resources and the United States Bureau of Reclamation and Army Corps of Engineers and request that construction of this project be completed at the earliest possible time to protect and enhance the salmon resources of the Central Valley of California, and

"BE IT FURTHER RESOLVED, that copies of this resolution be forwarded to: California Water Commission, Resources Agency of California, California Department of Water Resources, California Department of Fish and Game, U. S. Bureau of Reclamation, U. S. Army Corps of Engineers, California Assembly Fish and Game Committee, California Senate Natural Resources Committee, all members of California State Legislature, and appropriate members of Congress."

14. Commendation of Washington Department of Fisheries

WHEREAS, the 1966 annual meeting of the Pacific Marine Fisheries Commission held in Seattle, Washington has been a most constructive and successful deliberation, and

WHEREAS, the Washington Department of Fisheries has acted as official host in a most outstanding and cordial manner thus assuring the success of our discussions, and

WHEREAS, the cordiality of this meeting was further heightened by the social occasion hosted by the Washington Advisory Committee and the fishing industry, A

NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission does hereby express its sincere appreciation for the foregoing assistance and hospitality tendered so graciously during the course of its deliberations and pleasant stay in Seattle. In addition, the Commission hereby expresses special recognition to PMFC's staff and Washington Department of Fisheries representatives and personnel for their long hours of faithful duty in manning the typewriters, duplicating equipment and the numerous essential details which contributed to the success of the meeting.

Election of Officers, Etc.

The following were elected officers for 1967:

J. Pat Metke, Chairman
Walter T. Shannon, First Vice-Chairman
John R. Woodworth, Second Vice-Chairman
Thor C. Tollefson, Secretary

The time and place of the 1967 Annual Meeting were not settled at Seattle, except that it was agreed the meeting would be in Oregon. Subsequently, November 30 to December 1 and Salishan Lodge at Gleneden Beach, Oregon were selected.

Budget

A budget in the amount of \$89,214 was adopted for the biennium July 1, 1967 to June 30, 1969. An anticipated surplus of \$5,014 from the previous biennium reduced the amount to be raised by membership contributions to \$84,200 or \$42,100 per year.

PACIFIC MARINE FISHERIES COMMISSION BUDGET

Biennium July 1, 1967 to June 30, 1969

CALIFORNIA, IDAHO, OREGON AND WASHINGTON

Salaries and Wages:	
Executive Director	\$27,120
Office Secretary	12,522
Part-Time and Temporary	7,600
General Operations and Maintenance:	
Office Supplies	2,650
Telephone and Telegraph	850
Postage, Freight, Express	1,250
Rent, Office	2,216
Premiums, Bonds, Insurance	338
Audit Fees	630
Private Car Mileage	400
Fares, Plane, R. R., Bus	2,300
Meals and Lodging	1,600
Library Supplies	70
Social Security	1,708
Retirement Annuity	2,890
Medical Insurance	240
Miscellaneous	212
Annual and Research Meetings:	
Meeting Rooms	600
Advisory Committee, Travel, etc.	6,907
Commissioners, Travel, etc.	3,381
Administrative and Research Staff	7,500
Sound and Recording	300
Publications:	
Annual Reports	5,000
Data Series	500
Cooperative Research*	
Capital* Outlay:	
Office Furniture and Equipment	400
Miscellaneous	
	30
Total Estimate	\$89,214
Surplus from Previous Biennium	5,014
	\$84,200

*Unexpended funds for this purpose are available from allocation in previous biennium.

PROPORTIONATE CONTRIBUTIONS BASED ON TOTAL ANNUAL CONTRIBUTIONS OF \$60,200

Member	5-Year Average*	% of Contribution	Annual Contribution
California	\$51,457,685	66.426	\$26,600
Washington	18,501,004	23.883	9,600
Oregon	7,507,405	9.691	3,900
Idaho	Minimum	—	2,000
		100.000	\$42,100

*Annual value of catch, 1960-1964 inclusive.

FINANCES

The Commission receives its financial support from legislative appropriations made in accordance with Article X of the interstate Compact in which the signatory states have agreed to make available annual funds for the support of the Commission in proportion to primary market value of the products of their fisheries as recorded in the latest published reports (five-year average), with the provision that no state shall contribute less than two thousand dollars per annum and the annual contribution of each state above the minimum shall be figured to the nearest hundred dollars.

STATEMENT OF RECEIPTS AND DISBURSEMENTS

January 1, 1966 to December 31, 1966

CASH BALANCE December 31, 1965

(Ending Balance 18th Annual Report).....\$32,220.68

RECEIPTS: Contributions by Member States

California	\$26,600.00	
Idaho	2,000.00	
Oregon	3,800.00	
Washington	10,500.00	42,900.00

REFUNDS:

United Airlines	3.68	
Leo T. Sides Travel Service	7.66	11.34

DISBURSEMENTS:

Salaries and Wages:	
Executive Director, Consultants, Treasurer, Office Secretary, and Temporary	\$21,113.50
Office Supplies	1,056.48
Library Supplies	17.35
Telephone and Telegraph	496.48
Postage, Freight, Express	506.05
Rents: Headquarters Office	1,114.08
Premiums: Fidelity Bonds, Fire Insurance, Workmen's Compensation Insurance	143.79
Audit of Fiscal Books and Records	315.00
Legal Fees	200.00
Private Car Mileage	185.34
Fares: Airplane, Railroad, Other	316.90
Meals and Lodging	353.49
Physician and Hospital Insurance	120.00
Retirement Contributions	2,051.95
Annual and Research Meetings:	
Advisory Committee	\$1,734.17
Commissioners	1,131.41
Administrative and Research Staff	3,212.23
Meeting Rooms	184.37
	6,262.18
Office Equipment	21.48
Cooperative Research	590.58
All Other	2.50
Total Disbursements	\$34,867.15

Cash on Deposit in The United States
National Bank of Portland, Oregon:

December 31, 1966

40,264.87

\$75,132.02 \$75,132.02

AUDIT REPORT

ALLEN H. ADAMS
Certified Public Accountant
Portland, Oregon

August 24, 1966

The Board of Commissioners Pacific Marine Fisheries Commission State
Office Building Portland, Oregon

BALANCE SHEET

June 30, 1966

EXHIBIT "A"

GENERAL FUND

Gentlemen:

I have examined the books and records of the Pacific Marine Fisheries Commission for the fiscal year ending June 30, 1966. The examination was made in accordance with generally accepted auditing standards and, accordingly, included such procedures as were considered necessary in the circumstances.

The accounting procedures of the Commission reflect revenue in the accounts when it is received rather than at the date when appropriated by member states to the Commission and reflect expenditures in the fiscal period in which they arise irrespective of when paid, i.e., the accrual basis.

The following exhibits are submitted:*

- A. Combined Balance Sheet, as at June 30, 1966, of the General Fund and Property Fund.
- B. Statement of Revenue and Expenditures, with Budgetary comparisons, for the period July 1, 1965 to June 30, 1966.
- C. Analysis of changes in Unappropriated Surplus and in the Property Fund for the period July 1, 1965 to June 30, 1966.
- D. Reconciliation of changes in the cash balance with revenues and expenditures for the period July 1, 1965 to June 30, 1966.
- E. Audit Comments.
- F. Scope of the Audit.

In my opinion, the accompanying statements present fairly the financial position of the Pacific Marine Fisheries Commission at June 30, 1966, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Yours very truly,

ALLEN H. ADAMS
Certified Public Accountant

	Total	General Fund	Property Fund
ASSETS:			
Cash in Bank	\$18,303.64	\$18,303.64	\$
Office Furniture and Equipment....	3,838.34	.....	3,838.34
Total Assets	\$22,141.98	\$18,303.64	\$ 3,838.34
LIABILITIES:			
Accounts Payable	\$ 459.83	459.83	\$
RESERVES:			
Reserve for Allocations—			
Coop. Research	\$ 6,331.00	\$ 6,331.00	\$
Total Reserves	\$ 6,331.00	\$ 6,331.00	\$
FUND BALANCE:			
Investment in Fixed Assets.....	\$ 3,838.34	\$	\$ 3,838.34
Unappropriated Surplus	11,512.81	11,512.81	.....
Total Fund Balances	\$15,351.15	\$11,512.81	\$ 3,838.34
Total Liabilities, Reserves and Fund Balances	\$22,141.98	\$18,303.64	\$ 3,838.34

Appendix — Special Report

NUCLEAR POWER AND DESALTING

WILLIAM A. WILLIAMS, JR.

Chief, Desalting Branch U. S.

Atomic Energy Commission

It is a pleasure for me to be with you today to discuss nuclear power and some of its aspects particularly its application to desalting.

A nuclear reactor is a source of heat energy. It can be considered as a furnace that "burns" atomic fuel, such as uranium or plutonium. Instead of the chemical reaction of combustion, which takes place when coal or oil is ignited in the presence of oxygen, the process by which heat is released from the atoms of reactor fuel is known as fission. Fission occurs when a neutron strikes the nucleus of certain kinds of atoms, causing them to split into two parts and, at the same time, releasing tremendous amounts of energy in the form of heat. As an atom is split, two or more neutrons are set free, and if there is a sufficient amount of fissionable material within range of the neutrons, and proper conditions are present, the process will continue in what is called a self sustained chain reaction.

In a nuclear reactor, this chain reaction is controlled. The neutrons are slowed down by a moderator (which can be various substances such as light or heavy water, hydrocarbons, or graphite) to a speed at which they are most likely to interact with other fuel atoms. The number of neutrons is regulated by absorber materials in movable control rods and thereby the energy liberated in the reactor is 'governed. Another major reactor component is the reactor coolant, which is light water in most commercial reactors today, but which can also be a number of other substances, such as gas, heavy water, hydrocarbons or liquid metals. The coolant flows through or around the fuel to remove the heat generated by the fissioning atoms, and in a power-generating reactor, carries the heat to a steam generator. Depending on the particular reactor concept, steam may be piped directly to the turbine, or heat may be transferred indirectly through a secondary heat transfer system. In any case, steam so produced turns conventional steam turbine generators and electrical energy is then delivered to a power grid just as in a coal, oil or gas-fired electric power plant. In a hydroelectric plant, water is used as the driving fluid to turn the turbine.

NUCLEAR POWER AND ITS CHARACTERISTICS

As you probably have gathered, a nuclear power plant is very similar to most other power plants. The basic differences lie in the source of energy for the process. The nuclear energy source, however, gives rise to a number of significant differences from fossil fuel plants, in both site applicability and operating characteristics.

One highly important difference, in these days of increasing populations and urbanization, is the absence of atmospheric

pollution from a nuclear plant. No smoke, smog, ash or cinder problems are created. While it is true that relatively small quantities of radioactive wastes are generated, regulations and technology to control these effluents have been well developed. Actual experience with existing central station nuclear plants has shown that the levels of radioactivity released to the environment are well within nationally and internationally accepted standards of radiation protection.

Several of the differences contribute to relative geographic independence in applying nuclear power plants. Nuclear plant economics do not vary greatly from one region to another; thus no region need be excluded automatically. Additionally, nuclear plants do not require large fuel storage or transportation facilities, and therefore need not be located near sources of nuclear fuel, near large rail or river networks, or near the plants in which the nuclear fuel is originally fabricated or reprocessed.

A highly significant advantage of nuclear plants, when compared on a relative basis to fossil plants, is their more rapid decrease in unit costs with increased size, or scale-up, of the energy plant. This characteristic of nuclear plants has been of particular importance in the U.S. since the general trend is to build larger and larger electric power plants. The preference for nuclear power in the larger plant sizes is so pronounced that some 60% of new generating capacity committed so far this year is nuclear.

There are two primary reasons for the relative advantage of nuclear plants in this respect. First, since a larger portion of the relative energy cost is due to the capital cost, reductions in these costs will be more significant in a nuclear plant. The second reason stems from unique structural features of the nuclear plant, such as containment shells, shielding, instrumentation, etc. The costs of these unique items do not increase linearly with plant size. In fact there is only a moderate cost increase for many portions of the plant, and thus in the larger sizes significant *unit* cost reductions are obtained.

An additional advantage for nuclear energy is its potential for further reductions in operating costs. Once a plant is built and the capital has been expended its economics are then dependent on its fuel and operating costs. Nuclear fuel costs can be expected to decrease as fuel technology is improved and a larger fuel fabricating and processing industry comes into being. Thus, these economies are expected to make nuclear energy more attractive in a wider range of plant sizes and probably in a wider range of process applications. This also indicates that nuclear plants probably will experience a higher load factor during their lifetime.

ENERGY APPLICATION

I hope these comments have laid a general basis for the difference in nuclear and fossil fired power plants. Comparisons of nuclear and hydroelectric power, as general systems, are almost as direct in principle. As you know, substitution of a water head for steam generator, make a few changes in the turbine blading, and you get back to the same basic flow diagram as for the steam power cycle. I must emphasize, however, that valid comparisons of one source of power with another for use in a particular location can only be made by detailed evaluation of all factors, including many not easily quantified. With the caveat in mind, however, a few general observations can be made.

Here in the Columbia River Basin, with the dominance of hydroelectric sources of power production in the Basin, and their probable dominance for many years to come, nuclear power must of necessity be accepted on a partnership basis in this region if it is to be accepted at all. The time is not very distant, perhaps beginning in the mid-1970's, when it may be necessary to install large amounts of steam-electric generating capacity in the Columbia Basin. When this need arises the relative economic positions of fossil and nuclear power will no doubt have to be given close scrutiny.

The prospects of a region-wide system consisting mostly of hydropower but of growing thermal capacity is an intriguing one. The proper management and planning for such a system is extremely complex with all the variables involved. It is probable that heavy reliance will have to be placed on computers to perform the necessary calculations.

There will eventually come a point in time when the water flow is insufficient to produce the annual energy required. It will then be necessary to add thermal power stations to augment the energy production. Through careful planning of system expansion and operation, the existing and planned hydro facilities can be used to provide much of the base load energy plus whatever peaking is required. The thermal plants will gradually contribute a larger share of the base load. Since the running costs of the thermal plants are more than the hydro plants, the hydro plants will be used to their maximum extent, especially for providing peak loads, and the thermal plants will provide whatever energy deficit exists. Nuclear power, with its low incremental operating cost, is an excellent source of supplementary energy for the system.

Now let us take a look at the water picture. As you know, by far the largest single industrial use of water is for condenser cooling in steam power plants, and nuclear power plants do not eliminate this requirement. While nuclear power plants do not depend on chemical combustion for their energy and thus have the virtue of not discharging combustion products into the atmosphere, the type of reactors commercially available today have lower overall plant conversion efficiencies than do modern fossil fuel plants. The result is that more heat is discharged to the cooling water than is discharged from an equivalent fossil plant. This increase can be of the order of a third to a half more. Some of the advanced reactors now being developed will permit higher thermal efficiencies and are expected to be more nearly on a par with fossil plants insofar as heat discharge is concerned.

NUCLEAR DESALTING

Turning now to that aspect of nuclear energy of most immediate interest to me, I would like to discuss its application to desalting and the consequent production of what I call, for the lack of a better term, "new" water. The first thing I want to do is to say that, for all our enthusiasms for this concept and application, and for all the widespread interest in the field, it must be recognized that desalting is not a panacea for all water problems, nor is nuclear energy the fuel of choice for all desalting processes and plants. In any given water requirement situation, all feasible water sources should be evaluated, just as in any power situation all available energy sources should be considered. We enthusiasts are sometimes considered to be blind to the capabilities of competing activities, so we find it advisable to bend over backwards to include "the competition" in our analyses. With that stance clearly in mind, I can now proceed to display my enthusiasm.

DESALTING PROCESSES

There are actually a number of different desalting processes, with many individual variations in various stages of development. Some of the processes are better for brackish water conversion—others for sea water. Also, the processes are sometimes discussed according to whether salt is removed from water, or water is removed from salt.

Electrodialysis is the most developed of the processes that remove salt from water. Although it appears to be limited economically to brackish water at the present time, the process is in use commercially both here and abroad. As you might deduce from the name, the process applies electrical potentials to semipermeable membranes past which the brackish water flows, thereby removing most of the ions of the contaminating salts.

Reverse Osmosis is a relatively new process also using semipermeable membranes, but with pressure as the driving force, rather than an electromotive force. By applying pressures of the order of 1,500 pounds per square inch, water can be forced through certain membranes, leaving the salt behind. This process is not yet in commercial use, but is considered most promising, since it is inherently a very simple process. Its usefulness and progress depends on the development of suitable membranes and hardware, and the Department of the Interior's Office of Saline Water has a significant development program underway in this area. The process at this stage is considered applicable to brackish water, but may be developed to be useful for sea water.

The processes which remove water from salt are "freezing," and the various "distillation" processes. Considerable strides have been made in the last year or so with freezing processes and their future potential appears bright. This process type can use a sea water feed source and at least one fabricator offers to build commercial plants. One of the major problems, however, appears to be an effective means of separating the ice crystals from the brine.

Distillation is the oldest, most widely used, most highly developed kind of desalting process and at this stage is the process which is most likely to be used with nuclear energy.

There are several developmental types of distillation processes, such as vapor compression and "long tube vertical" which I won't go into. However, the distillation process which has the most promise for early application in large sizes is the "multi-stage flash distillation."

In this process heated brine, or sea water, is directed through a series of chambers (or stages), each at a lower pressure than the previous one. In each stage some of the brine is boiled or "flashed," into steam, condensed and collected to form the fresh water product. The incoming sea water serves as the condensing fluid and at the same time is preheated prior to its introduction into the actual flashing process.

The process achieves its efficiency through conservation and re-use of heat energy, by transfer from product water vapor to incoming sea water. Plants now in operation concentrate sea water to half its original volume, and return the resultant brine to the ocean at temperatures only a few degrees above ambient. This process already is in use in many parts of the world in small sizes ranging from a few hundreds of gallons per day to several million gallons per day.

DUAL PURPOSE PLANTS

What we have been talking about until now has been a water plant or a power plant. Now let us consider a "dual-purpose" plant, one which produces saleable amounts of *both* water and power.

In most fossil fuel and nuclear energy plants, steam can be readily produced at temperatures and pressures higher than needed for distillation desalting processes. Overall plant economics are enhanced by using the higher temperature energy for power generation and the lower temperature turbine exhaust steam for desalting. By combining the two processes of power generation and distillation in one plant, larger heat sources can be used resulting in lower unit capital investments. This scale-up in size will provide more cost benefit to a nuclear plant than to fossil plants for the reasons mentioned earlier.

In dual purpose plants major items of equipment may sometimes be eliminated, and other equipment and facilities, such as water intake and discharge lines, control rooms, maintenance shops, etc., can be shared to provide significant overall cost savings. The dual purpose plant appears to be particularly attractive where sizeable quantities of water and power are needed.

The single purpose, or "water-only" plant probably has its principal near term utility in smaller application, or in situations where it is impractical to use beneficially the quantities of electric power produced by dual-purpose plants. With all factors being equal, however, single purpose plants are expected to produce water at a cost somewhat higher than that achievable from dual purpose operations.

The long range outlook for large single purpose nuclear plants, especially if the needs of agriculture to feed the world's expanding population are considered, is still a matter of opinion. Low temperature reactor systems for single purpose plants are being investigated for potential cost reductions, such

as more economical materials, designs and fabrication processes. These things will only be learned through continued research and development.

The favorable potential which I have just mentioned for nuclear energy in large-scale dual-purpose plants has caused it to be looked at in detail in a number of specific applications, and a firm decision to go ahead with one such plant has been made in this country.

METROPOLITAN WATER DISTRICT PROJECT

As you probably know, the Metropolitan Water District of Southern California, in association with the Southern California Edison Company, the San Diego Gas and Electric Company, the Los Angeles Department of Water and Power and the Federal Government, plans* to build an 1,800 gross megawatt electrical, 150 million gallon per day plant, on a man-made island just off Bolsa Chica Beach south of Los Angeles.

The electrical power capability of this two-reactor system, which is expected to be operational about 1972, is comparable to that of the Hoover Dam. Each reactor, if used only for electrical generation, would be about the same size as large central power stations being committed this year by the power utilities. The desalting plant will be the largest one in the world, and will more than double the combined capacity of all the desalting plants in the world today; it will produce enough fresh water to supply the needs of a city of 750,000 people. Total project cost, including island construction and transmission lines for the two products to existing distribution systems, is estimated at \$444 million. Water costs are expected to be about 29** per thousand gallons delivered to the water distribution system. Government support of the project is planned for the development of technological information and operating experience, as a part of the national effort to expand and develop our water resources.

Plants of this kind should have little effect on the environment. They are almost certain to be located on ocean shores, in order to obtain saltwater feed in the volumes needed and they return only concentrated brine to the environment. The brine temperature is only a few degrees above that of the sea water from which it comes, and both its salinity and heat should be readily absorbed in the ocean's volume.

CONCLUSION

In conclusion, I would like only to repeat a concept I have tried to emphasize. Nuclear power, and desalting, have tremendous capabilities; they also have some unique characteristics. Final conclusions as to which power source should be used, or which water resource should be used, and how, can only be reached for specific sites and locations, and then only after all pertinent factors have been thoroughly studied.

