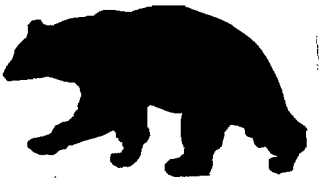
ALASKA

DEPARTMENT OF FISH AND GAME 1972



ANNUAL REPORT

STATE OF ALASKA

WILLIAM A. EGAN, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER / SUBPORT BUILDING
JUNEAU 99801

May 1, 1973

The Honorable William A. Egan
Governor of Alaska
Juneau, Alaska

Dear Governor Egan:

We are pleased to submit to you this summary of Department of Fish and Game activities in 1972.

Department efforts during the year centered on developing and strengthening management and research programs and in seeking new ways to meet the growing demands on Alaska's fish and game resources.

Sincerely,

James W. Brooks

James W. Brooks
Commissioner

INTRODUCTION

1972 ANNUAL REPORT

Department of Fish and Game activities in 1972 were marked by the introduction of a new commissioner and a number of new programs designed to improve the management of the state's fish and wildlife resources.

James W. Brooks, who formerly served as director of the Game Division, became commissioner Aug. 1 following the resignation of Wallace H. Noerenberg.

The Game Division prepared management policies for all major game species. The Department prepared a survey of the distribution and abundance of all important species of wildlife throughout the state. This extensive compilation of resource information will be of enormous value to Alaska's native people who must have immediate knowledge of the resources on their lands.

With attention focused on the fisheries resources of Alaska, the Department initiated the development of a comprehensive policy covering both sport and commercial fisheries. This policy will provide guidelines for future development of fisheries resources.

The Department also undertook an in-depth review of its fisheries research programs and established program review committees for the Divisions of Commercial Fisheries and Sport Fish.

Technical and industrial development continues to accelerate in Alaska. This increases the need for investigations designed to provide realistic guidelines and to minimize harmful impacts. The Sport Fish Division, responding to these needs, has completed its initial fishery studies along the northern portion of the route of the proposed trans-Alaska pipeline. Other study phases completed cover the effects of the Chena River flood control project on arctic grayling stocks.

Some game animal and commercial salmon harvests in 1972 were relatively low. The smaller yields of these resources reflected two years of abnormally severe winter weather which depressed the natural survival of many species of fish and game. This situation was further aggravated by Japanese catches on the high seas of substantial numbers of red salmon which were bound for Bristol Bay. In response to these conditions, it was necessary to restrict the harvest of certain fish and game resources so that essential breeding stocks would be preserved.

The Department initiated during 1972 experimental projects aimed at augmenting salmon production by means of gravel incubation and saltwater rearing. These programs and other innovative procedures show much promise for the future.

Although the State of Alaska was an acknowledged leader in the conservation of its marine mammals and had developed an unexcelled management program, the

federal government totally pre-empted jurisdiction of these resources by passage of the Marine Mammals Protection Act of 1972. In place of a sound program to conserve and utilize our marine mammals, a total moratorium on taking them has been imposed and only natives may still harvest them for subsistence or "cottage industry" purposes. Under terms of the Act, it is possible that a degree of jurisdiction over marine mammals may be returned to the state, and we are now taking the procedural steps necessary to bring this about.

DIVISION OF ADMINISTRATION

I. PURPOSE AND DUTIES:

The Division of Administration acts as business manager for the Department of Fish and Game. It also provides centralized services of accounting, personnel, supply, data processing, switchboard, central mail room, warehousing, records storage, budget counseling and monitoring as well as administrative guidance at regional offices. The Director of Administration also has responsibility for operation and maintenance of department-owned vessels.

II. ACCOMPLISHMENTS:

The Division of Administration accomplishments tend to be in the area of improving the quality of services furnished, and improving the efficiency of operations.

Notable changes during 1972 were made in office accommodations at regional headquarters in Fairbanks, Anchorage and Juneau, with planning begun for a new regional office building in Kodiak.

Fairbanks now has a new home for Department personnel located at 1300 College Road. The building, designed by a Fairbanks architectural firm, incorporates quality construction techniques, excellent schematics, beautiful decor and harmonious blending with surrounding terrain. The funding for the building is a cooperative venture between the state and the U.S. Bureau of Sport Fish and Wildlife.

For the first time in several years, all Fish and Game Department personnel in Anchorage are housed in the same building. Through competitive bids the state leased a new building at 333 Raspberry Road for regional headquarters. The building, designed and built to meet department needs, includes approximately 21,000 square feet of office, laboratory and warehouse space. The new facility represents a tremendous improvement in working conditions over the quarters previously occupied.

The owners of the building which houses the department's Juneau regional office added another floor to the building this year. The Fish and Game Department was moved into the new space which is more usable and better lighted.

The Accounting Section processed documents for receiving and expending more than $8.5 million with objects of expenditure covering a wide range from capital improvements to pencils. Approximately 7,500 short form field warrants were issued, thereby speeding payments to vendors. The accuracy of the Department's accounting records received commendation from federal auditors.

The Personnel Section maintained personnel records on 438 permanent personnel until April when the entire Division of Protection, the Aircraft Section and three positions in the Division of Administration were transferred to the Department of Public Safety. After April the Department had 371 permanent personnel. Some 2,700 personnel actions, 245 certifications of elegibility and 1,350 replies to inquiries were prepared by the section. Additionally, all necessary personnel documents were processed for approximately 300 temporary personnel.

The Statistics Section, in support of Department programs, compiled and published approximately 26,000 copies of various periodic reports. In producing reports required by the Department, some 383,600 source documents were processed with varying degrees of attention required for each type. Department biologists received 849 computer-printed reports through the section. These were generated from approximately 150 separate computer programs maintained by the Section's programmers.

The Supply Section maintained and improved inventory records on approximately $3 million worth of personal property. Through mechanization and improved procedures in mail handling, approximately 500,000 pieces of mail were processed at a cost of approximately $5,000 less than required by old methods. The Section processed some 402 purchase requisitions to the Department of Administration and initiated 422 original purchase documents to vendors. These accomplishment were in addition to a wide variety of other services furnished to the Department.

The Vessels Section maintained and operated Department vessels for a total of 1,514 days. Vessels ran more than 82,000 miles in carrying out research, management, rehabilitation, logistics and enforcement activities. Approximately half a million pounds of freight were hauled in supplying remote stations and in support of field activities of the Department. Eleven foreign fishing violations were reported by vessel crews. Distress assistance was provided to three fishing vessels, including fire fighting in one case. Additionally, search and rescue operations were performed by a Department vessel in the disappearance of Rep. Nick Begich.

ENGINEERING SECTION

I. PURPOSE AND DUTIES:

The Engineering Section has the following duties:

1. To design and produce "tools" with which the resources managers can better perform the primary programs of fish and game husbandry.

2. To provide technical and professional engineering consultation and service to the biologist staff including: evaluate proposed physical plant construction programs; determine feasibilities and economic justifications; develop and define options; develop plans; and make engineering decisions.

3. To provide engineering support to the resources management and research programs including: construct facilities to monitor fish and game populations and migrations; rehabilitate fish spawning streams; develop new fish spawning and rearing areas; clear migration barriers; and construct hatcheries, shops, warehouses, offices and housing facilities.

II. ACCOMPLISHMENTS:

1. Relocated and established staff capability in Juneau and Anchorage regional offices to facilitate direct engineering input to the regional resources managers, thereby providing greater service and more efficiency in operation.

2. Developed a numerical index for Prince William Sound expressing comparative values for the regimen of freshwater streams favorable to pink salmon production. A report on the research is in final manuscript form and is nearly ready for publication.

3. Provided 585 items of technical and professional engineering consultation and service to department administrators and resources managers.

4. Completed capital improvement construction projects including: Bear Lake fish holding facility; Bear Lake rehabilitation, fish evaluation facilities; Little Harding Lake outlet structure; Talarik weir structure; Ft. Richardson fish rearing ponds; Fire Lake hatchery water supply upgrading, warehouse relocation and residence construction; Craig floating warehouse; saltwater fish rearing facilities (first stage) at Starrigavin, Little Port Walter and Kasitsna Bay; Prince William Sound stream rehabilitation (earthquake damage); Cordova office building; Sand Point headquarters building; Eyak Lake outlet control dam; Seal Bay fishladder (with U.S.F.S.); Genevieve Lake outlet structure; and Margaret Lake outlet structure.