Thank you.

20th Annual Report — 1967 Report Oth Annual — 1967

INTRODUCTION

The year 1967, as is frequently the case in fisheries, was a mixture of the bitter with the sweet. It marked the 20th year of membership in the Pacific Marine Fisheries Commission by the States of California, Oregon and Washington, and the 4th year by the State of Idaho. It also marked the year in which the State of California voiced grave doubts about its continued participation unless the formula for financial support of the Commission, which had been based since 1947 entirely on the relative values of the commercial fisheries of the member States, except the State of Idaho, could be changed to one that resulted in less disparity between the financial contributions of the States with significant commercial fisheries. The existing formula and California's dominantly valuable commercial fisheries had caused that State to support a major portion of PMFC's expenses each year.

Fortunately, at the 1967 Annual Meeting agreement was reached on a revised contribution formula. (See Resolution No. 9 under 1967 Resolutions.) However, because of uncertainty regarding the effective date of the revised formula pending legislation by each of the member States and ratification by Congress, First Vice-Chairman Shannon asked that the 1968 Annual Meeting be hosted by Idaho instead of California, and that Second Vice-Chairman Woodworth be nominated for Chairman in 1968 instead of him.

The following changes in the roster of Commissioners and Advisors occurred. In Idaho, Advisor R. J. Holmes was appointed a Commissioner to succeed Frank Cullen, and Ray Sims was appointed to the Advisory Committee vacancy left by Mr. Holmes. In Oregon, George L. Hibbard and McKee A. Smith were appointed Commissioners, respectively, succeeding Tallant Greenough and Herman P. Meierjürgen. In Washington, Dwight S. Hawley and Advisor Harold E. Lokken succeeded, respectively, Dick Kink and John H. Wedin as Commissioners; and Jesse M. Orme was appointed to the Advisory Committee vacancy left by Mr. Lokken. No changes occurred in California's representation.

Fishing off North America by foreign distant-sea fleets, threats of thermal pollution resulting from proposed nuclear-fueled thermal electric generating plants, and off-reservation fishing for salmon by Indians were matters of concern to PMFC that were discussed at the 1967 Annual Meeting. The commissioning of the Bureau of Commercial Fisheries' research vessel *Miller Freeman* and its assignment to the Pacific Coast area brought hopes that this large vessel might be useful in evaluating the effects of foreign trawlers on fish stocks off the Pacific Coast.

There were many matters of international concern in 1967 that were of interest to PMFC. United Nations Resolution 2172 to internationalize the resources of the seas passed and received an affirmative vote from the United States delegation on December 6, 1966 only to be vigorously opposed in 1967 by industry and other forces and by a growing demand for nationalization of the seas by contiguous nations out to the limits of the continental shelf or at least to 200 nautical miles, whichever is furthest offshore.

Two events occurred which could lead to abrogation of the A\$, 14-year-old North Pacific Fisheries Convention, which is now continuing on a year-to-year basis. South Korea launched a small abortive high-sea fishing operation south of the Aleutian Islands and east to the Gulf of Alaska and acquired a large mothership for more intensive North Pacific operations in 1968. Since South Korea is not a member of the Convention and is therefore not bound by the Abstention rule, her actions could cause termination of the Convention. Japan launched a high-sea salmon fishery in the Chukchi Sea arm of the Arctic Ocean with arguments that the Sea was not included in the Abstention rule of the Convention.

Cuba's long-line vessel *Bonito* entered the eastern Pacific Convention area of the Inter-American Tropical Tuna Commission. Cuba, as a non-member of the Convention, is not subject to the Commission's quotas and regulations.

The Food and Agriculture Organization of the United Nations in 1967 (*National Fisherman Yearbook Issue 1968*) reported the following 1966 fish production figures for the 10 leading fishing countries:

COUNTRY	LANDINGS (in metric tons)	
Peru	8,800,000	
Japan.....	7,070,000	
China (a very rough estimate)	5,800,000	
U.S.S.R.....	5,348,800	
Norway	2,849,400	
United States.....	2,514,600	A
South and S. W. Africa	1,400,000	"
Chile	1,383,500	
India	1,367,400	
Spain.....	1,357,400	

The following developments in domestic fisheries of interest to PMFC occurred in 1967. The first Annual American Commercial Fish Exposition (FISH EXPO) was held in Boston, Massachusetts, during October 10-14, and plans were made for a second FISH EXPO to be held also in Boston during October 16-19, 1968.

After adoption by the United States in 1966 of a 12-mile fishing limit and the subsequent negotiation of a bilateral agreement between Soviet Russia and the United States, U.S. fishermen in 1967 demonstrated that they could catch Pacific hake by landing over 18 million pounds at Aberdeen, Washington. However, economics will be the determining factor regarding the persistence of this new U.S. fishery. An additional catch of nearly 11 million pounds was made from an independent stock of hake in Puget Sound and was landed at local ports during the fall and winter of 1966-1967, the second season for this fishery which began in November 1965.

In Alaska, the king-crab fishery began to show signs of over-fishing, but the shrimp landings were 64% better than in 1966. This, plus good shrimp landings in Oregon, plus landings in California and Washington, caused the Pacific Coast area to surpass the South Atlantic area and to rank second behind the Gulf States area in pounds landed. However, landings in the 4B South Atlantic and Gulf States areas were still 80% of the total U.S. shrimp catch.

Salmon production in Alaska was at a near record low, with the pink salmon runs in the Southeastern region being complete failures. The pink salmon runs to Washington's Puget Sound streams were also poor. Fish passage problems for salmon and steelhead of the Columbia River system continued to require much attention. (See Action on 1966 Resolutions for information on High Mountain Sheep Dam!) Construction is continuing on the new fishway at Willamette Falls, Oregon City, but completion will have to await funding in subsequent years. (See No. 6 under Action on 1966 Resolutions.) Proposed nuclear-fueled thermal electric plants threaten the anadromous fish runs of the Columbia River with thermal pollution. The return to Lake Michigan streams of large numbers of recently introduced coho salmon caused much excitement.

The combined Canadian and U.S. catches of Pacific halibut were about 7 million pounds less in 1967 than they were in 1966. This was the second year of decline which may be the result of intensive trawling by distant-sea foreign fleets. Stocks of herring off British Columbia were scarce. Yellowfin and skipjack tuna were abundant in the Inter-American Tropical Tuna Convention Area, where international regulations were in effect for the second year. The U.S. fleet landed approximately 90,000 and 130,000 short tons, respectively, of the two species for a combined U.S. record catch.

The first session of the Ninetieth Congress in 1967 has laid the groundwork for much fishery legislation. S. 1472, regarding inspection of fishing facilities, plants and products, which was introduced by Senator Philip A. Hart, is the subject of much continuing discussion. The Foreign Assistance Act of 1967, together with an amendment submitted by Senator Edward M. Kennedy to undertake a program to demonstrate the potential and to encourage the use of fish protein concentrate in the less developed nations, of the world, became law. The *Torrey Canyon* wreck off the British Isles on March 18, and the growing number of oil spills has led to the introduction of much legislation dealing with oil pollution.

ADMINISTRATION

Personnel

The following served as Commissioners during 1967:

Oregon

John P. Amacher, Winchester
 Leonard N. Hall, Charleston
 George L. Hibbard, Oregon City, successor to Tallant Greenough
 Edward G. Huffs Schmidt, Portland
 J. Pat Metke, Bend, Chairman
 Wayne E. Phillips, Baker
 Joseph W. Smith, Klamath Falls
 McKee A. Smith, Portland, successor to Herman P. Meierjurgan

California

Walter T. Shannon, Sacramento, First Vice-Chairman
 Vincent Thomas, San Pedro
 Ray Welsh, Fort Bragg

Idaho

Ray J. Holmes, Twin Falls, successor to Frank Cullen
 Arlie Johnson, Boise
 John R. Woodworth, Boise, Second Vice-Chairman

Washington

Dwight S. Hawley, Seattle, successor to Dick J. Kink
 Harold E. Lokken, Seattle, successor to John H. Wedin
 Thor C. Tollefson, Olympia, Secretary

Messrs. Holmes and Lokken are additions to the growing list of Commissioners who were initially members of the Advisory Committee.

The Advisory Committee consisted of the following members:

Oregon*

David B. Charlton, Portland, Chairman
 Charles S. Collins, Roseburg
 Harold C. Gramson, Warrenton
 Charles F. Henne, Salem
 J. F. Hoagland, Astoria, Deputy Chairman
 Andrew J. Naterlin, Newport
 Arthur Paquet, Astoria

California

Charles R. Carry, Terminal Island, Section Chairman
 Clifton D. Day, San Francisco
 Thomas R. Gardiner, Oakland
 John P. Gilchrist, San Francisco
 Paul McKeehan, Santa Clara
 Anthony Nizetich, Terminal Island
 Charles V. Williams, Crescent City

Idaho

William B. Durbon, Moscow
 Ray Sims, Bonners Ferry, replaced R. J. Holmes
 Glenn Stanger, Idaho Falls, Section Chairman

Washington

Robert E. Colwell, Seattle
 Earl Engman, Tacoma
 Charles F. Mechals, Seattle, Section Chairman
 Nick Mladinich, Tacoma
 Bjarne Nilsen, Westport
 Jesse Orme, Seattle, replaced Harold E. Lokken
 John N. Plancich, Anacortes

Alternates, approved for those members who were unable to attend the Annual Meeting, are listed under Committee Action. These alternates serve only during the designated meeting.

The permanent staff comprised:

Leon A. Verhoeven, Executive Director
 Gerald L. Fisher, Treasurer
 Mrs. Evelyn Korn, Office Secretary

They were assisted for short periods by:

Alphonse Kemmerich, Consultant J.
 Thomas Barnaby, Consultant

Temporary clerical employees were utilized as needed.

Conferences and Meetings

The intergroup relationships of the Pacific Marine Fisheries Commission call for frequent participation in conferences and meetings. In furtherance of this function, the Executive Director attended the following as a representative of the Commission during 1967:

Meeting with Congressman John R. Dellenback and his administrative assistant David Foote, Salem, January 11; accompanied by Herman P. Meierjürgen, chairman, and C. A. Weberg, assistant director, Oregon Fish Commission, to discuss fishery matters.

Annual Administrators' Review of Fish Passage Program, Seattle, January 19, 1967; a review by the Bureau of Commercial Fisheries, regarding fish passage research.

Columbia Basin Inter-Agency Committee, Portland, March 21, discussion of transition from hydro to thermal fuel systems.

Pacific Fishery Biologists, Gearhart, Oregon, annual meeting, March 29, first day only.

Oregon Fish Commission and Washington Department of Fisheries, Portland, April 25, joint hearing regarding fishing season for Columbia River spring chinook salmon.

U. S. Fish and Wildlife Service, Portland, April 25, meeting to discuss legislation (H.R. 25), regarding estuaries.

BCF's Ad Hoc Committee on Surveillance, Olympia, April 26.

Oregon Fish Commission and Washington Department of Fisheries, Portland, May 3, joint hearing regarding fishing in Columbia River, plus independent consideration by Oregon of request from California for suspension of shrimp fishing until June 1.

Oregon Fish Commission and Washington Department of Fisheries, Portland, May 10, joint hearing regarding Columbia River spring chinook season and shad.

Bureau of Commercial Fisheries, Portland, June 1, discussion of thermal pollution.

Pacific Northwest River Basins Commission and Columbia Basin Inter-Agency Committee, Portland, June 9, transition from CBIAC to PNWRBC.

Oregon Fish Commission and Washington Department of Fisheries, June 10, regarding Columbia River sockeye fishery; June 12, regarding Columbia River fall chinook fishery.

BCF's Ad Hoc Committee on Surveillance, Seattle, June 15.

BCF's Ad Hoc Committee on Surveillance, Seattle, July 19.

California Fish and Game Department, Sacramento, August 23, dedication of Department's Fish and Wildlife Pollution Control Laboratory.

Bureau of Commercial Fisheries, Seattle, September 9, commissioning research vessel *Miller Freeman*.

Oregon Fish Commission and Washington Department of Fisheries, Portland, September 12, regarding Columbia River late fall salmon fishery.

BCF's Ad Hoc Committee on Surveillance, Astoria, September 14.

Pacific Northwest River Basins Commission, Boise, October 20.

BCF's Ad Hoc Committee on Surveillance, Seattle, October 31.

House of Representatives Subcommittee on Fisheries and Wildlife Conservation, Seattle, November 9, hearing regarding fisheries.

Oregon Fish Commission hearing, Portland, December 21, regarding trawl fishery regulations.

Administrative and Service Activities

In compliance with the annual request of the Office of International Relations, Fish and Wildlife Service, PMFC again secured specific statistics concerning the salmon, herring and halibut fishery landings, the propagation of salmon, commercial fishing regulations and enforcement of those regulations concerning salmon and halibut in the States of Washington, Oregon and California. After consolidation, this material was forwarded through proper channels—U.S. Section, INPFC—to the Japanese government.

An annual meeting, attended by representatives from the fish and game agencies of the Pacific Coast States, the University of Washington and the U.S. Fish and Wildlife Service, was held January 26, 1967, to coordinate and record the planned fin-marking programs of the various agencies for salmon and steelhead trout. Subsequently, a 49-page listing for 1967 of all salmon and steelhead trout marks authorized for use by agreement of the cooperating agencies was prepared and distributed. Memoranda advising the agencies of additions or revisions to the listing were issued from time to time.

The Executive Director served as liaison officer for the United States sections of the International Trawl Fishery Committee and the Informal Committee on Chinook and Coho Salmon. He attended the annual meeting of the Technical Subcommittee of the International Trawl Fishery Committee in Nanaimo, B. C. on June 27, 28 and 29. The statistics in the Bottom or Trawl Fish section of PMFC's Data Series are furnished by the member Canadian and United States agencies represented on this subcommittee. He also attended the meeting of the International Trawl Fishery Committee on November 29 at Salishan Lodge.

The Working Group of the Informal Committee on Chinook and Coho Salmon continued 1) to exchange scientific information between the Canadian and United States members of the group, and 2) to prepare a report to the Informal Committee on the available biological information, the status of the stocks, and on recommendations for cooperative action.

The Executive Director is ex officio secretary for the Pacific Salmon Inter-Agency Council and observer on the

Council's Technical Committee. In compliance with a request of the Second Governors' Conference, he compiles and distributes to the members of the Technical Committee items regarding salmon management and research. He also serves on subcommittees and attends meetings of the Technical Committee. On October 24 and 25, 1967, in Seattle, the Executive Director attended the annual joint meeting of the Salmon Council and its Technical Committee. At this meeting he reported on the status of the statistical report on salmon and steelhead and also on the project to update the Salmon Compendium. An Anadromous Fish Act agreement has been executed between the Salmon Council and the Bureau of Commercial Fisheries which will make federal funds available to the Council to have the University of Washington update the Salmon Compendium. The Executive Director, as the Council's secretary, is coordinating the administration of this project.

Numerous letters were written to Congressmen and Senators for copies of specific bills introduced by them that affected fish. When these copies were received, they were either distributed to the directors of PMFC's member agencies or to the Executive Committee for their information.

From July 31 to August 4, the Executive Director accompanied Burton E. Carnegie, an engineer on the staff of the Oregon Fish Commission, on a periodic inspection that the fishery agencies make of fish passage conditions at 11 dams on the Columbia and Snake Rivers.

On November 1, the Executive Director met with Advisers from Oregon; on November 15 with Advisers from Washington; and with Advisers from California on November 28. In each instance, these pre-annual meeting caucuses were attended by the director of the state fishery agency who convened the caucus, plus some of the Commissioners from each State.

On November 8, the Executive Director spoke to an Oregon State University Class on World Fishery Resources, regarding the past, present and future of the Pacific Marine Fisheries Commission.

The passing of Milt James, who died of a heart attack on June 17, 1967 in Olympia, Washington, put a temporary end to all formal publications of the Commission. Milt, who had served PMFC so efficiently for so many years as Research Coordinator, Executive Director and Consultant, had been confining his activities in recent years to editing Bulletins, Annual Reports, etc., of the Commission. With his invaluable broad background acquired over almost half a century of experience as a fishery biologist and administrator in all parts of the United States, nobody could say it, or write it, the way Milt could.

As in 1966, so again in 1967, the office staff was pressed to its capacity preparing the many memoranda and multiple letters to conservation and fishery agencies, Congressmen, etc., required to keep all concerned informed of current progress on issues of vital importance. Revised and supplemental pages for the 1966 catches of trawl fish, crab and shrimp were prepared and distributed to the holders of copies of these sections of the Data Series. The preparation of an Albacore and Bluefin Tuna Section has not been started yet; and the preparation of Pacific Salmon and Steelhead Catch Statistics has been taken over by the Pacific Salmon Inter-Agency Council.

The Executive Committee at its spring meeting in Portland on May 31 adopted or approved the following:

1. Plans to hold Annual Meeting at Salishan Lodge on the Oregon coast, November 28-December 1, 1967, and instructions to the Executive Director to consider the suitability of including at the meeting reports on: a) review of foreign fishing, b) thermal pollution, and c) Indian fishing rights
2. Operating budget for fiscal year July 1, 1967-June 30, 1968
3. Submission of a revised membership contribution formula to the Commission for adoption at the Annual Meeting
4. Submission for adoption by the Commission of "Proposed Procedure for the More Efficient Use of the Research Staff at Annual PMFC Meetings," which procedure was submitted by the Research Staff after its spring, 1967 meeting
5. Actions taken on 1966 resolutions. (See subsequent section, "Actions on 1966 Resolutions")
6. Emergency resolution on "Use of Water by Fish and Shellfish is a Prime and Beneficial Use," and instructions to the Executive Director to disseminate the resolution as a news release after sending it to the pertinent authorities.

COMMISSION ACTION

The 20th Annual Meeting of the Pacific Marine Fisheries Commission was held at Salishan Lodge, Gleneden Beach, Oregon, from November 28 to December 1, 1967. Approximately 125 persons, including official participants, registered their attendance; an unknown number of wives did not register.

Although the primary purpose of the Annual Meetings is to arrive at conclusions and recommendations affecting the fisheries of the Pacific Coast, other matters of internal concern require consideration. Such subjects included:

1. The following alternates for Commissioners who were unable to be present were approved:
Robert Schoning for Edward G. Huffs Schmidt (Oregon)
Phil Schneider for Joseph W. Smith (Oregon) C A.
Weberg for McKee A. Smith (Oregon)
2. The following alternates for members of the Advisory Committee who were unable to attend were approved:
Fred Phebus for Thomas R. Gardiner (California)
Laurence Lazio for John Gilchrist (California)
3. The Commission heard and approved reports from the Executive Director and the Treasurer. The latter's report is presented in full in a subsequent section of this report.
4. Mr. Roy Rickey, representative from Alaska, informed the convention that there was a bill pending in the Alaskan

Legislature which, if passed in 1968, would provide funds that would enable Alaska to join the Pacific Marine Fisheries Compact.

5. The Commission approved a motion by Commissioner Shannon that PMFC endorse Congressman Johnson's (California) House of Representatives bill 12621 to amend the Anadromous Fish Act to permit funds appropriated but unexpended in any given year to be carried over to the following year.

6. The Directors of Research for the Oregon Game Commission and Oregon Fish Commission, Dr. John Rayner and Dr. Gene Kruse, introduced the fishery biologists who presented the status reports on albacore, Dungeness crab, pink shrimp, trawl fish, commercial troll salmon, and sport salmon and steelhead fisheries. As usual written versions of these reports were available at the meeting. They are reproduced in Appendix I of this report.

7. Special reports and panel discussions¹ on the subjects chosen for the meeting were presented by the following speakers who also answered questions from the floor:

Section I: Fishing off the Pacific Coast of North America by Foreign Fishermen

Dr. Dayton L. Alverson, Bureau of Commercial Fisheries, Seattle, gave a very enlightening talk on his recent 5-week trip to the Soviet Union to observe methods and techniques which the Soviets have employed so successfully for fishing in distant waters.

Mr. Harry Rietze, Regional Director, Bureau of Commercial Fisheries, Juneau, presented with-phonographic slides an excellent review of fishing activities of about 1,200 large, modern Japanese and Soviet vessels off Alaska, where they catch over 1.5 million tons of fish, including whales and shellfish, annually.

Mr. M. P. Houghton, Chief of the Conservation and Protection -Branch of the Department of Fisheries for Canada, presented orally Dr. K. S. Ketchen's report, "Recent Developments in the Domestic and Foreign Fisheries for Groundfish in the Northeastern Pacific," Fisheries Research Board of Canada, Nanaimo, Circular No. 79, March 1967. Copies of the report were distributed to all in attendance.

Mr. Walter T. Shannon, Director of California Department of Fish and Game, read a report on "Summary of California Foreign Fishing Vessel Surveillance."

Mr. Donald R. Johnson, Regional Director, Bureau of Commercial Fisheries, Seattle, presented a two-part paper, "Status of Negotiations Between U.S.S.R. and U.S. Relative to Programs to Minimize Fishing Conflicts, and to Determine Size of Stocks and Effects of Fishing." Copies of the paper were available at the meeting.