5. Surveys, plans and specifications completed with construction underway: Ship Creek fishladder at Chugach Electric Co. dam; Elmendorf-Ship Creek fishladder (with military); Mendenhall-Dredge Lake fish ponds (first stage); King Salmon station site grading; Fairbanks headquarters building; Crystal Lake fish hatchery; Kitoi gravel fish incubation boxes; Frazer fishladder modification; fish transplant scow; and Chatanika River weir.

6. Surveys, plans and specifications completed: Akalura Lake outlet control structure and Buskin River fish rearing pond.

7. Site surveys completed and plans and specifications being prepared: Mendenhall-Dredge Lake fish ponds (second stage); saltwater fish rearing facilities (second stage) at Starrigavin and Tuckta Lagoon; Seward aquaculture facility (with U. of A.); Chignak River weir; Russian River fishladder; Lower Jean Lake control structure; and Packers Lake control structure.

8. Site surveys completed for: Deadman Lake outlet structure; Birch Lake fish screen; Kasilof River weir; Control Creek fishladder; Pavlof Harbor fishladder; Salt Lagoon fishladder, Aiken Cove Creek fishladder; 108 Creek fishladder; Survey Creek fishladder; Klakas Lake Creek fishladder; and Anan Creek fishladder.

HABITAT SECTION

I. PURPOSE AND DUTIES:

It is this Section's function to coordinate the Department's involvement in environmental quality programs. It administers the Department's statutory authority over the protection of waters important to fish (16.05.870; 16.10.010; 16.05.020).

In addition, it coordinates the Department's program in land and water use planning. It also works with the Department of Environmental Conservation in enforcement and updating of the state's water quality standards.

II. ACCOMPLISHMENTS:

The primary accomplishment of the Section was the continuing coordination of intradepartmental responses to applications and proposals from both individuals and agencies for developmental projects that affect fish and wildlife resources and their habitat. For projects of a larger nature such responses were coordinated with other state agencies to permit a consolidated state position.

The Habitat Section is divided into four major components. The following is a brief summary of each component's major accomplishments for 1972:

Land Use Planning - This component actively participated as a member of the Resource Planning Team of the Joint Federal-State Land Use Planning Commission which was established pursuant to the Alaska Native Claims Settlement Act. Departmental wildlife resource data was contributed to the Commission's planning system. The far-reaching effects of the land planning aspects of the Native Claims Settlement Act make this activity of critical importance to the future wildlife resources within Alaska.

The major portion of the Susitna Flats Resource Management Area management plan was drafted. Considerable effort was expended in developing an experimental waterfowl habitat improvement project in conjunction with the Greater Anchorage Area Borough's sewer interceptor line which will traverse a portion of the Potter Point State Game Refuge.

Of particular interest was the legislative passage of a Critical Habitat Bill which afforded eight specific areas, all critical to fish and wildlife resources and totaling approximately 327,000 acres, significant additional protection from improper developmental practices.

Water Projects - This component continued to exercise the Department's constitutional charge to protect anadromous fish streams. Major emphasis in this area centered around oil and pipeline associated activities. We continued to coordinate the Department review of pipeline alignments and gravel sites.

Water Planning - The cataloging of waters in Alaska continued. This information is currently being given to the planning system established by the Alaska Land Use Planning Commission. Departmental fisheries resource information is also being coordinated by this component for use in the Commission's planning system.

Access - Access to public waters was provided through the acquisition of 52 additional parcels of state land. Two valuable private access sites also were purchased for public use. Particular emphasis was placed on securing rights to the many departmental research sites located on public domain throughout the state.

Passage of the Alaska Native Claims Settlement Act, with its charge of delineating needed public easements across potentially private lands, initiated a program of identifying those areas throughout the state which require access for hunting and other forms of recreation.

HATCHERY SERVICES SECTION

I. PURPOSE AND DUTIES:

Hatchery Services was activated in 1969-70 to implement the $3 million fish hatchery construction bond issue, SLA 1968, Chapter 227 and to consolidate the operations of the Department's existing and expanded fish hatchery facilities. The operational functions were assigned to Hatchery Services in July, 1971. Hatchery Services has three basic goals:

1. Completion of the new fish hatchery facilities as funded by the Fish Hatchery Construction Statute.

2. Becoming completely operational with the new and existing fish hatchery facilities in a unified operation.

3. Fully utilizing the facilities to provide the Sport Fish Division, Commercial Fisheries Division, and Fishery Rehabilitation, Enhancement and Development Division with fish for their expanding needs.

II. ACCOMPLISHMENTS:

Construction at the Ft. Richardson Rearing Ponds was completed as was the preliminary construction at Crystal Lake hatchery. Construction has proceeded as planned, and the Crystal Lake hatchery became partially operational, ahead of schedule, Oct. 11 when 1.5 million king salmon eggs were received and incubated. Overall construction is now scheduled for completion by Feb. 1, 1973. This will provide two completely modern fish rearing facilities with the capability of year-round water temperature control. Because of this the state will have, for the first time, the complete capability of manipulating the rearing of fish to help meet the needs of the various fishery enhancement projects.

Due to inflation, allotted funds proved insufficient to complete all aspects of the Crystal Lake hatchery as designed, so the high capacity rearing ponds and secondary water supply were deleted. This allowed construction of the project without delays. Production levels will be significantly impaired until these deletions can be reinstated.

Despite this, the consolidation of the hatchery system and the comparatively inexpensive upgrading of the Ft. Richardson rearing facility gave the state two completely modern hatchery complexes for the $3 million bond issue, instead of the one originally thought possible by the engineering and fishery consultants.

Operational activities proceeded at an accelerated pace at the Fire Lake-Ft. Richardson facilities after completion. Over seven million eggs were received and 4.1 million fish were stocked into 103 lakes, three streams and two saltwater rearing sites. Miscellaneous

transfers were made for experimental and interagency cooperative purposes. The facility produced a total of 48,000 pounds of fish. This compares with 2.9 million fish stocked and 31,000 pounds produced in 1971.

Three and one-half million rainbow trout eggs were provided without charge by the Bureau of Sport Fisheries and Wildlife. Fire Lake hatchery personnel participated with the Sport Fish Division in other egg takes and conducted Ship Creek king and Kodiak coho egg takes.

The new rearing program encountered serious gill diseases and the controls proved inadequate. Continued experimentation has improved techniques.

The attempts to produce first-year smolt from 1971 brood coho were not successful. The results with 1972 brood coho appear much more promising to date. The growth acceleration of 1971 brood Ship Creek kings to first-year smolt was successful and the 1972 brood fish are at anticipated sizes. Experimental rearing of sheefish and grayling did not prove promising with the equipment on hand.

An experimental advanced design upflow biological filter was developed to an operational prototype and installed at the Fire Lake hatchery. Operational use has refined and proven the design. This prototype work by hatchery personnel was invaluable in the design and installation of these new filters at the Crystal Lake hatchery.

The Elmendorf Cooling Pond was used for rearing coho smolt when a major stocking could not be made. Use of the pond was worthwhile under the circumstances, but extensive alteration and modifications are needed for production use. This is being evaluated further.

Funding shortages made it impossible to acquire conventional high-capacity fish transportation units. Equipment was also required to move quantities of fry via air and water to saltwater rearing prototypes. In the first instance, a privately owned 8,000-gallon tank-trailer was adapted to haul fish. It successfully hauled thousands of pounds of coho smolt to Seward. In the second instance, a surplus military trailer was modified to carry two 300-gallon fish tanks and it was used to transport over 500,000 rainbow trout and coho, king and red salmon to Sitka and Petersburg in an Alaska Air National Guard C-123. It also moved fish via highway and barge to the Kasitsna saltwater rearing prototypes.

The Kitoi Bay Station continued operations at maintenance levels. Delays in the Akalura system rehabilitation project were supplanted by experimental work with gravel incubation boxes by F.R.E.D. (720,000 pink salmon and 200,000 red salmon eggs were taken and incubated to the eyed egg stage for the gravel incubators and other experiments in cooperation with the F.R.E.D. staff.) King salmon eggs were also taken for the Fire Lake station and 250,000 red salmon eggs were taken and incubated for shipment to Japan.

The Crystal Lake hatchery staff conducted coho egg-taking operations locally and in cooperation with Sport Fish Division personnel in the Juneau area. They also received coho eggs from NMFS Auke Bay Labora-

tory's Little Port Walter station and king salmon eggs from the B.S.F.& W. Carson National Fish Hatchery in Washington state. The hatchery became operational with these eggs and the operation has been entirely successful to date. Approximately three million eggs will be incubated and hatched at the hatchery this year. Some of these eggs and hatching fry are being used in the experimental development of techniques for rearing and manipulating fish growth in the new controlled-environment, closed-system hatchery.