Section II: Thermal Pollution

Mr. Anthony J. Novotny, Fisheries Research Biologist, Bureau of Commercial Fisheries, Seattle, gave verbally his report on "The Effects of Temperature Change on Salmon, Trout and Competing Fishes." Copies were distributed at the meeting.

Dr. Robert W. Zeller, Northwest Regional Office, Federal Water Pollution Control Administration, Portland, Oregon, presented verbally "Report to the Pacific Marine Fisheries Commission on the Columbia River Temperature Study." Copies of his report were distributed at the meeting.

Mr. Robert Rulifson, Northwest Region, Federal Water Pollution Control Administration, Portland, presented the final paper on thermal pollution, "Policies and Regulations for the Prevention of Thermal Pollution Relative to Salmon and Steelhead." Copies of his report were distributed at the meeting.

Section III: Indian Fishing

Mr. Owen Panner, Attorney for the Confederated Tribes of the Warm Springs Reservation, Bend, Oregon, opened the panel with a paper on "The Double Standard (Indian Fishing Rights)."

Mr. George S. Woodworth, Assistant Attorney General, State of Oregon, spoke on "Indian Fishing Rights (A Review of Some Court Decisions)."

Mr. C. Richard Neely, Assistant Regional Solicitor, U.S. Department of the Interior, Portland, discussed "Recent Developments in Indian Off-Reservation Fishing."

Mr. Jim Jackson, Tribal Council Chairman of the Quinalt Indian Reservation, who volunteered from the floor to speak in the place of Bob Jim, Tribal Council Chairman of the Yakima Nation, who was unable to attend, gave a good extemporaneous description of fishery management on the Quinalt Reservation in Washington. His talk was one of the highlights of the special reports and panel discussions.

Mr. A. W. Galbraith, Assistant Area Director, Bureau of Indian Affairs, Portland, reported on "Comments on Proposals for Resolving the Indian Fishery Problem."

Final panel speaker on this subject was Mr. Kessler R. Cannon, Executive Secretary of the Committee on Natural Resources and personal representative of Governor Tom McCall of the State of Oregon. Mr. Cannon's report was "Proposed Solution to the Indian Fishing Problem."

The Executive Director closed the special reports and panel discussions by announcing that copies of a number of other reports were available in the Steno Pool. The other reports included the following:

"California Anchovy Fishery and Anchovy Research," Pelagic Fish Investigations, California Department of Fish and Game, Terminal Island

"Anchovy in the Pacific Northwest," A. T. Pruter, Bureau of Commercial Fisheries, Seattle

"Pacific Saury," A. T. Prater, Bureau of Commercial Fisheries, Seattle

"Current Status of the Pacific Hake Fisheries," Alan E. Millikan, Washington State Department of Fisheries*

"Summary of Progress on Pacific Oyster Mass Mortality Investigations 1966-67," Cedric E. Lindsay, Washington State Department of Fisheries, Olympia*

"Port Sampling at Crescent City-Brookings-Port Orford, November 1966-October 1967," California Department of Fish and Game*

"Status Report, Anadromous and Great Lakes Fisheries Conservation Program, Public Law 89-304," Bureau of Commercial Fisheries, Arlington, Virginia, October 31, 1967.

Action on 1966 Resolutions

The following information regarding the actions taken by the Commission or its staff was sent to all Commissioners, Advisers and Research Supervisors on November 15, 1967, in compliance with Resolution No. 10 of 1965, "Report of Actions Taken on Last Year's Resolutions." The information also appeared as Appendix A to the Report of the Executive Director on November 30, 1967. The resolutions are referred to in numerical order. Missing numbers are the result of the rejection or tabling of proposals bearing those numbers at the 1966 Annual Meeting.

Resolution 1, Effects of Water Usage on Water Temperature and Dissolved Oxygen Content: This resolution, accompanied by a two-page transmittal letter explaining the relationship between water temperature and the well being of salmon and trout and the present trend of water temperature in the Columbia River, was sent to the Congressional Delegates and Governors of the States of California, Idaho, Oregon and Washington; the members of the House Committee on Merchant Marine and Fisheries and Senate Committee on Commerce. It was also sent to officials of the following federal agencies: Department of the Interior, Army Corps of Engineers, Soil Conservation Service, Federal Power Commission and Atomic Energy Commission. Copies were sent to Pacific Northwest Power Company, Idaho Wildlife Federation, California Wildlife Federation, Washington State Sportsmen's Council, Oregon Wildlife Federation, Pacific Northwest River Basins Commission, State of Washington's Water Research Center; and Congressman Robert E. Jones, Chairman of the Subcommittee on Natural Resources and Power of the Committee on Government Operations.

The wide dissemination of this resolution resulted in many encouraging replies, much concern about thermal pollution, and definite resolve by some agencies to consider temperature and dissolved oxygen at projects under their jurisdiction.

One interesting development was receipt of information that an Assistant Secretary of the Department of the Interior

had agreed with the Deputy General Manager of the Atomic Energy Commission that heat discharges into the Columbia River are not now a problem. This brought forth vigorous protests, to Chairman Jones of the Subcommittee on Natural Resources and Power of the House Committee on Government Operations, from the Washington Department of Fisheries, the Washington Department of Game, the Idaho Fish and Game Department, the Fish and Game Commissions of Oregon, and from this office. Secretary Udall in a letter to Chairman Jones, subsequently stated, "In addition, an interagency task force to study thermal pollution in general and in the Columbia River specifically has been activated. It will conduct an in-depth study for a period of two years to establish useful data on thermal pollution effects on stream life, stream management techniques that may be employed to reduce thermal damages, and other facets of this most difficult problem. We have had a continuing dialogue with the AEC on the problems of the Columbia River and progress is being made."

The Corps of Engineers, via a release of May 17, 1967, announced the award of a 5-year contract at \$50,000 per year to the "Sport Fishing Institute to do research into the effects of releases of water from various depths within reservoirs upon fish populations and on water quality in reservoirs and tailwaters."

In a letter of June 17, 1967, to Congressman Dingell, relative to PMFC's resolution, the Secretary of the Interior made reference to a September 1966 report by the Columbia Basin Inter-Agency Committee on Columbia River Water Temperature Conditions and said that, "... the Federal Water Pollution Control Administration will assign four men (engineers and mathematicians) to the task of gathering existing data, developing a mathematical model, and developing a proposed program and budget for continuing studies in future fiscal years. The report by that group is to be presented to the Water Resources Council by November 1967. During the course of the current effort, FWPCA personnel will work closely with all interested state and Federal agencies.

♦ "While the potential exists for water temperature degradation in the Columbia River System, an opportunity also exists for temperature control and enhancement through flow regulation with selective withdrawals from certain existing and proposed reservoirs. The mathematical model will permit careful examination of reservoir operations and maximization of their potential for control over undesirable thermal pollution." Similar information was received from Congressman Garmatz, Chairman of the Committee on Merchant Marine and Fisheries.

The Federal Water Pollution Control Administration in April sent a representative from its Northwest Regional Office to visit the various directors of Pacific Northwest fishery agencies to assure them that the Department of Interior intends that the water quality standards adopted by the various states, including the standards for limitations on thermal additions, shall be enforced.

The acceptance of this resolution is indeed encouraging. However, it will be necessary to see that the thermal studies are pursued rapidly and conclusively. The PMFC Executive Committee has instructed the Executive Director to prepare a

proposal for consideration as a resolution, requesting that the Federal Power Commission be empowered to grant licenses for electricity-generating plants regardless of whether they are hydraulically or thermally energized.

Resolution 2, Cooling Water from High Mountain Sheep Dam: Copies of this resolution were sent with transmittal letter to: President of the Pacific Northwest Power Company; Federal Power Commission; Congressional Delegates and Governors from Idaho, Oregon and Washington; members of the House Committee on Merchant Marine and Fisheries and Senate Committee on Commerce; officials of the Department of the Interior and Army Corps of Engineers; Idaho Wildlife Federation; Washington State Sportsmen Council; Oregon Wildlife Federation, and Columbia River Fishermen's Protective Union. The transmittal letter pointed out the relationship between this resolution and Resolution No. 1, "Effects of Water Usage on Water Temperature and Dissolved Oxygen Content."

The Federal Power Commission replied that it would give adequate consideration to the recommendations expressed in PMFC's resolution regarding relicensing or issuance of new licenses for hydroelectric projects which may affect the anadromous fishery resources of the Columbia and Snake rivers. The Department of the Interior replied, "You may be assured that we are interested equally in these problems and will continue to give them the full consideration they deserve. Your support and that of the Pacific Marine Fisheries Commission is welcome." Governor Samuelson of Idaho wrote the Federal Power Commission personally, endorsing this resolution.

In June, the Supreme Court ruled that nothing should be done in the middle Snake River until more attention is given to the impact on fish and wildlife. Since this ruling there has been a myriad of proposals for construction of a dam by a Federal agency, or a combination of public utility districts and private utilities; and also, possibly, at more upstream sites such as Appaloosa and Pleasant Valley, respectively, 9 and 29 miles upstream from the High Mountain Sheep site.

Resolution 3, Fund-Biological Studies as Part of Water Project Planning: This resolution was sent to 230 addressees with a two-page transmittal letter, pointing out the existence of this problem in other areas as well as in California, and stating that construction agencies should not be permitted to add to the burden of local fish and game agencies by the almost endless proposal of water usage projects unless the construction agencies were prepared to finance the fish and wildlife studies which should be a prerequisite to judging the feasibility of the projects.

Many of the replies from Congressional Delegates were attentive to the problem. The replies from the construction agencies were generally to the effect that the Fish and Wildlife Service was their agent per the Fish and Wildlife Coordination Act, whenever fish and wildlife were involved in proposed projects. They also stated that they transferred large sums from their planning funds to other agencies, including fisheries, to advise them of the needs of fish. Some of the replies implied that the solution to the problem should be worked out

between the Fish and Wildlife Service and the state fish and wildlife agencies and that the fish and wildlife agencies should not castigate the construction agencies for the shortcomings of the fish and wildlife agencies.

This office sent duplicated copies of many of these replies to the directors of member PMFC agencies. The Western Division of the American Fisheries Society in July adopted a resolution requesting Congress and the construction agencies, "to include sufficient funds in project feasibility studies to be made available to the States to (1) study alternate solutions to water problems, and (2) enable the States involved to formulate and implement biological studies of existing resources which would be affected by water developments for the purpose of providing essential information to plan for the protection and/or enhancement of these resources in connection with and prior to said developments, . . ." Frank H. Dunkle, State Fish and Game Director, Montana, presented an excellent statement on "Problems of State Fish and Game Agencies in Preparing Criteria for Projected Water Uses and Quality to Meet Federal Agency Deadlines" at the Pacific Northwest Conservation Council annual meeting at Richland, Washington, on May 6, 1967.

Resolution 4, Public Law 88-309 — Commercial Fisheries Research and Development Act of 1964: This resolution was sent with transmittal letter to the Congressional Delegates and Governors of Alaska, California, Idaho, Oregon and Washington; the Chairmen of the House Committees on Merchant Marine and Fisheries and on Appropriations, and of the Senate Committees on Commerce and on Appropriations; the Director of the Bureau of the Budget, the Secretary of the Interior, the Commissioner of the Fish and Wildlife Service, and the Director of the Bureau of Commercial Fisheries.

Many of the addressees promised to intervene to increase to \$5 million the \$4.1 million, included in the President's budget, for grants to States, under Section 4(a) of this Act; however, they were not successful. The \$4.1 million for this purpose in the final budget for fiscal 1968 was the same as the amounts appropriated in fiscal 1966 and 1967, although the Act authorized \$5 million per year.

This Act will expire on June 30, 1969 unless it is extended. It is desirable that this be done by the Ninetieth Congress rather than the Ninety-first Congress so that the States will have ample time to budget for continued participation in the Act. It should be pointed out that no money was appropriated for Section 4(a) during the first year (FY 1965) of the Act and that the full amount authorized by the Act was never appropriated in any of the subsequent years.

Resolution 5, Public Law 89-304 — Anadromous Fish Act of 1965: The same addressees that received Resolution No. 4, plus the Bureau of Sport Fisheries and Wildlife also received this resolution. Many of the Congressional Delegates replied that they would attempt to secure the release of the \$3 million remaining from the \$5 million which was appropriated for fiscal 1967 and to obtain an increase in the \$3 million for grants in the original fiscal 1968 budget. Although they were unsuccessful in obtaining the release of the \$3 million remain-

ing from 1967, they were successful in getting the 1968 funds for grants to the States increased to \$4.5 million.

The Western Division of the American Fisheries Society in July 1967 passed a resolution, requesting the Bureau of the Budget to increase the funding of this program to the authorized level and urging Congress to consider the feasibility of increasing the initial segments above the \$5 million prorated annual portion.

Two bills have been introduced in the Ninetieth Congress to amend the Anadromous Fish Act. S. 1784 would permit Idaho to participate in the Act. In accordance with instructions received at the PMFC Executive Committee meeting of May 31, 1967, letters were written to Senators Church and Jordan, with copies to the other Congressional Delegates from Idaho and the Pacific Coast States stating that PMFC is in favor of this amendment. H. R. 12621 would allow unexpended funds which were appropriated in one fiscal year for section 4(a) to continue to be available in the succeeding fiscal year.

Resolution 6, Willamette Falls Fishway: This resolution was sent by transmittal letter to 70 addressees: including the Congressional Delegates and Governors of California, Idaho, Oregon and Washington; the Chairmen of House Committees on Appropriations and on Merchant Marine and Fisheries; the Chairmen of the Senate Committees on Appropriations and on Commerce and of the latter's Sub-committee on Merchant Marine and Fisheries; the Secretary of the Interior; the Commissioner of the Fish and Wildlife Service; the Director of the Bureau of Commercial Fisheries; and the Director of the Bureau of the Budget.

The initial 1968 fiscal year budget for the Bureau of Commercial Fisheries included only -\$100,000 for the fishway instead of the \$1,500,000 requested by PMFC to permit completion of the fishway by construction of Phase C. The Congressional Delegates were only successful in increasing the initial \$100,000 to \$450,000 in the final budget. This will make it necessary to subdivide Phase C into Phases C and D, and to hope that an additional \$1,062,000 will be appropriated in fiscal 1969 to permit completion of the fishway project in 1970.

Phase B of the project is expected to be completed this winter or early in the spring of 1968. It will eliminate the cul-de-sac problem that exists at the face of the Willamette Falls powerhouse. Returns of adult fall-run chinook and coho salmon this fall from juveniles released in the river in previous years give promise of substantial runs of these races of salmon by 1970. Congressman Wendell Wyatt personally inspected the fishway project in June.

Resolution 8, Atomic Energy Commission's Surplus Property: This resolution was sent to the Atomic Energy Commission via transmittal letter dated December 30, 1966, with carbon copies to other addressees. However, before the requested transfer of the property could be acted upon, a second letter was written to the Atomic Energy Commission on January 11, 1967, with copies to all the other original addressees telling them that, as a result of a preliminary study,

the Washington Department of Fisheries had concluded that the use of the area and equipment for the propagation of salmon was impractical and that the Department wished to withdraw its request for the property and wished to thank everyone for their help in the matter.

Resolution 10, Shellfish Toxin Study: This resolution was sent to the Secretary of the Department of Health, Education and Welfare and to the Secretary of the Interior via transmittal letter with copies to the Congressional Delegates and Governors of Alaska, California, Oregon and Washington; and to the Chairmen of the Senate Committee on Commerce and its Subcommittee on Merchant Marine and Fisheries, and of the House and Senate Committees on Appropriations; and to the Commissioner of the Fish and Wildlife Service; and the Director of the Bureau of Commercial Fisheries.

The Department of Health, Education and Welfare and the Bureau of Commercial Fisheries replied that they were concerned about paralytic shellfish poisoning and would welcome a coordinated State-Federal effort. It was suggested that PMFC would be a logical coordinator to develop the research program needed. Copies of these replies were sent by the PMFC office to the state fishery agencies of Alaska, California, Oregon and Washington.

Resolution 11, Foreign Fishing: This resolution was sent via letter dated December 30, 1966, to the Secretary of State and to the Special Assistant for Fisheries and Wildlife to the Under Secretary of State, calling their attention to subparagraphs b. c. and d of the resolution. Other copies were sent via letter dated March 7, 1967, to the Chairman and the Director of the National Council on Marine Resources and Engineering Development, the Secretary of the Navy, the Commandant of the U.S. Coast Guard; the Congressional Delegates and Governors of Alaska, California, Idaho, Oregon and Washington; the Chairmen of the House Committee on Merchant Marine and Fisheries, the Senate Committee on Commerce and its Subcommittee on Merchant Marine and Fisheries; the Secretary of the Interior, the Commissioner of the Fish and Wildlife Service, the Director of the Bureau of Commercial Fisheries, and to several other addressees.

This second letter called attention to subparagraph "a" and its request for funds and promised to send each addressee a copy of a program that PMFC was drafting to support the request. On March 16-17, 1967, PMFC convened a meeting of state, university, and federal fishery scientists to advise it on the drafting of a program. Subsequently, a copy of "PROGRAM FOR EXPANDED AND COORDINATED RESEARCH AND DEVELOPMENT OF PACIFIC COAST MARINE FISHERY RESOURCES, proposed by the Pacific Marine Fisheries Commission, April 4, 1967" was sent each addressee with a request for funding.

Many of the addressees replied that, in view of the current national financial situation, PMFC would be best advised to seek full funding of existing acts, the Commercial Fisheries Research and Development Act, the Anadromous Fish Act, and the Sea Grant College Act and Program. The net result was that the proposed program was not funded, but it is felt that

more funds, though not the full amounts authorized, were made available for the three existing Acts than would have occurred without PMFC's requests. Copies of the most important replies were sent to the directors of PMFC member agencies.

Resolution 12, Wild Rivers Legislation: This resolution, which was a reaffirmation of No. 8 of 1965, was sent on April 7, 1967, to all Congressional Delegates and Governors of California, Idaho, Oregon and Washington; to all members of the Senate Committee on Interior and Insular Affairs; to the Secretary of the Interior, the Commissioner of the Fish and Wildlife Service, the Director of the Bureau of Commercial Fisheries, the Director of the Bureau of Sport Fisheries and Wildlife; to the International Association of Game, Fish and Conservation Commissioners, the Western Association of State Game and Fish Commissioners; and to the President of the United Automobile Workers.

The Executive Director's transmittal letter of April 7, 1967, and Resolution No. 12 were included in the report, "WILD AND SCENIC RIVER," of the Hearings before the Committee on Interior and Insular Affairs, United States Senate, Ninetieth Congress, First Session, April 13-14, 1967, on S. 119 and S. 1092.

On June 13, 1967, the Executive Director wrote Senators Church and Jackson at the request of the Executive Committee, informing the Senators that PMFC still desires passage of "Wild Rivers" legislation, but favors S. 119 over other bills on this subject now before Congress. It was also mentioned that the Commission would like to see S. 119 amended to include the Klamath River and the middle fork of the Feather River, both in California, with those streams listed under Sec. 3 (b) "FEDERAL-STATE PLANNING FOR ADDITIONS TO SYSTEM"; and that the Commission would be opposed to any legislation that would fail to grant "Wild River" status to the portions of the Salmon and Clearwater Rivers as described in Sec. 3 (a) "NATIONAL WILD RIVERS SYSTEM" of S. 119. The Commission's position on "Wild Rivers" was also included in its news release of June 2, 1967, regarding the actions of the Executive Committee at its May 31, 1967, meeting.

"Wild Rivers" legislation is still under consideration by the Senate Committee on Interior and Insular Affairs. However, proponents of Penny Cliffs dam project on the Clearwater River and of projects on the lower Salmon River are opposing inclusion of those parts of the rivers as "Wild River Areas."

Resolution 13, Delta Facilities of the California Water Plan: This resolution, which was a reaffirmation of Resolution No. 18 of 1965, was sent to the Commissioner, U.S. Bureau of Reclamation via letter of April 10, 1967 with copies to the following other addressees: Sacramento Branch Office of the Bureau of Reclamation; Chief Engineer, South Pacific Division Engineer and San Francisco District Engineer of the U.S. Army Corps of Engineers; Water Commission, Resources Agency, Department of Water Resources, Department of Fish and Game, Senate Natural Resources Committee, Governor, and Legislators of the State of California; Congressional Delegates from California, Oregon and Washington; Chairmen of the Senate and House Committees on Appropriations; Secre-

tary of the Interior; Commissioner of the Fish and Wildlife Service; and Directors of the Bureaus of Commercial Fisheries and of Sport Fisheries and Wildlife.

The Commissioner of the Bureau of Reclamation replied that the Bureau's planning report on the Peripheral Canal, "will be completed and processed as quickly as practicable so that the Congress may consider authorizing its construction." On May 24, 1967, Congressman Hosmer of California introduced H. R. 10297 for the above purpose. The Executive Director, per instructions from the Executive Committee, wrote Congressman Hosmer on June 13, advising him of the Committee's wish to reiterate PMFC's support of the Peripheral Canal Plan.

Resolution 14, Commendation of Washington Department of Fisheries: A copy of this resolution was sent to the Governor of the State of Washington.