INFORMATION AND EDUCATION SECTION

I. PURPOSE AND DUTIES:

The Information and Education Section is responsible for informing the public about the fish and wildlife resources of Alaska and the Department's research and management activities.

This is accomplished through a variety of informational and educational programs which include news releases, films distributed throughout the state, a weekly television program, a magazine, pamphlets, exhibits, feature stories, photo displays and personal appearances. The Department's technical library is part of the Section and provides valuable research facilities to staff personnel. The Section answers more than 5,000 letters per year from persons seeking information about Alaska's fish and game.

II. ACCOMPLISHMENTS:

The press run of the Department magazine "Fish Tales and Game Trails" reached 6,000 and about 100 new requests for subscriptions are received each month. The magazine is now being printed by a commercial shop in Anchorage.

Two new films, "Quest for Grayling," and "Coho Carnival," were produced by the Section and released in 1972. Footage for films on sheefish, shrimp fishing, bear tagging and the Gulkana River was obtained. A commercial film showing Department wildlife management activities was added to the film library. The library distributed about 900 film copies during the year.

The Department's television program is now being broadcast in Anchorage, Juneau, Sitka, Ketchikan, Wrangell, Petersburg, Kodiak, Fairbanks and Nome.

Approximately 175 news releases were issued by the I and E Section. The section provided an exhibit at Fish Expo '72 in Seattle and coordinated programs observing National Hunting and Fishing Day in Anchorage and Juneau. The section also provided material for exhibits and displays at other shows, fairs and school projects.

DIVISION OF COMMERCIAL FISHERIES

I. PURPOSE AND DUTIES:

The Division of Commercial Fisheries has the responsibility of managing all of Alaska's commercial fish species (except halibut) and of conducting research to provide the best information possible to obtain a maximum sustained yield from the fisheries resources.

II. ACCOMPLISHMENTS:

SOUTHEASTERN MANAGEMENT

The Southeastern Region, including Yakutat, was one of the bright spots in the 1972 salmon fisheries. Catches were good and escapement goals were largely met. The area produced 43 per cent of the total state salmon pack and 50 per cent of the state-wide frozen salmon production.

The purse seine fishery harvested 13.4 million salmon. This was the third largest catch since 1960. Strong returns of red and chum salmon compensated partially for the reduced pink returns.

Preliminary data indicate a record gillnet catch of 1.9 million salmon. The strong coho, red and chum salmon returns provided the base for the most successful gillnet year since statehood.

Catches by the troll fishery totaled over a million salmon which reflects a continuing recovery from the low catches of 1970. The highlight of the 1972 troll fishery was the sharp increase in coho production.

Set net fisheries in the Yakutat area harvested more than 188,000 salmon. Notable was the excellent red salmon production in the Yakutat Bay and Situk River fisheries.

Dungeness crab catches in the Yakutat area continued to increase with 1.9 million pounds harvested. The total catch for Southeastern Alaska exceeded 2.5 million pounds. This was the largest dungeness production since 1968.

Heavy attention was focused on the herring harvest in 1972 and the catch increased to 10.02 million pounds for the 1971-72 fishing year.

Through funding of the Governor's fisheries rehabilitation program, stream clearance was initiated in the four management areas of Southeastern Alaska. Clearance work was conducted on 26 streams which resulted in substantial recovery of spawning and rearing area and improved access for pink, chum and coho salmon.

SOUTHEASTERN RESEARCH

Pink Salmon Research - This project forecasts pink salmon returns to Southeastern Alaska. Field work completed the preceding spring resulted in an estimated return of 26.6 million pink salmon in 1972. Complementary studies indicated a minimum spawning escapement of at least 10 million pinks.

The 1972 forecast for southern Southeastern was extremely accurate. In northern Southeastern, however, the total return was about seven million pinks below the forecast. Similar results throughout the remainder of the state indicate that cold ocean temperatures and probable scarcity of food in the spring of 1971 resulted in a high mortality of young pinks that would have returned to spawn in 1972.

Red Salmon Research - Progress is evident in determining the contribution of the Chilkat and Chilkoot systems to the gillnet fishery of Lynn Canal.

Coho Salmon Research - Juvenile coho salmon within several Lynn Canal river systems were marked with pigments which will remain evident until they return to spawn in 1974. Recovery of marked fish will aid in determining the contribution of various stream systems to seine, troll and gillnet catches of northern Southeastern.