1967 Resolutions

Pre-meeting preparations facilitated a careful consideration by the Advisory Committee of proposals for resolutions which had been submitted by the diverse fishery interests of the Pacific Coast. Simultaneously, the Research Staff received the proposals, with the result that the Commission had available the views of the Advisers and Researchers before it acted upon the pending resolutions at the final business meeting.

The 11 resolutions are cited verbatim as they were approved on December 1.

T. Use of Water by Fish and Shellfish is a Prime and Beneficial Use

WHEREAS, water resource conservation, enhancement, development and utilization are pressing subjects of international, national and state concern, and

WHEREAS, the Pacific Marine Fisheries Commission and its member States, California, Idaho, Oregon and Washington, have a vital concern in safeguarding the food producing and recreational potential of our aquatic resources, and

WHEREAS, water quality, quantity impoundment, diversion, and control have a major impact on these aquatic resources, and

WHEREAS, each State is in the process of adopting water quality standards,

NOW, THEREFORE, BE IT RESOLVED, that fish and shellfish are a prime and beneficial use of both fresh and marine waters, and that action be taken to obtain and maintain optimum water quality conditions for this use in the changing years ahead, and

BE IT FURTHER RESOLVED, that the Federal Water Pollution Control Administration is urged to review all policies submitted by the States to ensure that said policies adequately protect all fish and shellfish resources in regard to water quality, and

BE IT FURTHER RESOLVED, that the Executive Director of the Pacific Marine Fisheries Commission shall transmit copies of this resolution to the Director of the Federal Water Pollution Control Administration and to the appropriate water pollution agencies in Washington, Oregon, California, Idaho and Alaska.

2. To Promote Comprehensive Planning and Coordination of Waste Disposal

WHEREAS, the Pacific fish and shellfish resources are definitely re-emerging into their rightful high food and recreational importance to the economy of the United States, parallel only in lesser degree to our other renewable natural resources of agriculture and lumbering, and

WHEREAS, material and thermal pollution of our marine and fresh waters today are a major threat to the very existence of salmonids and other aquatic resources and are a block to volume rehabilitation of these resources, and

WHEREAS, new methods in the control of sewage and industrial waste discharges must be developed if the clean waters restoration objective is to be attained, and

WHEREAS, programs directed toward new solutions to these problems are now underway, such as the Bay-Delta Study in California,

NOW, THEREFORE, BE IT RESOLVED by the Pacific Marine Fisheries Commission that the Federal Water Pollution Control Administration be requested to provide information on recent research and planning programs being undertaken in the direction of a public service type of waste collection and disposal system so as to provide for the reclamation of useful materials and for the highest degree of treatment prior to disposal and/or utilization of the final effluent, and

BE IT FURTHER RESOLVED, that the requested information be made available to the Executive Director of the Pacific Marine Fisheries Commission by October 1, 1968.

3. Delta Facilities of the California Water Plan

WHEREAS, the State of California and the Federal Government have selected the Peripheral Canal as the engineering facility in the Sacramento-San Joaquin Delta to carry out the California Water Plan and to further develop the Central Valley Project, and

WHEREAS, the State of California is faced with a deficit in the financing of the State Water Project, and the Bureau of Reclamation has suffered some unfortunate delays in submission of the Feasibility Report to Congress, and

WHEREAS, the California Department of Fish and Game has predicted increasing dangers to the salmon resources in the years between the start of State pumping operations (now operating), increased pumping by the Bureau of Reclamation and completion of the Peripheral Canal, and

WHEREAS, the king salmon resources of the Central Valley of California must pass successfully through the Sacramento-San Joaquin Delta, and

WHEREAS, man's activities have already done considerable damage to the salmon resources, and there is great need to protect and rebuild these resources, and

WHEREAS, these king salmon runs are of major importance to the salmon fisheries in the ocean off California and also contribute to ocean fisheries off Oregon and Washington, and

WHEREAS, the Peripheral Canal Plan is the only known engineering plan which will protect existing king salmon resources passing through the Sacramento-San Joaquin Delta, and which will provide opportunities for passage through the Delta of increased king salmon runs thereby allowing enhancement of said salmon runs, and

WHEREAS, existing conditions in the Delta are detrimental to the San Joaquin River salmon runs and may become so to the Sacramento River and American River salmon runs before completion of the Peripheral Canal,

NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission reaffirms its support of the Peripheral Canal Plan and urges all appropriate agencies to start and complete this project at the earliest possible date to protect and enhance the salmon resources of the Central Valley of California, and

BE IT FURTHER RESOLVED, that copies of this resolution be forwarded to: Governor of California, California Water Commission, Resources Agency of California, California Department of Water Resources, California Department of Fish and Game, Secretary of the Interior, U. S. Bureau of Reclamation, U. S. Fish and Wildlife Service, U. S. Army Corps of Engineers, California Assembly Committee on Wildlife and Conservation, California Assembly Water Committee, California Senate Committee on Water Resources, California Senate Committee on Fish and Game, all members of California Legislature, and appropriate members of Congress.

4. Penny Cliffs and Reregulating Dams, Clearwater River, " Idaho

WHEREAS, the construction of Penny Cliffs Dam in the Middle Fork Clearwater River and one or more reregulating dams in the Middle Fork and Main Clearwater Rivers is under consideration by the U. S. Army Corps of Engineers, and

WHEREAS, the Clearwater River is a major producer of steelhead in the Columbia River system, and

WHEREAS, runs of spring and summer chinook, fall chinook, and coho salmon have recently been reintroduced into the Clearwater River drainage, and

WHEREAS, Dworshak Dam which is now under construction on the North Fork has removed from production approximately 50 percent of the suitable anadromous fish habitat in the Clearwater River drainage, and

WHEREAS, construction of Penny Cliffs Dam would remove most of the remaining portion of the drainage from anadromous fish production, and construction of reregulating dams would have an adverse effect upon survival of upstream and downstream migrating anadromous fish,

NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission in session at Gleneden Beach, Oregon, on December 1, 1967, does hereby oppose the construction of any further dams in the Clearwater River drainage, and

BE IT FURTHER RESOLVED, that copies of this resolution be sent to the Congressional Delegations from Idaho and the Pacific Coast States and to the Governor of Idaho, the U. S. Army Engineers, and all other interested parties as determined by the Executive Director of the Pacific Marine Fisheries Commission.

5. To the Memory of Milton C. James

WHEREAS, upon the death of Milton C. James on June 9, 1967, at Olympia, Washington, the Pacific Marine Fisheries Commission and the fisheries of the Pacific Coast lost a dedicated fishery scientist and friend, and

WHEREAS, this hard-working and astute man, after retirement as Assistant Director of the United States Fish and Wildlife Service, in March 1952, continued to serve fisheries as follows: Consultant to the Washington Department of Fisheries; August 1954 — temporary Executive Director, International North Pacific Fisheries Commission; December 1955 — Executive Director, Pacific Marine Fisheries Commission; August 1956 — Director, Oregon Fish Commission; June 1957 — Executive Director, Pacific Marine Fisheries Commission for a second time; September 1960 — Consultant, Pacific Marine Fisheries Commission; December 1965—Editor, Pacific Marine Fisheries Commission, and

WHEREAS, he continued to give generously of himself, despite failing health, until the very end; -•

NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission, in regular session on December 1, 1967, at Gleneden Beach, Oregon, observe a moment of silence in memory of Milton C. James, and that the Executive Director be instructed to convey the Commission's appreciation for^Milt's services to his widow and family.

6. Thermal Plants to be Licensed by FPC

WHEREAS, thermal plants, especially nuclear plants, for the generation of electric power are expected to increase rapidly in number, and

WHEREAS, it is anticipated that many of these plants will be located on bodies of water where the use of water for cooling will have significant effect on the aquatic resources therein, and

WHEREAS, the present system of licensing and control of thermal power plants does not provide adequately for the protection of these resources, and

WHEREAS, the Federal Power Commission has the responsibility to see that all resource values, including fish and wildlife, are protected at projects proposed under its licensing authority,

NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission urges Congress to require all thermal plants to be licensed by the Federal Power Commission.

7. Fund Biological Studies as Part of Water Project Planning

WHEREAS, many of the rivers, streams and lakes of the United States tributary to the Pacific Ocean and Bering Sea support runs of salmon and steelhead and other anadromous fish which are of enormous value to the people of this Nation as food, livelihood and recreation, and

WHEREAS, the Bureau of Reclamation of the U. S. Department of the Interior and the Corps of Engineers of the U. S. Army have constructed and are continuing to propose construction of additional dams, reservoirs and appurtenant facilities for irrigation, navigation, power production, and flood control on many of these freshwater bodies, and

WHEREAS, these projects in general modify the cool, oxygenated water, clean gravel, and positive access to and from the ocean required for the perpetuation of these fish, thereby causing decreased abundance and, in some cases, total extinction of the runs of salmon and steelhead and other anadromous fish that frequent the freshwater bodies on which these projects are constructed, and

WHEREAS, it is only through careful long-range biological studies or planning that values of the endangered fish and recreation resources and the potential effects of proposed projects can be assessed and possible alternative projects can be considered,

NOW, THEREFORE, BE IT RESOLVED, that biological studies be commenced at the earliest opportunity concurrent with or preceding engineering feasibility studies — and that biological studies be conducted by the appropriate state fish and wildlife agencies having jurisdiction for these resources in the pertinent area, and be financed by the agencies that propose to build and operate the projects, and

BE IT FURTHER RESOLVED, that the Pacific Marine Fisheries Commission does hereby request the Bureau of Reclamation and the Corps of Engineers to include sufficient funds in project costs to fund comprehensive biological studies of the salmon and steelhead and other anadromous resources in the areas which would be affected by the proposed construction projects.

8. Greenland Flounder

WHEREAS, for the past century, the large flatfish, genus *Hippoglossus* including the species *Hippoglossus stenolepis* and *Hippoglossus hippoglossus*, has been marketed under the name of halibut, and

WHEREAS, recently another flatfish, genus *Reinhardtius*, species *bippoglossoides*, has been imported into the United States from Newfoundland in large quantities under the name of "Greenland halibut," and

WHEREAS, *Reinhardtius* has for most of the last century been commonly referred to in commercial circles in Canada

and the United States as turbot or "Greenland turbot," although the American Fisheries Society has recognized the name "Greenland halibut," and

WHEREAS, at least 90 percent of the present world production of *Reinhardtius* is taken in waters throughout the Northern Hemisphere other than off the coast of Greenland, and

WHEREAS, *Reinhardtius* is being marketed in the United States with the word halibut being used in such a way as to deceive consumers in the belief that they are buying genuine halibut from Greenland, and

WHEREAS, genuine halibut is a firm textured fish high in protein and low in fat content, and

WHEREAS, *Reinhardtius* is a soft textured fish with approximately one-fifth less protein than that of genuine halibut and seven times more fat according to the U. S. Department of Agriculture, Handbook No. 8, "Composition of Foods," and

WHEREAS, the sale of these two essentially different fish products under similar names is a practice which is deceiving to the consuming public, and

WHEREAS, this deception, in addition to being deceiving to the consumer is demoralizing not only to the economy of the North Pacific halibut fishery but also to the North Pacific trawl industry in reducing the demand for their high quality trawl-caught fish,

BE IT THEREFORE RESOLVED, that the Pacific Marine Fisheries Commission hereby requests all appropriate governmental authorities to give urgent consideration to this problem with the aim of requiring *Reinhardtius hippoglossoides* to be marketed under a more appropriate name such as "Northern flounder," and

BE IT FURTHER RESOLVED, that copies of this resolution be sent to the United States Food and Drug Administration, American Fisheries Society, United States Bureau of Commercial Fisheries, and to other appropriate governmental agencies and individuals having an interest in avoiding deception in the marketing of food.

9. Revision of Membership Contribution Formula

WHEREAS, it is apparent that there is disparity between the financial contributions of the present member States of the Pacific Marine Fisheries Commission, and

WHEREAS, the Pacific Marine Fisheries Commission has considered this matter and feels that a revision of the membership formula is needed to correct the inequity, and

WHEREAS, a revision of the membership formula will require enactment of appropriate enabling legislation,

NOW, THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission respectfully memorializes the Congress of the United States and the Legislatures of the respective compact States to enact legislation to amend Article X of the PMFC Compact to provide that:

The States agree to make available annual funds for the support of the Commission on the following basis:

Eighty percent (80%) of the annual budget shall be shared equally by those member States with a significant commercial fishery; not less than five percent (5%) of the annual budget shall be contributed by each member State having no significant commercial fishery; the balance of the annual budget shall be shared by those member States with a significant commercial fishery in proportion to the primary market value of the products of their fisheries on the basis of the latest five-year catch records.

The annual contribution of each member State shall be figured to the nearest one-hundred dollars.

BE IT FURTHER RESOLVED, that the Executive Director of the Pacific Marine Fisheries Commission shall transmit copies of this resolution to the Governors and to the Congressional Delegates of the member States.

10. Aid and Protect Groundfish Stocks

WHEREAS, important elements of the American fishing industry have been in a state of decline for the past several years, and

WHEREAS, this decline is materially due to the lack of adequate safeguards for the American fishing industry comparable to those afforded foreign fishing industries by their governments, and

WHEREAS, in the area of production appropriate government agencies should take action to stimulate the initiation of fishing by U. S. fishermen off our coast on stocks of fish not utilized or underutilized; and should take action to insure that foreign fishing off our coasts, particularly off the west coast of the United States, be conducted in such a way as to insure continued existence of U. S. fishing industries, and to insure that foreign fishing on stocks of fish be conducted on a maximum sustained yield basis so as to insure maintenance of such stocks for the future, and

WHEREAS, in the area of marketing, the U. S. industry should be kept in healthy condition by being allowed to supply to the U. S. market for fish a fair percentage of the market's needs based upon a reasonable estimate of the productive capabilities of U. S. fishermen related to the estimated consumption of fish in the United States,

BE IT THEREFORE RESOLVED, that the Congress of the United States and all appropriate government agencies be requested to take such action as to insure adequate protection for the U. S. fishing industry as outlined in this resolution, and

BE IT FURTHER RESOLVED, that the Pacific Coast States and the Federal Government be requested to take immediate steps to increase efforts to determine the condition of the eastern Pacific fish stocks, particularly groundfish, so that this information may be used as a basis for such conservation measures, and

BE IT FURTHER RESOLVED, that copies of the resolution be sent to all governmental bodies having an interest in this matter.

11. Commendation to Departments of State and Interior

WHEREAS, the U. S. State Department, assisted by the Interior Department, has in the past several years conducted fisheries negotiations with a number of foreign countries, and

WHEREAS, these negotiations have had as their purpose the protection of fishery stocks of concern to U. S. fishermen, and

WHEREAS, as a result of these negotiations a number of agreements have been reached with foreign countries regarding fisheries of interest to the participating countries, and

WHEREAS, although the agreements reached have not achieved completely the objectives sought by the U. S. fishing industry; nevertheless, the agreements do represent material progress which will lead to protection of fishery stocks of concern to the U. S. fishing industry,

THEREFORE, BE IT RESOLVED, that the Pacific Marine Fisheries Commission herewith expresses its appreciation for the efforts expended by the Departments of State and Interior with the hope that the two Departments will continue their efforts to secure adequate protection for the stocks of fish of concern to the U. S. fishing industry, and

BE IT FURTHER RESOLVED, that copies of this resolution be sent to the Secretary of State and Secretary of the Interior.

Election of Officers, Etc.

The following were elected officers for 1968:

Executive Committee

Chairman — John R. Woodworth, Director, Idaho Fish and Game Department

First Vice-Chairman — Walter T. Shannon, Director, California Department of Fish and Game

Second Vice-Chairman — Thor C. Tollefson, Director, Washington Department of Fisheries

Secretary — Leonard N. Hall, Member, Oregon Fish Commission

Steering Group of Advisory Committee

Overall Chairman — William B. Durbon, Idaho

Deputy Chairman — Ray Sims, Idaho Sectional

Chairman — Charles R. Carry, California Sectional

Chairman — Nick Mladinich, Washington Sectional

Chairman — David B. Charlton, Oregon

The time and place of the 1968 Annual Meeting was not settled at Salishan although it was agreed that it would be in Idaho. It was subsequently decided to convene at North Shore Motor Hotel, Coeur d'Alene, Idaho, from November 19-22, 1968.

FINANCES

AUDIT REPORT

ALLEN H. ADAMS
Certified Public Accountant
Portland, Oregon

The Commission receives its financial support from legislative appropriations made in accordance with Article X of the interstate Compact in which the signatory states have agreed to make available annual funds for the support of the Commission in proportion to primary market value of the products of their fisheries as recorded in the latest published reports (five-year average), with the provision that no state shall contribute less than two thousand dollars per annum and the annual contribution of each state above the minimum shall be figured to the nearest hundred dollars.

August 14, 1967
The Board of Commissioners Pacific Marine Fisheries Commission State Office Building Portland, Oregon

Gentlemen:

I have examined the books and records of the Pacific Marine Fisheries Commission for the fiscal year ending June 30, 1967. The examination was made in accordance with generally accepted auditing standards and, accordingly, included such procedures as were considered necessary in the circumstances.

The accounting procedures of the Commission reflect revenue in the accounts when it is received rather than at the date when appropriated by member states to the Commission and reflect expenditures in the fiscal period in which they arise irrespective of when paid, i.e., the accrual basis.

The following exhibits are submitted*:

- A. Combined Balance Sheet, as at June 30, 1967, of the General Fund and Property Fund.
- B. Statement of Revenue and Expenditures, with Budgetary comparisons, for the period July 1, 1966 to June 30, 1967.
- C. Analysis of changes in Unappropriated Surplus and in the Property Fund for the period July 1, 1966 to June 30, 1967.
- D. Reconciliation of changes in the cash balance with revenues and expenditures for the period July 1, 1966 to June 30, 1967.
- E. Audit Comments.
- F. Scope of the Audit.

In my opinion, the accompanying statements present fairly the financial position of the Pacific Marine Fisheries Commission at June 30, 1967, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Yours very truly, ALLEN H.
ADAMS Certified Public
Accountant

*Only Exhibit A has been reprinted here. A complete audit report with exhibits was sent each Commissioner.

STATEMENT OF RECEIPTS AND DISBURSEMENTS

January 1, 1967 to December 31, 1967

CASH BALANCE Dec. 31, 1966		
(Ending Balance 19th Annual Report).....	\$40,264.87	
RECEIPTS: Contributions by		
Member States—		
California	\$13,300.00 ¹	
Idaho	2,000.00	
Oregon	3,900.00	
Washington	9,600.00	28,800.00
<hr/>		
REFUNDS:		
California State Compensation Insurance Fund.....		6.83
DISBURSEMENTS:		
Salaries and Wages:		
Executive Director, Consultants, Treasurer, Office Secretary and Temporary	\$22,318.31	
Office Supplies	822.96	
Library Supplies	8.00	
Telephone and Telegraph	391.92	
Postage, Freight, Express	671.42	
Printing of Publications	2,149.80	
Rents: Headquarters Office	1,015.74	
Premiums: Fidelity Bonds, Fire Insurance, Workmen's Compensation Insurance	177.92	
Audit of Fiscal Books and Records	315.00	
Private Car Mileage	100.82	
Fares: Airplane, Railroad, Other	786.33	
Meals and Lodging	601.17	
Physician and Hospital Insurance	120.00	
Retirement Contributions	2,111.11	
Annual and Research Meetings:		
Advisory Committee	\$1,846.51	
Commissioners	828.37	
Administrative and Research Staff	2,444.71	
Meeting Rooms	236.76	5,356.35
<hr/>		
Cooperative Research		2,167.42
<hr/>		
Total Disbursements	\$39,114.27	
Cash on Deposit in The United States National Bank of Portland, Oregon December 31, 1967	\$29,957.43	
<hr/>		
	\$69,071.70	\$69,071.70

BALANCE SHEET

June 30, 1967

EXHIBIT "A" GENERAL FUND

ASSETS:	Total	General Fund	Property Fund
Cash in Bank	\$21,813.85	\$21,813.85	\$
Office Furniture and Equipment	3,851.84	.....	3,851.84
Total Assets	\$25,665.69	\$21,813.85	\$ 3,851.84
LIABILITIES:			
Accounts Payable	\$ 489.90	\$ 489.90	
RESERVES:			
Reserve for Allocations—			
Coop. Research Note No. 1	\$ 4,074.04	4,074.04	
Printing, Note No. 2	5,592.00	5,592.00	
Total Reserves	\$ 9,666.04	\$ 9,666.04	
FUND BALANCE:			
Investment in Fixed Assets	\$ 3,851.84	\$	\$ 3,851.84
Unappropriated Surplus	11,657.91	11,657.91	
Total Fund Balances	\$15,509.75	\$11,657.91	\$ 3,851.84
Total Liabilities, Reserves and Fund Balances	\$25,665.69	\$21,813.85	\$ 3,851.84

NOTE #1: During the fiscal year ended June 30, 1966, an allocation of \$6,331.00 was made for co-operative research on the Crescent City-Brookings-Port Orford Sampling Program as outlined in Resolution No. 1 at the 1965 annual meeting at Boise, Idaho. This was included in the revised budget for the 1965-67 biennium.

NOTE #2: Purchase orders were issued, on June 30, 1967, for the printing of the 19th Annual Report in the amount of \$2,082.00 and Bulletin No. 7 in the amount of \$3,510.00, or a total of \$5,592.00.

¹The remaining half of the Annual Contribution (\$26,600) for fiscal year, July 1, 1967-June 30, 1968, was received June 17, 1968.

Appendix 1 — Status Reports

STATUS OF THE 1967 PACIFIC COAST ALBACORE FISHERY

LARRY H. HREHA

Oregon Fish Commission

Combined albacore tuna landings of California, Oregon and Washington will approximate 46 million pounds in 1967. This is about 8.5 million pounds more than last year and about 4.5 million pounds above the 25-year average of 41.4 million pounds (Figure 1). The significant point of the 1967 season is the record Oregon-Washington landings and the near failure of the California fishery.

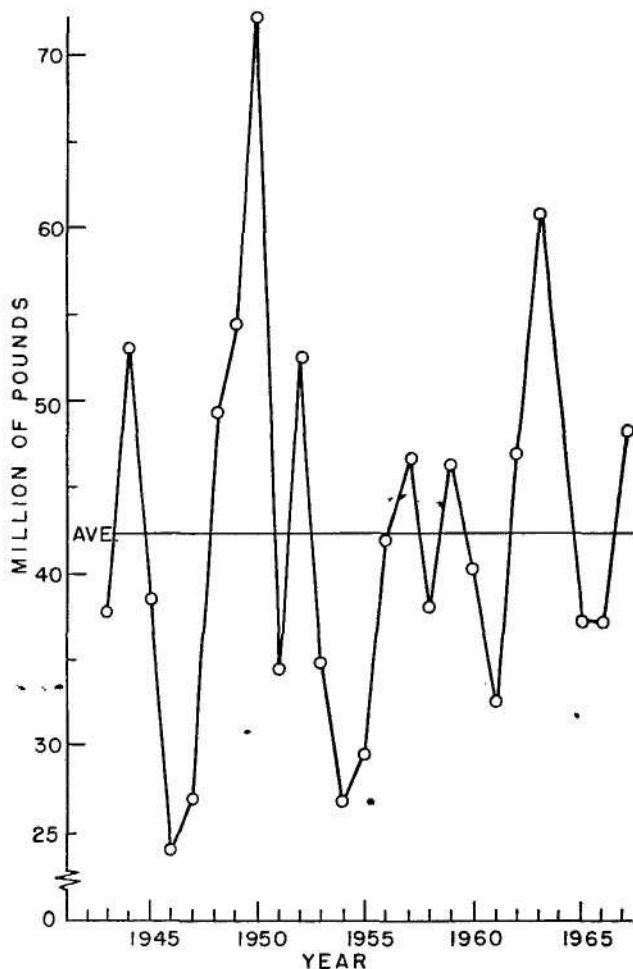


FIGURE 1. Pacific coast albacore landings, 1942 through 1967, and 25-year average.

California

The albacore migration arrived late again this year, and, by the time it appeared, the ocean as far north as Oregon and Washington had warmed spectacularly. These two related events apparently diverted the bulk of the migration north of Cape Mendocino for the third consecutive season.

Sea temperatures in the northeastern Pacific this spring were cooler than in recent years, and thus it appeared that we might expect a good fishery on the southern grounds. Despite favorable environmental conditions only four albacore were caught during the preseason albacore cruise, and these were far offshore. Considerable scouting by commercial vessels on the southern grounds through early July produced only small catches. Meantime, good signs of albacore were reported off the Oregon coast, and about 90% of the California fleet sailed directly for northern waters.

The small fleet that remained off California this year found fishing slow south of Point Conception during August and fish non-existent in September. A small but steady fishery developed off central California between Morro Bay and Monterey and saved this fleet, economically. In addition there was excellent fishing between Point Arena and Crescent City in late August and early September. During this period many boats moved south from Oregon to fish this area and land their catch in California.

California's monthly landing figures are unavailable at present. However, we estimate that approximately 10 million pounds of albacore were landed through September — barely a good month's fishing during a normal season. Total landings for 1967 should be between 15 million pounds and last season's 18 million (Figure 2), depending upon the number of skippers who unload their final trip in California. These are the lightest landings since 1947, and are only about one-half of the 31.5-million pound, 25-year average. However, demand was high and the price was favorable, opening at \$390 and rising to \$400 per ton for most of the season. The dominance of small albacore (12 to 14 pounders) this year partly explains why the landings were lighter than in 1966.

California partyboat anglers fared better than last year, by catching some 85,000 fish through September. If good fishing continues off central California, the statewide total may reach the annual, 90,000 fish, post-war average. Schools of small, easily handled fish were located close to sportfishing centers and helped compensate for the loss of nearly 2 weeks of fishing during July.

Oregon

Oregon albacore landings reached an all-time high of an estimated 28 million pounds in 1967 (Figure 2). The fishery began about mid-July when good catches were reported off southern Oregon. By the end of the month, jig boats were reporting as many as 750 fish per day 60 to 100 miles off Coos Bay and Cape Blanco. Poor fishing in California resulted in a large part of the California fleet moving to Oregon waters where most of the boats remained through August.

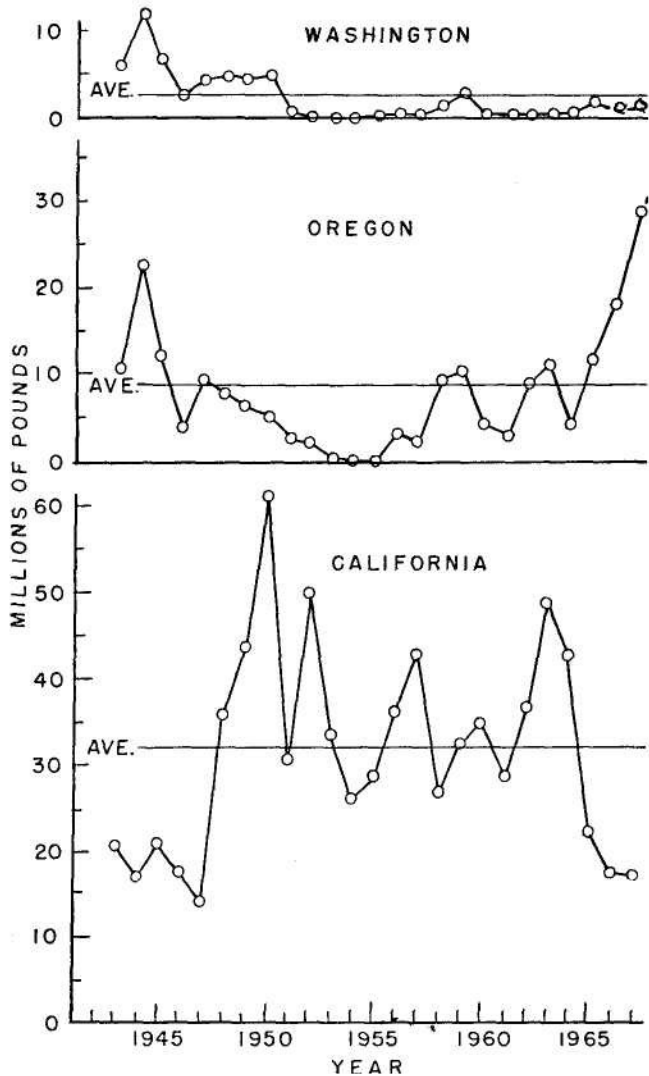


FIGURE 2. Annual albacore landings by state, 1942 through 1967, and 2.5-year averages.

Fishing remained excellent through August with the center of fishing gradually moving northward to the Newport area.

In early September, excellent fishing developed off northern California, and much of the fleet moved south. However, bad weather set in about the second week of September, and most of the fleet returned north as excellent fishing was reported from the Columbia River to Destruction Island.

Bait-boats did especially well during September off northern Oregon and southern Washington. One boat fishing 80 miles northwest of the Columbia River reported a catch of 119 tons in one day and 44 tons the next. This is the record 1-day catch of albacore for a single bait or jig boat off Oregon and may hold for other areas and types of gear as well.

In late September, cold storage facilities were filled and delays of up to 1 week were experienced in unloading. A series of storms forced most of the fleet to seek shelter at month's end, and many California boats returned south as weather permitted.

During the season, the bulk of the fish ranged from 12 to 14 pounds, with some large fish (18 to 25 pounds) being taken in inshore areas. Very few small fish were caught.

The price for albacore was set before the season started at \$390 per ton by California packers and was raised to \$400 per ton when \$410 per ton was offered for albacore delivered in Astoria. The price held firm until the third week in September when it was lowered \$25 per ton by all buyers.

Washington

We estimate that the 1967 total will reach 1,800,000 pounds (Figure 2). The final figure will, in large measure, depend on the amount of albacore landed by boats returning to Puget Sound ports at the termination of their fishing activities. It will be well below the 2.5-year Washington average of 2,380,000 pounds.

Albacore abundance was exceptionally good off the Washington coast during the 1967 season, and a large segment of the Washington troll fleet participated in the fishery. The lack of suitable landing and processing facilities again resulted in most dealers discouraging or actually refusing to accept albacore landings. Thus the poundage figures do not, by any means, reflect the excellent abundance of fish.

Summary

California landings were about half of the 2.5-year average, the lightest since 1947. Oregon landings were the best since the Oregon fishery began in 1936. Washington landings were up about 1/4 million pounds over last year. The combined landings of all 3 states reached an estimated 46 million pounds, some 8.5 million pounds above last year and 4.5 million pounds above the 2.5-year average. The rapid warming of the waters off Oregon apparently caused the main body of albacore to enter the fishery off southern Oregon for the third year in a row. The movement of most of the California fleet into northern waters early in the season and the excellent fishing which occurred accounts for the record Oregon landings. Warm water and excellent catches occurred off Washington, but only a few of the catches were landed in Washington.

Large fluctuations in the migration and annual harvest of albacore are normal. The above-average catch, despite the near failure of the southern fishery, indicates the great mobility of the albacore fleet. The evidence at hand indicates that the albacore resource remains in good condition.

STATUS OF THE 1966-1967 PACIFIC COAST DUNGENESS CRAB FISHERY

C. DALE SNOW
Oregon Fish Commission

Coastal crab landings were down slightly during the 1966-67 season. Preliminary figures for the states of California, Oregon and Washington show a catch of 29 million pounds compared to 31 million pounds in 1965-66. However, this is well above the 20-year average of 24 million pounds. Annual coastal landings by state appear in Figure 1.

Preliminary catch statistics for Washington show an ocean catch of 8.1 million pounds through July of the 1966-67 season and 765,000 pounds from the Puget Sound fishery. These figures represent a 2-million-pound decrease in the ocean fishery and a 50% decrease in the Puget Sound fishery when compared to the 1965-66 season.

Oregon crab landings through July 1967 reveal a catch of 9.4 million pounds as compared to 10 million pounds landed during the same time period during the 1965-66 season. This is a decrease of 600,000 pounds. However, poor bar conditions at the port of Brookings forced some Oregon boats to land their catches for the first 6 weeks of the season at Crescent City. These landings are estimated at 700,000 pounds, and if they had been landed in Oregon would have kept the Oregon landings comparable for the last two seasons.

Preliminary landing figures for California show a catch of 10.6 million pounds during the 1966-67 season as compared to 10.4 million pounds landed in 1965-66. The northern California fishery (Fort Bragg-Crescent City) accounted for 10.2 million pounds of the total catch. The San Francisco fishery produced the poorest catch ever recorded for that area with a season total of 390,000 pounds.

The 1966-67 crab season can be called good, with only the State of Washington showing a marked decrease in production. The outlook for the 1967-68 season, as based on interviews in Oregon and sampling in California, may be summed up as follows: Oregon anticipates an average or slightly better than average season; California expects the northern California season to be of the same magnitude as the past two seasons (9*10 million pounds) and the San Francisco season to be poor again. The current sampling program out of San Francisco indicates that the next three seasons will also be poor because of a series of weak year classes entering the fishery.

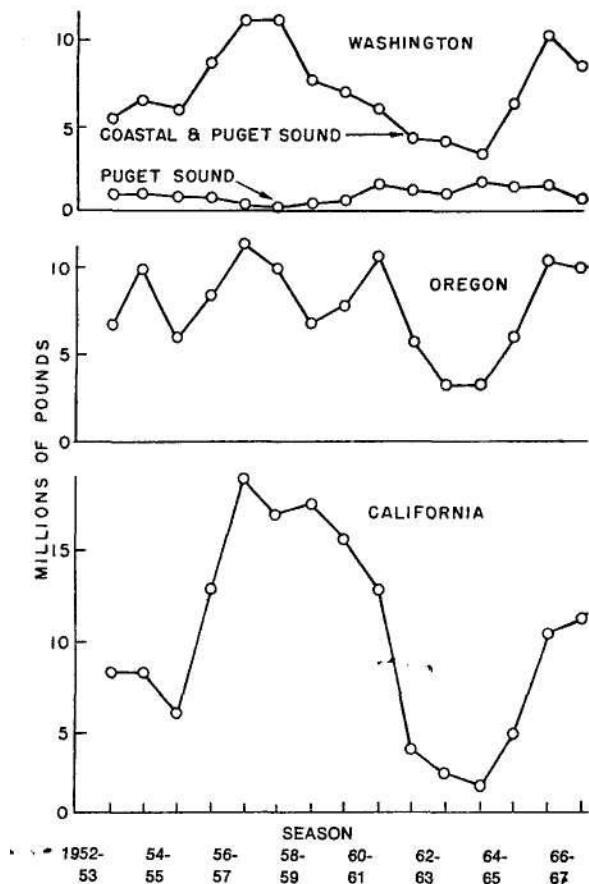


FIGURE 1. Dungeness crab landings by state.

STATUS OF THE 1967 TRAWL FISHERIES OF THE PACIFIC COAST

JAMES M. MEEHAN
Oregon Fish Commission

The 1966 trawl landings for the Pacific Coast were 185 million pounds (Figure 1), exceeding the mean 10-year catch (1956-65) of 137 million pounds by 48 million pounds (35%). Strong markets, record harvests of Pacific cod and rock sole, and the beginning of a hake fishery were the major contributors to the upsurge.

The Alaskan trawl catch remained negligible in 1967 with landings of only 13,400 pounds. Canadian landings of 27.5 million pounds through September 1967 were 40% less than the 1966 catch through September. The Washington trawl fleet was having a good year, and it was expected that the 1967 total production would exceed the record 68.9 million pounds landed in 1966. Landings through September were 23% above 1966 for the same period. Oregon landings through October 1967 were down 20% for the same period in 1966. Total landings were expected to be down 4 million pounds from the previous year. California trawl production during the first 6 months of 1967 was down 6% from comparable 1966 data. Total California 1967 trawl landings were expected to be slightly less than the 35.2-million-pound catch of 1966.

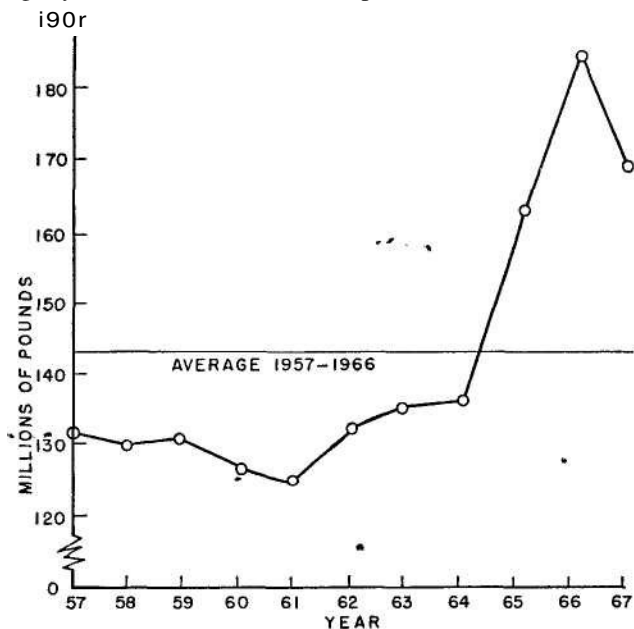


FIGURE 1. Total Pacific Coast trawl landings (1956-67).

Petrale Sole

The 1966 catch of petrale sole was 8.5 million pounds (Figure 2), which was the same as the 1965 landings and 5% below the 10-year average. The 1967 fishery shows the following trends:

- Canadian landings through September down 20%
- Washington landings through September down 41%
- Oregon landings through August up 9%
- California landings through June up 34%.

Expected catch during 1967 will be down slightly from 1966.

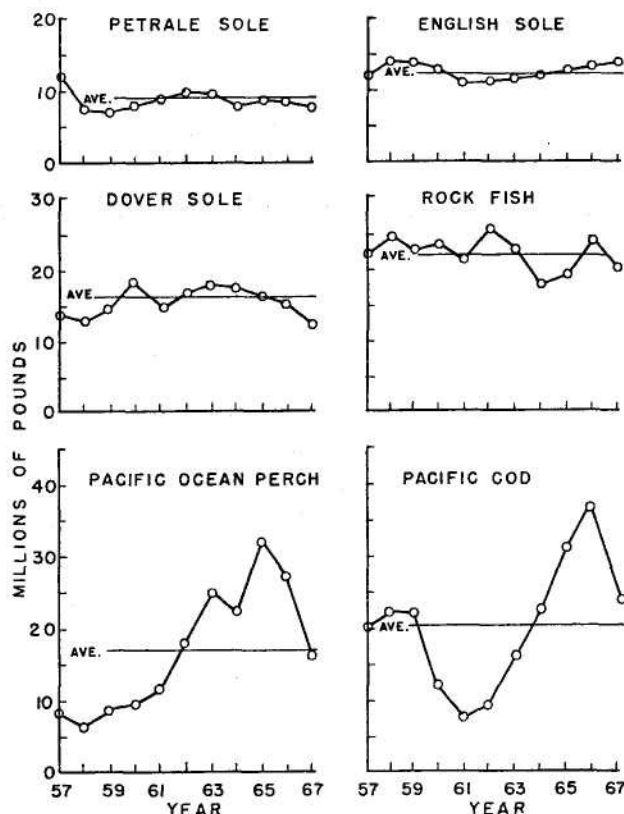


FIGURE 2. Pacific Coast trawl landings by species.

English Sole

The 1966 landings of English sole of 13.2 million pounds are 1.5 million pounds greater than 1965 and 10% above the 10-year average. The estimated 1967 landings are expected to run as follows:

- Canadian landings through September up 36%
- Washington landings through September down 20%
- Oregon landings through August down 28%
- California landings through June up 39%.

The total 1967 catch will be well above that of 1966.

Dover Sole

Landings decreased from 16.2 million pounds in 1965 to 15.4 million pounds in 1966. At the time of this report the 1967 fishery is progressing as follows:

- Canadian landings through September down 64%
- Washington landings through September same as 1966
- Oregon landings through August down 4%
- California landings through June down 41%.

The 1967 landings will be down 20 to 25% from 1966.

Rockfish

Rockfish is a collective term that includes many species. The total 1966 landing of 23.6 million pounds represented a 31% increase over the 1965 landings of 18.8 million pounds and a 7% increase over the 10-year average. Area landings for 1967 will show:

- Canadian landings through September down 51%
- Washington landings through September down 29%
- Oregon landings through August down 20%
- California landings through June down slightly.

The predicted combined landings for 1967 will be approximately 15% less than 1966.

Pacific Ocean Perch

Pacific ocean perch landings decreased by 5.0 million pounds in 1966 to 27.1 million pounds from the 1965 record of 31.1 million pounds. This is a possible reflection of competition with foreign fleets for fish and fishing grounds. The 1967 Pacific ocean perch landings continued to decline as the full effects of the foreign fishery were felt. Landings by area indicate the following:

- Canadian landings through September down 89%
- Washington landings through September down 13%

Oregon landings through August down 59%
California landings negligible.

Total 1967 landings will be down 35% from 1966.

Pacific Cod

Landings of Pacific cod increased significantly in 1965 and 1966 to 34.6 and 36.8 million pounds, respectively. The fishery for 1967 by area shows:

- Canadian landings through September down 54%
- Washington landings through September down 12%
- Oregon landings through August down 44%
- California landings negligible.

From these indicators it appears that Pacific cod landings will be down by 40%.

Summary

Market difficulties, foreign fleets, and labor strife within the trawl fishery have affected landings for 1967. The total trawl catch will be about 6% below the 1966 catch. A large increase in Washington's fish-meal landings of Pacific hake from 8.4 to 24.0 million pounds, however, masks the true seriousness of the trawl fishery decline. The 1967 landings of food fish only will be about 20% below the 1966 landings.

STATUS OF THE 1967 PACIFIC COAST TROLL SALMON FISHERY

ROBERT McQUEEN
Oregon Fish Commission

Preliminary troll-salmon-catch figures from Alaska, British Columbia, Washington, Oregon and California indicate that the 1967 landings will be about 55 million pounds compared to 71 million pounds landed in 1966.