Cataloging of coho spawning and rearing streams was continued.

Herring Research - Hydroacoustical techniques have been refined and are entering full-scale use in determining numbers of herring that can be harvested while maintaining healthy spawning stocks.

An active public relations program has done much to convey the Department's ideas concerning the harvest of herring within a procedure designed to increase stock size.

Salmon and Land Use Research - Researchers participated in interdisciplinary teams comprised of Alaska Department of Fish and Game and U.S. Forest Service scientists to recommend logging procedures which recognize the multiple-use concept of resource management. Field surveys were also conducted in cooperation with our pink salmon studies to advance knowledge of optimum escapement as related to stream classification.

CENTRAL REGION MANAGEMENT

Bristol Bay

For the Bristol Bay red salmon run, 1972 was a year of low abundance in the cycle. The actual inshore run of 5.4 million was only slightly over half of the forcasted run, resulting in severe curtailment of fishing time. The catch of 2.4 million red salmon was the lowest since 1896. In spite of limited fishing time, escapement goals were achieved in only three of the nine major river systems. All other salmon species, with the exception of chum salmon, were well below average in abundance. Pink salmon, which are strictly an even-year run of fish in Bristol Bay, were almost nonexistent in 1972. This species has been steadily declining after record producing years in 1966 and 1968.

Cook Inlet

The 1972 Cook Inlet red salmon harvest of 934,000 was slightly below the 17-year average but 42 per cent above 1971. Excellent escapements were obtained in the major red salmon producing systems.

Pink and coho salmon were well below average even-year levels. Chum salmon were slightly below average in abundance.

Shrimp production was on a par with 1971 at 5.4 million pounds for the year as was king crab at 4.3 million pounds. Stocks of both species appear to be healthy.

Tanner crab production, as in other areas of the state, established another record production year in 1972 with a 4.1 million pound catch.

Prince William Sound

The 1972 forecast for pink salmon was for a run of less than escapement requirements. Consequently, the purse seine fishery in Prince William Sound was closed completely during the 1972 season. The actual run of pink salmon followed the pattern of several other areas of the state, and was far below the forecast.

The loss of this fishery in 1972 was somewhat offset by above-average catches of red salmon in both the Copper River and Coghill districts. Additionally, the spring herring fishery was intensified and produced 3.5 million pounds of fish for roe extraction, and nearly 600,000 pounds of roe on kelp.

The tanner crab fishery is the newest and most rapidly expanding fishery in Prince William Sound. Current year production stands at 8.5 million pounds, compared to the initial year production of 298,000 pounds in 1968.

Interest is developing in marine snails for an export market.

CENTRAL REGION RESEARCH

Salmon Forecasts - The preseason forecast indicated below average runs for nearly all forecast areas in 1972, and the actual returns were either in the lower range or below the forecasted level. This was characteristic of many of the runs in Alaska in 1972.

The Bristol Bay sockeye run was forecasted at 10.3 million salmon prior to the season. The actual return was 5.4 million. The pink salmon run in the Southern and Outer districts of Cook Inlet was forecasted to be between 400,000 and 1.1 million. The actual return was 55,000 pink salmon. The Nushagak pink salmon run was forecasted at 1.4 million and the actual return was 126,000. The Prince William Sound pink salmon run was forecasted to be between 0 and 3.6 million with a mean of 1.7 million. The actual return was 635,000 pink salmon, and all were allowed to escape. Even though the run returned substantially below the mean level of forecast, the low forecast had indicated the desirability of closing

this fishery and had prevented unnecessary expenditure by fishermen and industry. The Prince William Sound chum salmon run was forecasted to be between 700,000 and 900,000 with a point estimate of 800,000. Actual return was 359,000, and 319,000 were allowed to escape to the spawning grounds.

Prince William Sound Rehabilitation - Experimental rehabilitation projects were in progress in Prince William Sound again in 1972 and 650 sockeye salmon were transplanted from Eshamy to Herring Bay Lake where no run had previously existed. Stream clearance and channelization and damming off of an unproductive stretch of stream was accomplished in Lagoon Creek in Landlock Bay. Windfalls and other debris were removed from Cannery Creek. Additionally, three experimental incubation boxes were stocked with salmon eggs--sockeye salmon at Eyak Lake, and pink salmon at Eccles Creek and Fleming Spit.