Oregon chinook landings will be up slightly in 1967, but Alaska, British Columbia, Washington and California all report chinook landings lower than the 1966 figures.

Oregon and California had record coho seasons, while Washington was essentially the same as last year. British Columbia had a poor coho season, landing only 54% of last year's poundage.

Troll pink salmon landings were excellent along the coast with record catches in British Columbia and Oregon.

Troll Chinook Fishery

Figure 1 shows the troll chinook catch by area since 1956. While the 1967 Alaska troll chinook catch of less than 4 mil-

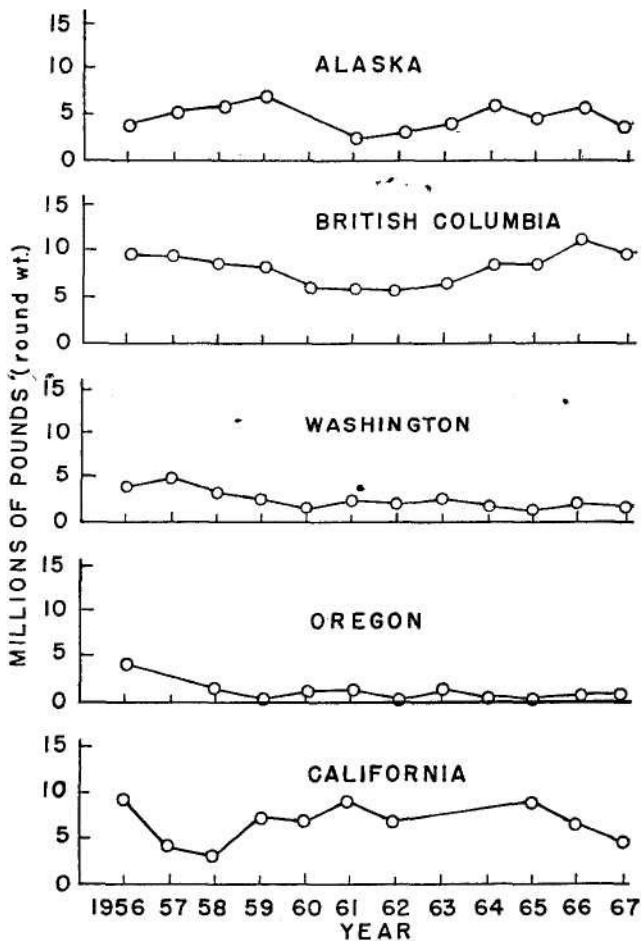


FIGURE 1. Pacific Coast troll chinook salmon landings.

lion pounds was one of the poorest on record, the final 1966 Alaska troll chinook catch of 5.7 million pounds was the fourth best catch since 1956.

Troll chinook landings for British Columbia through September totalled 9.7 million pounds round. Since October landings are usually small, the 1967 season will be less productive than last year when 11.4 million pounds were landed.

Washington chinook landings of 1.7 million pounds round were down slightly from the 2.0 million pounds landed in 1966. The Neah Bay district had its poorest fishing on record which accounted for the decline from 1966 since other Washington ports compared favorably with recent years. The 1963-brood chinook showed relatively well in the fishery, but the abundance of 1964-brood fish was definitely down.

Oregon chinook landings were about 1.2 million pounds round. This was up slightly from the 0.9 million pounds landed last year. Brookings had its best April-May fishing on record, and Newport had good June fishing. Oregon is the only area to show an increase in chinook landings in 1967.

California had its poorest chinook year since 1939 with only 3.5 million pounds round landed compared to 6.8 million pounds landed in 1966.

Troll Coho Fishery

Troll coho landings were down from 1966, mainly due to a scarcity of fish in British Columbia waters (Figure 2). The 1967 statistics for Alaska show about the same catch as in 1966 when the final Alaska troll coho catch totalled 4.8 million pounds, the poorest since 1961.

British Columbia 1967 coho landings of 13.4 million pounds round through September were down 10.9 million pounds from 1966 production. This was the poorest season since 1960, although average when compared to the seasons prior to 1960.

Washington coho landings of 6.2 million pounds round were similar to the 6.1 million pounds landed in 1966, making it the third best season since 1935.

Washington had the poorest catches on record from the Neah Bay district, although LaPush and Ilwaco were very good.

Oregon topped its 1935 record of 6.3 million pounds round by landing an estimated 8.0 million pounds round this year. This compares to 5.2 million pounds landed in 1966. Oregon had exceptional landings in all areas during July.

California also set a coho record with slightly over 4 million pounds compared to just under 4 million pounds landed last year. This is the first time in California that coho have exceeded chinook in commercial landings.

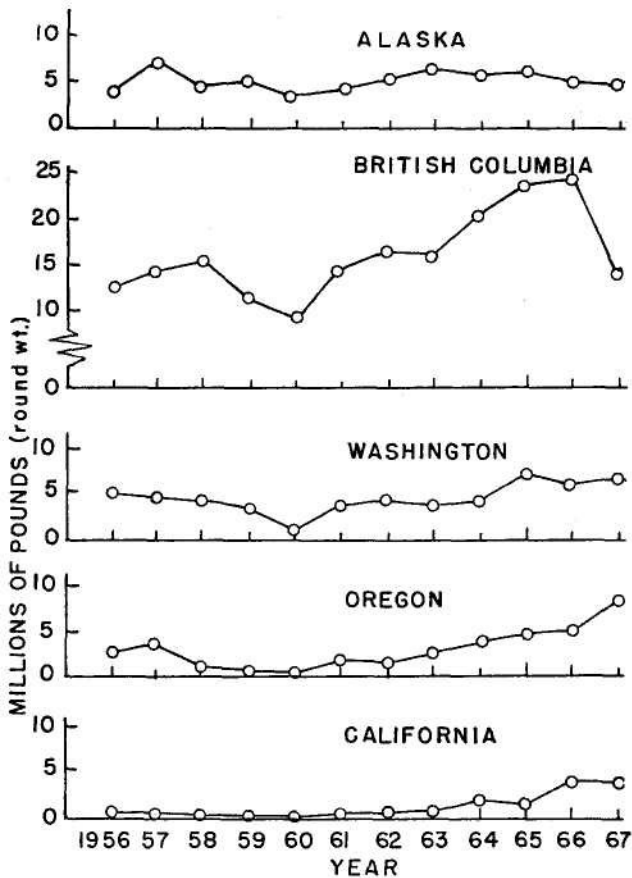


FIGURE 2. Pacific Coast troll coho salmon landings.

Troll Pink Fishery

Record troll catches of pink salmon were landed in British Columbia and Oregon. British Columbia landings through August totalled 9.8 million pounds round. Oregon landed over 1.2 million pounds round while Washington landings were about 1.9 million pounds round, topped only by the 3.0 million pounds landed in 1963.

Summary

From 1956-62, Pacific Coast troll chinook salmon landings

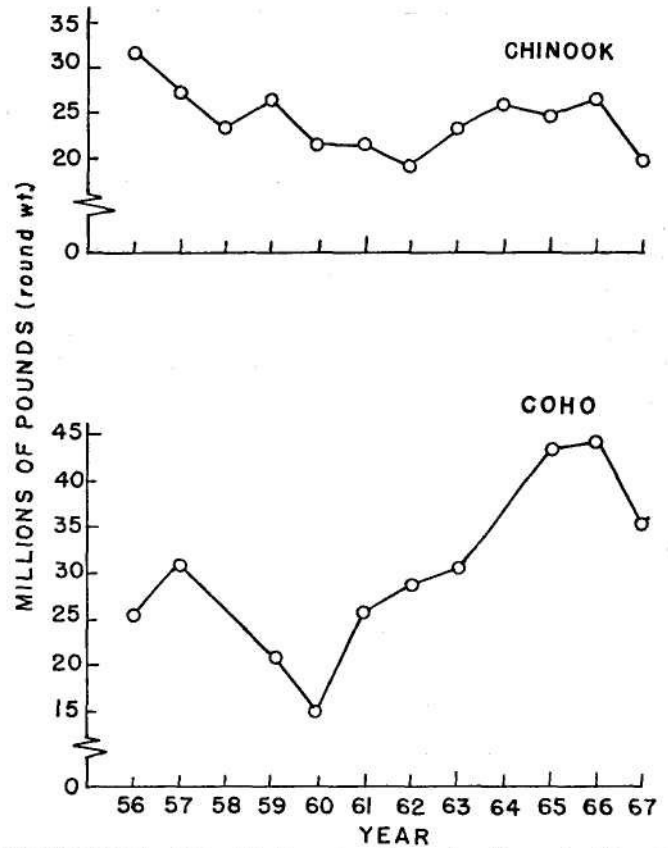


FIGURE 3. Total Pacific Coast landings of troll-caught chinook and coho salmon.

showed a declining trend (Figure 3). The years 1963-66 showed a brief improvement, but 1967 was downward again.

For the period 1956-60, Pacific Coast troll coho salmon landings showed a sharp downward trend. In 1961 this trend was reversed and from 1961-66 the landings rose sharply. In 1967, however, coho landings dropped because of the reduced British Columbia catch.

Troll pink landings will probably be at an all-time high this year with record catches reported from British Columbia and Oregon.

STATUS OF THE PACIFIC COAST PINK SHRIMP FISHERY-1967*

JACK G. ROBINSON
Oregon Fish Commission

The shrimp fishery of Washington, Oregon and California harvested a record 12.9 million pounds of ocean shrimp in 1967. This was 28% greater than the old high of 9.8 million pounds recorded in 1958. It was more than twice the 1966 catch of 6.2 million pounds and the 10-year average (1957-1966) of 6.0 million pounds (Figure 1). A unique combina-

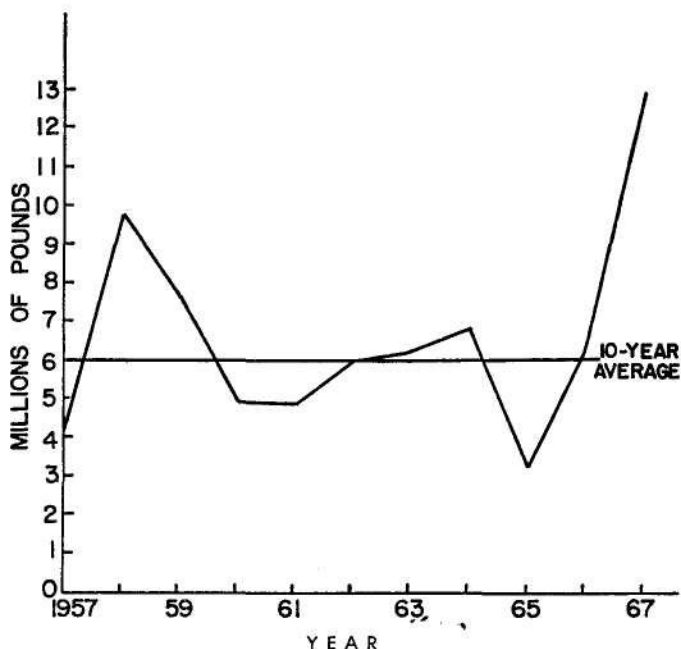


FIGURE 1. Combined shrimp landings for Washington, Oregon and California.

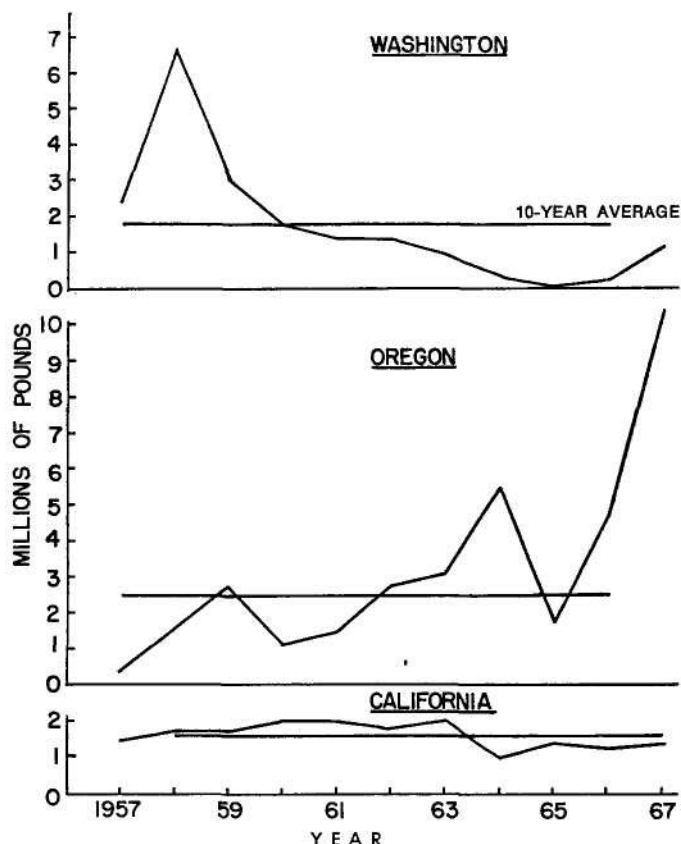


FIGURE 2. Annual shrimp landings in Washington, Oregon and California.

tion of factors spurred the fishery, especially in Oregon and Washington, where a number of trawl boats that normally harvest bottom fish converted to shrimp. This was due to the poor 1967 fish market, a very good shrimp market, and an abundance of shrimp throughout most of the year. A renaissance Washington fishery landed slightly over 1.0 million pounds, the first year since 1962 that 1 million pounds had been exceeded in Washington. This, combined with a record Oregon harvest of 10.4 million pounds, was largely responsible for the record combined harvest. The California harvest of 1.4 million pounds was only slightly less than average. Figure 2 shows landings by state except Alaska since 1957.

Alaska

Alaska's 1967 landings will be approximately 37 million pounds, with approximately 34.1 million pounds being landed through September 30. The 1967 total was 31% over the 1966 total of 28.2 million pounds and 180% more than the 1957-66 (10-year) average of 13.2 million pounds. Figure 3 shows Alaska landings for the period 1956 to 1967.

British Columbia

Shrimp landings from trawl and trap operations to October 31 totaled 1,327,329 pounds. It is expected that the 1967 catch will equal the 1966 total of 1.68 million pounds. Fisheries for *Pandalus jordani* on the south coast continued to yield, as in other years, half or more of the total production. The Stuart Channel ground off the lower east coast of Vancouver Island was especially productive this fall for *P. jordani*. Trap fishing for the "spot" shrimp or "prawn," *P. platyceros*, set a record in 1967; the catch to October 31 was 115,353 pounds, well above the previous high in 1953 of 92,300 pounds.

Washington

The 1967 pink shrimp fishery began with one landing in late April and accelerated to landings of 413,000 pounds in May. This was considerably more than the total 1966 catch

*This is a revised version of the report submitted at the 1967 Annual Meeting. It presents 1967 data in total instead of the original preliminary estimates.

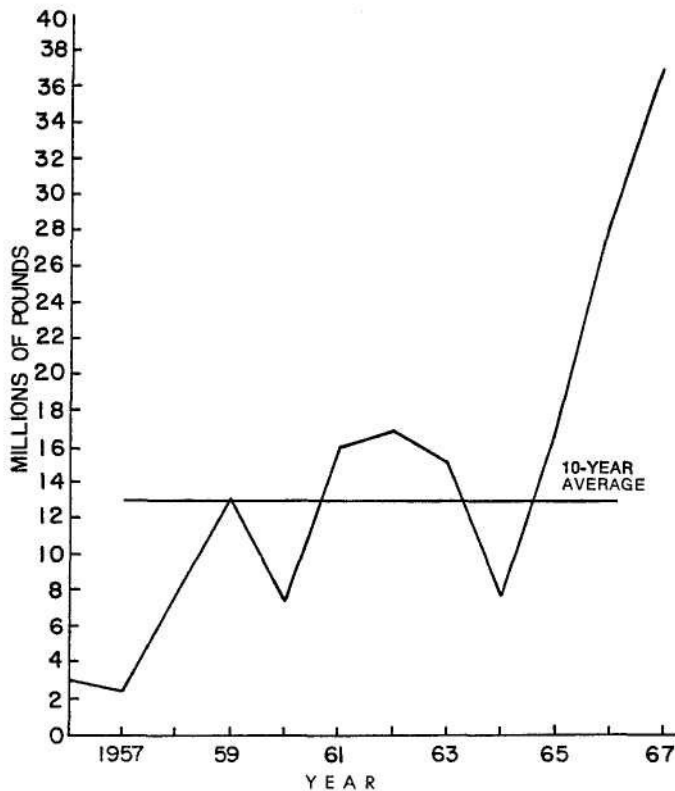


FIGURE 3. Annual shrimp landings in Alaska.

of 283,000 pounds. The 4 boats involved in May found excellent fishing off Grays Harbor (823 pounds/hour tow) and northern Oregon (660 pounds/hour tow). Landings declined to less than 231,000 pounds in June, as overall catch/hour dropped to 480 pounds. Catch rate increased to over 600 pounds/hour in July and August, but limited effort held the total catch for these months to 325,000 pounds, all taken off Grays Harbor.

Approximately 50,000 pounds were landed in September, bringing total Washington landings to just over 1 million pounds through September 25. Of this total, 850,000 pounds were taken off Grays Harbor and 161,000 pounds off northern Oregon. Destruction Island failed to produce commercial quantities.

The strong 1964-year class was the most important age group in the Grays Harbor area, but the 1965- and 1966-year classes both made substantial contributions. The 1966-year class was recruited as the season progressed and made up 35 to 40% of the August catch (by number). Indications of a substantial 1966-year class forecast a good fishery for 1968.

Oregon

The record Oregon landing of 10.4 million pounds was 89% greater than the old record of 5.5 million pounds landed in 1964 and 121% greater than the 4.7 million pounds landed in 1966. Of the total, 103,000 pounds were taken off Washington (670 pounds/hour tow) and approximately 65,000 pounds off northern California (867 pounds/hour) both in August. The Oregon catch rate was 520 pounds/hour.

The fishery began modestly in March with 308,000 pounds taken mostly off Coos Bay by 17 boats (522 pounds/hour). Landings accelerated in April to 1.1 million pounds (511 pounds/hour) by 26 vessels. Landings totaled 1.8 million pounds in May, 2.2 million pounds in June, 1.6 million pounds in July, 2.1 million pounds in August, 1.1 million pounds in September, and 200,000 pounds in October. Catch per effort dropped to less than 500 pounds per hour only in July and October.

A total of 45 vessels delivered shrimp in Oregon in 1967. Four vessels delivered 1.4 million pounds into Garibaldi, the first year significant shrimp landings were made there. Newport landings of approximately 3.0 million pounds were the largest on record. Warrenton landings of 1.7 million pounds were the second highest on record, exceeded only by the 2.8 million pounds landed in 1959. Coos Bay area landings of 2.7 million pounds were exceeded only by the 1964 catch of 4.3 million pounds. The Port Orford catch of 790,000 pounds and Brookings landings of 850,000 pounds completed the Oregon catch.

Catch per effort fell significantly below 500 pounds per hour tow only at Coos Bay where small 1966-year-class shrimp dominated landings and hampered fishing effort. Up to 60% of landings there were composed of group I shrimp and gave processors trouble throughout most of the season. The 1966-year class also showed up strongly in other areas of Oregon, especially south of Cape Blanco where they made up 71% of landings at Port Orford and Brookings in August. Faster growth and concentrated populations there lessened processor problems in these ports and boosted catch rates.

Northern Oregon fishing was very good throughout 1967, and catch rates up to 900 pounds per hour were made off Cape Lookout and TiUamook Head. The fishery off Newport was also good at 520 to 670 pounds per hour. A total of approximately 6 million pounds was taken from these areas. The 1964- and 1966-year classes dominated catches in these areas throughout the year. The 1966-year class contributed from 39 to 54% of the catch; the 1964-year class made up from 24 to 62% of landings (by number). Although the 1966-year class was strong in landings, large 1964-year class shrimp offset the small 1966 shrimp to make processing problems less than at Coos Bay.

The strong 1966-year class should contribute to a good 1968 Oregon fishery, and growth of these shrimp should eliminate processing problems at Coos Bay. Good populations are indicated in all areas of Oregon.

California

Ocean shrimp landings from California waters were exclusively from Area A (Crescent City-Eureka) this season. Fishermen were unable to find shrimp in commercial quantity in Area B-1 (Ft. Bragg) and Area B-2 (Bodega Bay).

The 1967 Area A season opening was delayed 1 month and opened on June 1. This delay was recommended because the population was composed of approximately 90% 1-year-old shrimp. The 1-month delay allowed these shrimp to grow to a size where most could be utilized by the industry.

The 1,250,000-pound quota was filled in just 2 months. A total of 1,360,779 pounds was landed in California through August 1 when the season closed.

An additional 42,385 pounds were landed on August 11 and 12 due to a misunderstanding stemming from a legal action brought against the Department of Fish and Game by fishermen in a Crescent City Superior Court. Landings in Brookings, Oregon, from California waters totaled approximately 65,000 pounds. Thus, landings recorded from Area A totaled 1,468,589 pounds.

Thirteen boats participated in the fishery. The fishermen

found good concentrations of shrimp from off the mouth of the Klamath River north to the California-Oregon border in 60 to 75 fathoms. The average catch per hour in June was 645 pounds, in July 746 pounds, and in August 620 pounds. The 1966-year class, one of the largest in recent years, made up 78% of the landings by number.

The post-season survey of the area between Mad River and Rogue River indicated a population of approximately 10.6 million pounds. Almost 90% (by number) of this population is composed of 1966-year-class shrimp. The survey also showed the 1967-year class to be one of the weakest since intensified surveys began in 1965.

STATUS OF SALMON AND STEELHEAD SPORT CATCHES IN THE PACIFIC STATES

H. J. CAMPBELL
Oregon Game Commission

The estimated* sport-catch of salmon and steelhead in the States of California, Oregon, Washington, and Idaho totaled 1,773,700 in 1966. Of this number 40% were coho, 25% were chinook, and 35% were steelhead. (Table 1). An estimated 1,034,900 anglers took fish at a rate of 0.8 to 1.9 salmon per year, depending upon the area fished. Fish per angler, per year, as a statistic is somewhat misleading because in Oregon and Washington approximately 52% of the total salmon and steelhead license holders catch all of the fish. In Oregon, for instance, 30% of all card holders reported that they fished but caught nothing. Another 26% reported that, although they bought a salmon license, they did not take part in the fishery. Of those anglers who actually caught salmon, 22% landed 56% of the total catch in Oregon.

In states where salmon licenses or catch cards are required, increases in use in 1966 were noted. In the State of Washington a 1.5% increase was recorded. A 4.5% increase occurred in Oregon, and a sharp increase was reported in Idaho following a 1965-salmon closure which drastically reduced the fishing effort.

Reducing the total sport catch to pounds of fish landed (at 6 pounds per coho and 10 pounds per chinook), a total of 8.8 million pounds of salmon was harvested. Adding steelhead (at 5 pounds per fish), about 12 million pounds of all species were caught.

The Oregon sport catch in 1966 was estimated at 455,000 fish of which 287,000 were salmon and 168,000 were steelhead. The catch represented an overall decrease of about 5,000 fish from the record 1965 catch. There was a sharp decrease of 60,000 salmon, but there was an increase of about 55,000 steelhead in the catch. This latter increase is partially attributable to hatchery programs. Preliminary estimates for 1967 indicate that 375,000 salmon were taken in Oregon's offshore sport catch of which almost 90% were cohoes.

The 1966 sport fishery at the mouth of the Columbia River was evaluated through a joint effort of the Oregon State Game Commission and the Washington Department of Fisheries. The

sample period was from early June to late September. A total of 163,900 anglers took 71,400 chinook and 187,800 coho. A total catch of 259,200 salmon ranked second only to the catch of 1965. The average catch of 1.6 salmon per angler trip was exceeded only in 1965. Figure 1 indicates the trend in sport catch at the mouth of the Columbia, which, as sampled by the two state agencies, has climbed steadily upward from 50,000 to almost 300,000 salmon per year during the last 10 years. One statistic of unusual interest in 1966 was the high number of chinooks landed, representing almost 28 percent of the total salmon caught. The coho catch declined from the 1965 total as a result of poor landings in the month of August.

Far from being unimportant to recreation were the 25,000 marine fish of other species taken incidentally to the salmon catch at the mouth of the Columbia River. The bulk of this incidental catch was comprised of rockfish and flatfish.

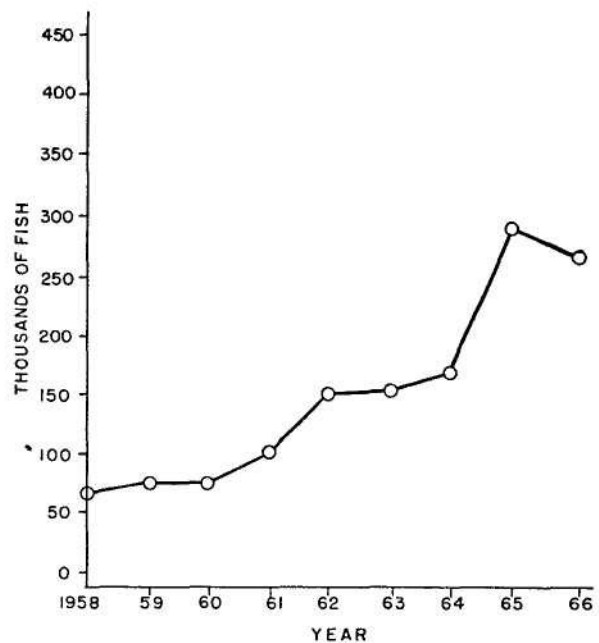


FIGURE 1. Columbia River estuary and adjacent Ocean sport catch of salmon.

TABLE 1
1966 Salmon and Steelhead Sport Catch

State	Anglers	Chinook	Coho	Steelhead	Total catch	Fish/Angler per year
Washington	548,000	267,600	434,200	347,000	1,048,800	1.9
Oregon	288,000	58,000	229,000	168,000	455,000	1.6
California	163,000	88,500	32,400	120,000*	240,900	1.4
Idaho	35,900	8,500	0	20,500	29,000	0.8
Totals	1,034,900	422,600	695,600	655,500	1,773,700	1.7

*Annual estimate based on Pacific Salmon Interagency Council report No. 3 (April 1964).

*By catch card returns or separate census methods in each state.

Appendix 2 — Hake Report and Cooperative Research

CURRENT STATUS OF PACIFIC HAKE FISHERIES

ALAN E. MILLIKAN Washington State
Department of Fisheries

Large concentrations of Pacific hake (*Metluccius productus*) have been reported off the Pacific coast of the United States for many years, but until recently the abundance, seasonal distribution, and relative availability of this species to commercial trawl gear had not been defined. In the summers of 1964 and 1965 the Seattle-based Exploratory Fishing and Gear Research Unit of the Bureau of Commercial Fisheries conducted surveys on the abundance and distribution of Pacific hake off the Oregon and Washington coasts with the *John N. Cobb* and chartered commercial trawlers. Huge compact schools of hake were found at irregular intervals from Cape Flattery, Washington, to central Oregon. These concentrations were in waters of 20 to 100 fathoms depth, but usually several fathoms off bottom and thus unavailable to bottom trawl gear. Sets upon the schools with the "Cobb" pelagic trawl which was monitored with a pressure-sensing telemetric system yielded consistent catches of 15,000 lb. per hour. One haul produced 60,000 lb. in 30 minutes.

Data from these surveys indicate a standing crop of 1 to 2 billion lb. exists off Oregon and Washington from mid-May to October. An annual maximum equilibrium yield of at least 150 to 300 million lb. is considered possible. Evidence indicates that the hake migrate northward to feed during the spring and summer and return to southern California and northern Mexico to spawn each winter.

A large population of hake is also present in Puget Sound. Although no estimates of population size or potential annual equilibrium yield have been determined, it has supported a limited seasonal commercial fishery since the winter of 1965-1966.

*

The Ocean Hake Fishery

Anticipating inception of a coastal hake fishery, Pacific Protein, Inc., of Aberdeen, Washington, constructed a \$1,000,000 fish meal plant which began operation in July, 1966. One feature of the new plant was inclusion of a hydraulic fish pump to remove hake from the holds of vessels, thereby expediting unloading.

Several fishermen expressed their intentions to fish for hake and began to outfit their vessels accordingly. Unfortunately, in April of 1966, before an American vessel had set a net for hake, the vanguard of over 100 Soviet vessels, including motherships, catcher boats, and supply units arrived in the area. The Soviet trawlers systematically fished north from the Astoria Canyon to Grays Harbor and 8 to 20 miles offshore. This operation was repeated three times before the fleet dis-

persed into small units. The over-all pattern was north and westward. The fleet quit fishing in late November northwest of Destruction Island.

The first American trawler began hake fishing early in July but could not compete for space on the fishing grounds against the larger, more numerous Russian vessels. Also, the concentrated fishing pressure had the effect of breaking up the formerly compact hake schools. Several vessels which initially were considering entering the fishery, decided against it in light of these developments. Late in July, the Bureau of Commercial Fisheries (BCF), and later the Economic Development Administration (EDA) of the U. S. Department of Commerce chartered four vessels to fish for hake. This move was considered necessary if the fledgling fishery was to survive. The U. S. fleet of 4 vessels took a total of 3.7 million lb. of hake in 1966 while the Soviet fleet harvested 291 million lb. The future of the U. S. hake fishery looked dim indeed.

Prospects for a successful 1967 season brightened somewhat during the winter of 1966-1967. In October 1966 the United States extended fishing jurisdiction from 3 to 12 miles offshore. In addition as a result of bilateral negotiations with the Soviet Union in February 1967, Russia agreed to abstain from fishing inside the 60-fathom contour from the Columbia River to Grays Harbor during the 1967 season. Finally, the EDA agreed to provide funds for the charter of up to 10 vessels for 80 days, and the BCF offered to supply gear and technical help to U. S. vessels in an attempt to determine the effect of the 1966 Russian harvest and to evaluate the economic feasibility of an American hake fishery.

The 1967 season began on May 15 and was successful almost immediately. Fishing in 40 fathoms between Grays Harbor and the Columbia River, the American vessels loaded up in 2 to 3 days. Catches of 15,000 to 30,000 lb. per hour were common, and at least 2 hauls of over 100,000 lb. were reported. Good fishing continued through July and resulted in a substantial increase in landings over 1966 (Table 1).

Fishing success was highly variable in the first week of August; hake concentrations were difficult to locate. Consequently, fishing success of most vessels dropped, but one vessel experienced the best catches of the season.

The charter contracts terminated on August 6, 1967. Although several boats expressed interest in continuing to fish hake, all eventually emigrated to other pursuits. Whether this was due to uncertainty of fishing success or competition from other fisheries is open to conjecture.

TABLE 1

Preliminary catch statistics of the 1966 and 1967 coastal hake fishery by month.

Month	1966			1967		
	Effort (hr.)	Catch (lb.)	C/E lb./hr.	Effort (hr.)	Catch (lb.)	C/E lb./hr.
May	.....	.....	.....	207.6	1,064,716	5,129
June	.....	.....	.....	805.3	9,100,902	11,301
July	132.1	691,966	5,238	679.4	7,165,509	10,547
Aug.	287.0	1,836,009	6,397	131.8	1,000,250	7,589
Sept.	115.7	978,161	8,454	.....	.....	.....
Oct.	24.0	228,802	9,533	.....	.....	.....
	558.8	3,734,938	6,684	1,824.1	18,331,377	10,050

At the present time the Aberdeen fish meal plant is the only processor in close proximity to the resource that can handle large quantities of hake, but because of an unstable world fish meal market the price for hake is low. No other market exists for these fish in the Aberdeen area. However, the Food and Drug Administration has recently approved hake for use in fish protein concentrate (F.P.C.). Following this approval Congress appropriated funds for construction of an F.P.C. pilot plant in the Pacific Northwest, but the exact site has not been announced yet. Construction of such a plant in the Grays Harbor area would provide another limited market for hake. Hopefully, a large production plant would follow.

The Russian fleet returned in force (maximum: 114 vessels) in 1967. The effort was not as concentrated as in 1966, but waters off the Oregon coast were fished more heavily. Aerial surveys conducted in the fishing area indicate that the Russian catch of hake will be significantly lower this year. The negotiated agreements of February 1967 plus the 12-mile fishing limit appear to be mainly responsible for the lower success. The 1966 Soviet fleet captured a large portion of its catch within the 60-fathom contour treaty line between the Columbia River and Grays Harbor. This was the best area for the American vessels in 1967.

The Puget Sound Hake Fishery

Large quantities of hake were discovered in central Puget Sound during midwater trawl gear developmental work. Close access to landing ports and a limited animal food market, resulted in a fishery beginning in November 1965.

Large catches of hake were made in November and December 1965 in Saratoga Passage, but the hake concentrations vanished in January 1966. After extensive searching, a huge concentration of spawning hake was discovered in Port Susan. Large quantities of these fish were taken until May, when the hake dispersed (Table 2). In September 1966 fishing again

TABLE 2

Catch statistics of the Puget Sound hake fishery by year, month, and gear type.

	1965-1966		1966-1967	
	Midwater trawl	Bottom trawl*	Midwater trawl	Bottom trawl
September				
Pounds	.....	.....	249,946	.....
Hours	.....	.....	28.8	.....
lb./hr.	.....	.....	8,664	.....
October				
Pounds	.....	.....	894,200	.....
Hours	.....	.....	91.4	.....
lb./hr.	.....	.....	9,788	.....
November				
Pounds	287,600	.....	613,600	.....
Hours	20.0	.....	77.9	.....
lb./hr.	14,380	.....	7,780	.....
December				
Pounds	447,606	.....	264,000	.....
Hours	43.0	.....	54.7	.....
lb./hr.	10,409	.....	4,826	.....
January				
Pounds	40,095	.....	1,583,950	.....
Hours	8.0	.....	229.0	.....
lb./hr.	5,012	.....	6,916	.....
February				
Pounds	1,262,373	149,700	2,870,800	311,500
Hours	63.0	63.0	277.0	46.0
lb./hr.	20,037	2,368	10,364	6,772
March				
Pounds	1,386,583	437,100	1,939,000	225,400
Hours	58.0	178.0	166.0	34.0
lb./hr.	23,906	2,453	11,681	6,629
April				
Pounds	343,585	605,920	948,100	318,600
Hours	13.0	142.0	160.0	26.0
lb./hr.	26,430	4,264	5,926	12,254
May				
Pounds	548,422	512,060	357,000	.....
Hours	53.0	113.5	84.0	.....
lb./hr.	10,391	4,512	4,250	.....
June				
Pounds	36,400	218,000	.....	.....
Hours	12.5	68.0	.....	.....
lb./hr.	2,912	3,206	.....	.....
TOTAL				
Pounds	4,352,664	1,922,780	9,783,546	855,000
Hours	270.5	564.5	1,168.8	106.0
lb./hr.	16,091	3,406	8,370	8,066

*A bottom trawl is here defined to be any net not used with telemetric gear to monitor net depth.

commenced in Saratoga Passage and switched to Port Susan in late January 1967, following the pattern of the 1965-1966 season.

Data obtained by the Biological Laboratory of the BCF indicate that the Puget Sound population is resident and distinct from the migratory ocean population. Apparently the hake concentrate in Saratoga Passage before entering Port Susan to spawn in February. Upon completion of spawning, the fish disperse.

Presently two markets exist for Puget Sound hake: animal food and fish meal. Combined landing totalled 6.3 million lb. in 1965-1966 and 10.7 million lb. in 1966-1967. Landings were limited by adverse market conditions during both seasons.

During both seasons some vessels used 400-mesh eastern otter trawls or "Cobb" pelagic trawls without telemetry; in general they experienced much lower success than the vessels using telemetry (Table 2).

The 1967-1968 season began the latter part of October with two vessels outfitted with midwater gear and committed to land fish for reduction. The animal food industry has about 2 million lb. of hake in storage from last season and estimates no purchases will be made until January. The outlook for the coming season is for reduced landings because of market conditions.

Conclusion

The current low world fish meal prices have resulted in a borderline economic situation, and it is now uncertain if the American trawlers can anticipate enough profit to be enticed into the ocean hake fishery in 1968.

The answer may be in establishing new markets for the product or perhaps in creating new products from hake. Whatever the answer, a critical look at the facts concerning the evolution of the ocean hake fishery brings the following factors into focus:

1. Cessation of the ocean fishery in August 1967 was not due to competition with the Soviet trawl fleet. Large quantities of hake were available inside the treaty lines negotiated in February 1967 and the 12-mile fishery limit. The Russians have observed the new boundaries.
2. At current prices, and without price support, only the larger vessels which fished in 1967 (at least 75 tons capacity) can profitably harvest hake. Smaller vessels must spend a disproportionate amount of time traveling to and from the fishing ground.

Effective gear, technology, and hake are available. When the price for hake can be increased to a point where the hake fishery is competitive with other fisheries, a permanent fishery will be established.

SUMMARY OF PROGRESS ON PACIFIC OYSTER MASS MORTALITY INVESTIGATIONS 1966-67

by CEDRIC E. LINDSAY
Washington Department of Fisheries

Mass mortality of Pacific oysters has been reported with increasing frequency during the past several years in Washington and California, while severe mortalities had earlier been reported in British Columbia. Losses have been 25% to 75%. The coastwise nature of the problem became apparent to Pacific Oyster Growers Association and the Pacific Marine Fisheries Commission in 1964, and their actions resulted in subsequent appropriation to the Bureau of Commercial Fisheries of \$150,000 each year for investigations beginning in July 1965.

The first action on this investigation was to establish a steering committee which would act as a body of "directors" to guide the studies of several research teams. The steering committee consisted of Dr. Victor L. Loosanoff, consultant; Dr. H. G. Orcutt, California; Mr. Dale Snow, Oregon; Mr. C. E. Lindsay, Washington; Dr. A. K. Sparks, University of Washington; Mr. D. C. McMillin, Oyster Industry representative; Dr. Carl Sindermann, BCF, Oxford, Maryland; and Mr. J. B. Glude, BCF, ex officio chairman. Research contracts were awarded to each of the state fisheries agencies, the University of Washington, Battelle Northwest, and the BCF laboratory at Oxford. There was some delay in establishing the contracts so that work generally was begun during the spring of 1966

except for earlier work by the University of Washington, the Washington Department of Fisheries, and the Oxford laboratory. Reports of the first one-and-one-half years' research were given at the 1966 annual meeting of Pacific Marine Fisheries Commission. The status of work through the summer of 1967 is briefly summarized:

Washington — R. E. Westley

Field monitoring of oyster mortalities and associated environmental conditions were continued in Puget Sound in Quilcene Bay, Oakland Bay, Case Inlet, Totten Inlet, Eld Inlet; and in Willapa Bay. Fenced ground plots, ground trays, and floating trays were used for the mortality observations. Sacrifice populations of oysters were used to determine growth rate and condition index. Oyster samples were also collected, preserved, and shipped to the University of Washington and the Oxford laboratory for histological examination. Environmental measurements were made in relation to the oyster study plots, and these included temperature, salinity, dissolved oxygen, pH, alkalinity, total and inorganic phosphate, ammonia, nitrite, and nitrate. The phytoplankton were evaluated through determination of the various chlorophylls, the photosynthetic rate, and

TABLE 1

Cumulative mortality in per cent for period June to December.

Area	1964	1965	1966	1967
Quilcene Bay	13	7	6	<10
Oakland Bay	6	8	3	14
Totten Inlet	12	29	14	48
Case Inlet	16	25	12	48
Eld Inlet	---	28	21	40

direct microscopic identification and enumeration. Table 1 presents the cumulative mortality in trays and plots for each bay for 1964 through 1967. Once again the mortality in 1966 followed late summer bloom of the armored dinoflagellate; in particular, a species of *Ceratium* was associated with the mortalities. A detailed report fully presenting all data on these studies is now in preparation.

The statewide survey of mortalities on commercial beds was carried out in the autumn of 1966 and the spring of 1967. The autumn survey indicated a mortality rate similar to those recorded for previous years. Maximum mortality observed was 38% at Case Inlet, while Sammish Bay, Carr Inlet, and Grays Harbor all had less than 5% mortality. Spring surveys indicated only very small additional mortality which enabled separation of the over winter mortality from the summer and autumn mortality. Commercial oyster bed mortality rates closely paralleled those of the study plots.

A special study was set up in the summer of 1966 to determine the length of time required for death for Pacific oyster upper and lower shells to separate. Single oysters were cemented to fiberglass panels and series of clusters also prepared. All single oysters on the panels were killed and one oyster on each cluster killed. The oysters were put out in several locations to test the difference in separation rate between exposed and protected locations and to compare results in productive and nonproductive bays. After 1 year in exposed areas, the valve separation has reached 50%, while in the protected areas only 10% valve separation has occurred. The experiments will continue during the coming year.

To obtain direct information on the relationship between *Ceratium* and oyster mortality, efforts have been made to culture this organism. Several standard laboratory phytoplankton culture methods have been tried without success. During the summer of 1966 and again in 1967 plastic water columns 5 ft. in diameter and 40 ft. deep were placed in the bay in front of the laboratory and filled with subsurface nutrient-rich water. These were allowed to go through a natural diatom bloom and were then seeded with populations of *Ceratium* obtained from southern Puget Sound. Limited success was achieved. However, the bloom did not reach the desired abundance, and the chief limiting factor apparently was the availability of nutrients.

Special studies were set up in Case and Eld inlets where the most extensive and continuing mortalities have occurred. Separate lots of Pacific oysters in bottom trays were established in

the upper bay mortality area and in the non-mortality area near the mouth of the bay. Every 10 days one lot of oysters from each area was transplanted to the other area. The purpose was to determine if a time lag existed between the transplant of fresh stocks and onset of mortality. Intensive monitoring of environmental conditions in each area was also done on 10-day intervals. Floating mortality stations were also located on a longitudinal section in Eld and Case inlets extending beyond the area of mortality. The purpose of the study is to determine if variation in mortality occurs lengthwise of the bay. By August 1967 results of the oyster transplant study showed consistently significant reduction in mortality when oysters were transplanted from the high mortality to the low area. The series of floats lengthwise of Case and Eld inlets once again showed mortality confined to the heads of the bays. The results of the work thus far still indicate a relationship between phytoplankton and mortality, but this relationship now appears different from our original concept. We must now determine the relationship of oyster condition (fatness) to high water temperature with respect to mortality as well as a possible interrelationship of these factors with spawning. Five shipments and samples have been received from the California Division of Fish and Game and have been analyzed. Evaluation of the results will be done after all data for the 1967 season have been analyzed and summarized.

Oregon — Dale Snow

The oyster mortality study in Oregon has been underway for 1 year and is starting into the second. Briefly, the study involves sampling six stations each in Yaquina, Tillamook, and Coos bays. At each station the following data are collected: pH, dissolved oxygen, turbidity, salinity, temperature, growth, and fatness. Samples are taken every other week in Yaquina Bay and once a month from Tillamook and Coos Bay. Oysters collected for histological examination are fixed, preserved, and shipped to the University of Washington for analyses. At the end of the first year's study, no major mortalities were noted. While native oysters being sampled in conjunction with this study have shown an 18.2% mortality in Yaquina Bay, mortality of Pacific oysters was 1.8% and can be regarded as minimal natural mortality. However, the mortality of native oysters which ran 3% to 4% on a quarterly basis, except during April and June when mortality increased to 9%, is still considerably less than expected or observed in the past by other researchers. Further study on these species is needed to see if a downward trend in mortality is continuing.

California — Dr. S. C. Katkansky

Monitoring of Pacific oyster mortalities at experimental stations in Humboldt Bay, Tomales Bay, Drakes Estero, Elkhorn Slough, and Morro Bay continued through this period. Mortalities were negligible in Drakes Estero, Elkhorn Slough, and Morro Bay. At Humboldt Bay mortalities in 1967 among the experimental populations of 1965 Japanese seed and 1966 Canadian seed were approximately 16 and 8% respectively with most of the mortalities occurring between May and August. These mortalities represent a significant decrease from trends observed in recent years. At Tomales Bay in 1967 mor-

talkies among the 1964 and 1966 Japanese seed plantings were approximately 12 and 27% respectively, and mortalities among the 1966 shipment of adult Eastern oysters (*Crassostrea virginica*) were approximately 10%. As at Humboldt Bay, most of these mortalities occurred between May and August.

A study was initiated in May 1967 at Humboldt Bay to investigate possible correlation of phytoplankton abundance and species composition with mortalities of oysters. Water samples are fixed in Lugal's fixative for plankton identification and enumeration. Water samples are frozen for chemical analyses and filtered for chlorophyll analyses. The chemical and chlorophyll analyses are being carried out by Washington State Department of Fisheries personnel at Brinnon, Washington. The plankton samples are retained at the Marine Resources Operations Laboratory, Menlo Park, for analysis.

University of Washington

Report to be submitted later.

Battelle Northwest — Gilbert Pauley

Mr. Gilbert Pauley, leader of the Battelle project under contract to the Bureau of Commercial Fisheries, reported on the final phase of the work by this research organization.

Early in the oyster mortality program, a small contract had been arranged with Battelle Northwest to investigate various techniques of research which might be applicable in the investigation of the causes of oyster mortalities. These studies were principally concerned with the testing of various stains and histological techniques which were used with other species to determine their applicability to similar studies on oysters. This research has led to the description of staining techniques which assist greatly in identification of organisms which may be responsible for mass mortalities. Some modifications of these techniques have been accomplished to improve their applicability to oysters. This project, which has now been completed, has provided methods which are now being used by other investigators.

Bureau of Commercial Fisheries, Oxford, Maryland — Dr. Carl Sindermann

The Bureau of Commercial Fisheries work at Oxford, Maryland, follows two principal lines of investigation: (1) studies on diseases and parasites in oyster stocks from potential

seed sources in mortality areas in the Far East; and (2) identification of pathogens or potential pathogens in Pacific oysters from the West Coast, including studies of life cycles and pathogenicity.

These studies have shown that there are a great number of parasites or pathological conditions in both Pacific and European oysters. It has not been established at this time whether these are causes of the mass mortalities observed on the Pacific Coast.

Studies at Oxford during the year have included the preparation of slides for histological examination and detailed study of these slides. In addition to identification of various microorganisms which have previously been identified, they have also conducted studies of a bacterium causing "focal necrosis" in Pacific oysters.

In studies of European oysters from California, as well as American oysters from Connecticut, they have observed an organism similar to that observed in oysters from Denman Island, British Columbia.

Other specialists have attempted to culture an Amoeboid organism found in oysters from Matsushima Bay, Japan.

Dr. Sindermann and Dr. Rosenfield, directors of this study, have discussed the question, "What can be done when faced with disease-caused mortality problems in sedentary inshore invertebrate populations such as oysters?" The methods of choice include: (1) prevention of transfer of any stocks into or out of epizootic areas; (2) if importation of marine animals is allowed, establish adequate safeguards against introduction of new or exotic pathogens into susceptible stocks; (3) disease-resistant strains can be developed using hatchery techniques by aggregating survivors of epizootics on natural beds to which adequate cultch has been added to obtain sets of resistant offspring.

As a final note of perspective, Dr. Sindermann states, "It is likely that mass mortalities are and have always been natural methods of population size regulation, but until recently they would have been accepted with the same dazed bewilderment and inaction that must have characterized the behavior of our ancestors during the plagues of the dark ages. We can now look to methods of environmental control and stock manipulation, particularly for sedentary shallow-water species such as oysters, as a part of the methodology of an increasingly complex system of cultivation of our inshore waters. Such methods must include safeguards against introduction of pathogens into susceptible stocks."

PORT SAMPLING AT CRESCENT CITY-BROOKINGS-PORT ORFORD NOVEMBER 1966-OCTOBER 1967*

DANIEL W. GOTSHALL California
Department of Fish and Game

The port sampling project which began in January, 1966 continued to provide data on the shrimp, crab and bottomfish fisheries in northern California and southern Oregon. The data collected include: (1) for crab: condition, catch-per-unit-of-effort, and tag recoveries; (2) for shrimp: age and sex composition of catch, counts per pound, and number of shrimp in Pacific hake stomachs; and (3) for bottomfish: species composition of catch, and age and sex of fish landed.

CRAB

Crab landings in Crescent City through June totaled 4,428,191 pounds, an increase over last season's landings of 500,893 pounds. Approximately 700,000 pounds landed in Crescent City were caught off Cape Sebastian, Oregon.

Landings in Brookings were slightly less this season, 1,174,155 pounds as compared to 1,509,654 pounds during the 1965-66 season. Part of this decrease can be attributed to the poor harbor entrance conditions that plagued the fishermen most of the season.

Port Orford landings also were smaller during the 1966-67 season; the fishermen landed 1,585,402 pounds during the 1965-66 season, compared to 904,686 pounds during the 1966-67 season.

The port sampler examined, measured, and weighed 2,285 market crabs at Crescent City; 698 at Brookings, and 1,269 at Port Orford.

The monthly mean of crab size (widths) at all three ports was significantly larger this past season; ranging from a high of 182.7mm in January at Crescent City to a low of 169.2 in June. The highest average during the 1965-66 season was 176mm.

In Brookings, a maximum mean width of 179.5mm was encountered in February. The minimum of 173.5mm occurred in March. Port Orford crabs reached their maximum mean width of 182.5mm in January.

A smaller percentage of soft crabs was observed during the 1966-67 season at Crescent City than during the 1965-66 season. The condition of Brookings crabs remained about the same; while Port Orford crabs seemed to be of poorer quality this past season.

The sampler recovered 22 California tagged crabs at Crescent City; 9 of these had molted at least once since being tagged. The average increase in width was 31mm. The average growth for the 9 crabs that had molted and were recovered during the 1965-66 season was 28mm. Five Oregon tags were recovered at Port Orford.

A total of 464 catch-per-trap interviews was completed this past season; 308 at Crescent City, 77 at Brookings, and 79 at Port Orford. Crescent City fishermen averaged 13.4, 13.5, 14.6 and 13.9 pounds per trap for 1, 2, 3, and 4 days of fishing. Brookings fishermen averaged 12.1, 13.8, 15.1, and 16.5 pounds per trap, and Port Orford fishermen 6.3, 6.7, 9.4, and 14.7 pounds per trap for the respective number of days fishing.

No sport fishery was observed at Brookings or Port Orford. However, the Crescent City crab sport fishery was monitored. Twenty-nine skiff fishermen caught 69 crabs during the period December, 1966 through March, 1967. Dock fishermen did not fair as well; 39 fishermen had 13 crabs when interviewed.

If it were not for this sampling project, there would not have been a sampling of the crab fisheries, particularly at Crescent City and Brookings. Travel expenses of driving from Eureka, California or Newport, Oregon has prevented adequate sampling at these ports in the past. In addition, the lack of manpower has precluded most sampling except in the Eureka or Newport area. We are convinced that most of the tag recovery data obtained would not have been available had the sampler not been in close contact with fishermen.

SHRIMP

A total of 1,403,164 pounds of shrimp was landed in California during the two month Area A season, the lion's share in Crescent City. Landings in Brookings from California waters totaled approximately 85,000 pounds through August 31. Thus, the landings recorded from Area A through August amounted to 1,488,164 pounds.

Brookings landings from Oregon waters through August totaled 621,540 pounds, and Port Orford shrimpers landed 626,626 pounds.

Sampling of the shrimp fishery began in March in Oregon and June in California. A total of 146 shrimp samples, each containing from 69 to 157 shrimp, was analysed for the 3 ports. The 1966-year class (Age I) dominated catches at all ports. Counts per pound ranged from a low of 95 at Port Orford in March to a high of 156 at Brookings in April. Last year the catches were predominantly two-year-old shrimp (1964-year class).

The port sampler continued to examine Pacific hake stomachs at all three ports when they were available. A total of 406 shrimp was removed from 232 hake stomachs collected at Crescent City and Brookings; 307 of these were Age I shrimp. Thirty-nine stomachs examined at Port Orford contained 349 shrimp; again Age I or 1966-year-class shrimp were dominant.

*The tabular data for this study have been included in the tables of the final report on pp. 29-35 of the 21st Annual Report of PMFC for 1968.

Judging from the stomach contents, the 1967-year class may be one of the weakest incoming year classes in recent years. Only 8.4 percent of the shrimp found in the stomachs at Port Orford were from the incoming 1967-year class and none of the Crescent City-Brookings hake stomachs contained 1967-year-class shrimp. Last year 32.5 percent of the shrimp found in September at Port Orford were from the incoming 1966-year class. Brookings hake stomachs in September 1966 contained 69.4 percent incoming year-class shrimp.

The incidental catches of bottomfish landed by shrimp trawlers in 1967 were sampled at Crescent City; as in 1966 the yellowtail and canary rockfish were the dominant species. Landings were not sampled at Brookings because the fish were immediately placed on a truck after being unloaded from the boat.

Because of the port sampling program, we were able to intensively sample shrimp landings at all three ports. The project has allowed us to obtain data on numbers of shrimp in hake stomachs, and incidental fish catch that were not being collected previously. A preliminary analysis of the data suggests that the shrimp landed in Brookings from Oregon waters south of the Rogue River probably are from the same populations as the northern California landings. Port Orford shrimp samples suggest that these shrimp originate from a different and slower-growing population. The hake stomach sampling program has yielded what we believe to be reliable estimates of natural mortality rates particularly of the one-year-old shrimp (from 0 to Age I), and also an index of the relative abundance of the incoming year classes. In short we have data from the crab and shrimp fisheries that were not available before port sampling.

One of the most important results of port sampling is the increased communication between fishermen and researchers from California and Oregon. We now have day to day information on fishing success and areas, weather conditions, and

observations on upwelling, and other oceanographic phenomena. These field type observations often prove helpful in understanding overall ecological changes.

BOTTOMFISH

A bottomfish sampling program for the otter trawl fishery at Brookings and Crescent City began in October 1966. Landings of rockfish, Dover, English and petrale sole were sampled at sea aboard Crescent City trawlers and in Brookings fish markets where local trawl catches are processed. The objective of the program is to obtain information on age, growth, population relationships, and long-term fishery trends of important bottomfish species being studied by Oregon and California trawl biologists. These data, previously unavailable, provide continuous information on trawl landings at ports distant from Oregon and California project headquarters.

The sampling scheme used by the port sampler follows a design compatible with both Oregon and California sampling procedures. Length frequencies and age structures are obtained randomly according to set sample sizes or sampling units. A minimum of two samples for each species category is required each month at Crescent City and Brookings. The nature of each fishery, however, dictates the availability of the desired species.

During the period October, 1966 through September, 1967, 58 bottomfish samples were obtained at Crescent City and Brookings. A total of 940 age structures were randomly selected from 1,808 flatfishes sampled; 314 rockfish were sampled for species composition, and length and weight by species.

A study to assist Oregon and California biologists evaluate Dover sole scale and otolith aging methods began in June. Oregon biologists are currently using scales while otoliths are the standard age structure used by California biologists. Scales and otoliths collected from the same fish are being processed in preparation for a joint meeting between the two states to compare aging techniques.



PACIFIC STATES MARINE FISHERIES COMMISSION

205 SE Spokane Street, Suite 100 Portland, OR 97202-6413

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Have you been employed previously by the Commission? If yes, give project name and dates employed:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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Are you able to perform the essential duties of the job for which you are applying, with or without accomodation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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EMPLOYMENT EXPERIENCE

Begin with the present or last job and include any job-related military service assignments and volunteer activities. You may exclude organizations that indicate race, religion, gender, national origin, handicap or any other protected status.

1. Employer Fiskars Brands Inc.	Address 14200 SW 72nd Ave.		Dates Employed	
			09-04	Present
City Portland	State OR	Zip 97035	From	To
Supervisor's Name Ken Hohmann			Telephone Number(s) (608) 294-4641	
Position(s) Held Desktop/Site Admin for Portland Region of Fiskars				
Reason for Leaving Want more of a challenge.			May we contact this employer? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Duties/Responsibilities <p>I am responsible for all the IT needs for the Portland Region for Fiskars Brands Inc., located at Gerber Legendary Blades. I have been working as a desktop admin, SMS admin, software packager for silent installs and also as the phone administrator. When my wife and I moved to work in Portland I loved the amount of work that was needed to increase productivity in the Portland region. I worked in creating policies and procedures for the company to implement and follow to form a company standard.</p> <p>I single handedly implemented Gerber's OS and software roll-outs that in turn through SMS, saved the customer and the IT dept. time. I built silent install packages for Office 2003 Pro, Adobe Acrobat and Reader, Symantec Antivirus Client and many others.</p> <p>Working for Fiskars I would report to my manager in Madison, WI and along with the rest of the Corporate team.</p> <p>Here I got to manage the company phone system as well as the security system.</p>				

2. Employer Peacehealth Corp.	Address St. John Medical Center		Dates Employed	
			10/98	3/03
City Longview	State WA	Zip 98632	From	To
Supervisor's Name Kathy Palmer			Telephone Number(s) 360-414-7402	
Position(s) Held Desktop/System Admin				
Reason for Leaving			May we contact this employer? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Moved to AZ for wife's job.

Duties/Responsibilities

For over four years at Peacehealth I supported between four to eight hundred computers/printers setup on the hospital's Windows NT/2000 network with Windows 95/2000/XP clients. I dealt with the various day-to-day help desk issues as well as the maintenance of the PC's, servers and printers.

I installed and configured the networks/desktops for various departments on a Windows NT/2000 environment as well as the Windows 95, 98, 2000 and XP clients. Troubleshooting the AS400 network and setting up new NT accounts for new users and account repairs. I dealt with customer service issues over the phone and on site. I would communicate with our local Help Desk and they would assign me to a particular issue that a customer might have and I would go on-site to fix the issue.

I communicated and planned with various vendors on hardware and software issues, upgrades and maintenance. I would perform computer roll-outs to various departments as well as OS migration and software installs. I instructed in the new employee orientations in a classroom environment and the setup of new employees and their accounts.

I did web design and creation of the documentation of hardware & software issues. I have vast knowledge and experience with Windows 95, 98, ME, NT/2000, and XP, AS400, IPX and TCP\IP. I helped in installing and configuring the onsite wireless network, configuring of Cisco routers and network hubs, hardware repair and installation on PC's, Laptops, PDA's and configuring and troubleshooting VPN. In addition I have worked in server administration and the administration of exchange.

I supported the departments of Admitting, Coding, Community Health Improvement (CHR), Emergency, Food & Nutrition, HR, Maintenance, Nursing Admin, Patient Financial Services, Trauma and the IT dept.

I managed many projects such as setup/install and the roll-out of devices, software, windows image standards, software installs and hardware upgrades. VPN configuring and install on devices, documenting all software and hardware changes and deploying them on our internal Intranet. I would also help in the management of the training and mentoring of our interns.

EMPLOYMENT EXPERIENCE - continued

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3.

Employer			Dates Employed	
Address			From	To
			Hourly Rate/Salary	
City	State	Zip	Starting	Final
Supervisor's Name			Telephone Number(s)	
Position(s) Held				
Reason for Leaving			May we contact this employer? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Duties/Responsibilities				

4.

Employer			Dates Employed	
Address			From	To
			Hourly Rate/Salary	
City	State	Zip	Starting	Final
Supervisor's Name			Telephone Number(s)	
Position(s) Held				
Reason for Leaving			May we contact this employer? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Duties/Responsibilities				

EDUCATION

Skills, education and/or training that is directly related to the position for which you are applying: (i.e., trade school, on-the-job training programs, college degrees, volunteer experience, certificates, licenses, math courses, chemistry, physics, etc.)

Washington State University (Vancouver) 1996 - 1998
Vancouver, WA.

SPECIAL SKILLS AND QUALIFICATIONS

Summarize special job-related skills and qualifications acquired from employment or other experience.

MCSE 2000 (Microsoft Certified System Engineer)
CompTIA A+
Dell Certified
HP Certified

If you are applying for any position that requires driving, please fill out this section:

Do you have a valid Drivers License?

Yes No

If yes, give state and license number:

WA MERWIJS243KJ

How many reportable accidents have you had in the past 5 years?

None

How many moving violations have you had in the past 5 years?

None

NOTE: If you are selected for an interview, you may be asked to bring a copy of your driving record that is no more than 2 weeks old.

**READ THIS SECTION CAREFULLY BEFORE SIGNING. YOU MUST SIGN
TO BE CONSIDERED FOR ANY POSITION.**

I certify all information on this application and any supporting information is true and complete and I authorize PSMFC to verify any information that has been provided by me or on my behalf. I agree that, if hired, I may be discharged at any time, if PSMFC learns of any falsification or material omission in the information I have provided. If discovered prior to hire, I would be ineligible for consideration for not only this position, but future positions as well. I authorize PSMFC to contact all former and current employer references listed and all educational institutions. All references are authorized to release all information requested which they might have about me. I hereby release PSMFC and all references from any liability which might be claimed because of information provided by such references.

I agree that, if hired, I will follow all PSMFC policies, rules, procedures and all other directions. I understand that I may terminate my employment at any time and for any reason without prior notice. I agree that if I am hired, I will be employed at the will of PSMFC and my employment can be terminated at any time, with or without notice.

I understand PSMFC reserves the right to add to, change and/or delete their policies, procedures, work rules and benefits at any time and that no one in PSMFC has the authority to enter into any agreement, for any particular period of time, or contrary to the above terms, unless that agreement is set forth in writing and signed by the Executive Director of PSMFC.

EMPLOYMENT DATA RECORD

If you choose to volunteer the requested information, please note that all Data Records are kept in Confidential File and are not part of your Application for Employment or personnel file.

Applicants are treated during the recruitment process without regard to race, religion, gender, national origin, age, marital status, special disabled or Vietnam Era veteran, medical condition or disability, or any other legally protected status.

As an employer with an Affirmative Action Program, we comply with government regulations, including Affirmative Action responsibilities where they apply.

To assist PSMFC in its commitment to Equal Employment Opportunity and Affirmative Action, applicants are asked to voluntarily provide the following information. This questionnaire will be separated from the application prior to the examination and will not be used in any employment decisions.

VOLUNTARY SURVEY

(Please Print)

Date: _____

Government agencies at times require periodic reports on sex, ethnicity, disability, veteran or other protected status of employees. This data is for statistical analysis with respect to the success of the PSMFC Affirmative Action program. PLEASE PROVIDE THE FOLLOWING VOLUNTARY INFORMATION.

Name		
Address		
City	State	Zip
County		

COMPLETE THE SECTIONS BELOW AND CHECK THE APPROPRIATE SQUARES:

Position Number and Title Applying For:

Check One: Male Female

Check One of the Following (Ethnic Origin):

White Hispanic American Indian/Alaskan Native
 African-American Asian/Pacific Islander

Check if any of the Following are Applicable:

Vietnam Era Veteran Disabled Veteran Veteran

I choose not to provide any or all of the requested information.