Cook Inlet Shellfish - A king crab tagging experiment was carried out in Kachemak Bay. Biologists tagged 1200 king crabs, making a total of 1600 tagged in the past two years. Hopefully, recoveries will show whether the crabs in the different king crab quota fishing areas in Cook Inlet are actually separate populations. This project also monitored the shrimp population in Kachemak Bay through sampling of the fishery and analysis of catch and effort data.

Cook Inlet Salmon Investigations - Emphasis was again placed on estimating sockeye salmon escapements to various areas in Cook Inlet. Escapements were estimated through the use of weirs, counting towers and sonar counters in the Kenai, Kasilof, Susitna and Fish Creek drainages. An exhaustive survey was made of the spawning populations in Tustumena Lake tributaries to assess the accuracy of the sonar counter at the lake outlet. The sonar counter estimated 123,195 sockeye, whereas the estimate for the spawning grounds was 112,277. This showed that the sonar counter was essentially accurate. Sockeye escapements were shown to be good in all areas of Cook Inlet with the exception of Fish Creek in the Northern district.

Sonar Research - Work continued on development of a sonar counter to estimate the number of sockeye salmon smolt leaving the important Iliamna Lake drainage in Bristol Bay. This counter will allow an estimate of the total outmigration from Lake Iliamna, which should improve forecast accuracy. In 1972 the ice outflow from Lake Iliamna breakup was so heavy at the time of smolt migration that normal means of enumeration of the young fish were useless. Without the sonar counter there would have been no estimate of the size of the outmigration.

Work continued on the improvement of the adult salmon sonar counter in 1972. Again, as in the initial tests in 1967 and 1968, the counter achieved over 90 per cent accuracy in estimating numbers of salmon migrating upstream.

Cook Inlet Inventory Project - In 1972, funds were made available to inventory Cook Inlet salmon habitat. The purpose of the inventory was to provide a background of data to formulate a plan for maximizing the salmon yield from this habitat. Certain priority

lakes and streams were chosen and preliminary field investigations were carried out during the 1972 field season. Additionally, a data file was created to incorporate all past, present and future data collected on salmon in Cook Inlet.

Test Fishing - The offshore test fishing program at Port Moller indicated the Bristol Bay run in 1972 would be below the preseason forecast. A great deal of fishing time was missed due to weather and the estimate was not as accurate as it had been in several previous years.

Copper River Sockeye - Estimations of escapements in the Copper River through the use of tags and recovery from fish wheels was continued. Work was expanded to include better escapement estimation and sampling of runs in the Copper River Delta area. Escapement estimation for upriver areas seems to be quite accurate but occurs too far after the fishery to be of use in in-season management. New tagging areas were investigated closer to the fishery and in 1973 the operation will be shifted downriver.

WESTERN REGION MANAGEMENT

Salmon Fishery - During 1972, an extremely poor return of pink salmon occurred throughout the entire Westward Region, which includes the Kodiak, Chignik and Peninsula-Aleutian areas. The Westward Region pink salmon harvest totaled 24 per cent of the past 10-year average, while red salmon harvests amounted to 66 per cent of the red salmon harvests of the same period. Only chum salmon showed a harvest rate above average, with a catch of approximately 20 per cent above the past 10-year average. The total salmon harvest for the region was 6.12 million.

Shellfish Fishery - Fishermen landed 172.87 million pounds of shellfish in the Westward Region during 1972. The approximate poundage by species:

1.	Shrimp	76,323,000 pounds	
2.	King Crab	68,739,000 pounds	
3.	Tanner Crab	15,542,000 pounds	
4.	Dungeness	2,109,000 pounds	
5.	Scallops	10,000,000 pounds	(1,000,000 pounds shucked)
6.	Razor Clams	159,000 pounds	
	Total	172,872,000 pounds	

The 1972 landings reflect an increase of approximately seven million pounds over the total for 1971. Kodiak shrimp landings decreased by 24 million pounds, but increased landings of king and tanner crabs and the expansion of the Shumigan shrimp fishery held the total above the 1971 figure.

Kodiak Area - The poor 1972 pink salmon harvest consisted of approximately 3.8 million fish and there was a complete island closure between Aug. 5 and Aug. 23 to allow for maximum escapement. Escapement goals were not obtained in most systems, and the total pink salmon escapement was little more than one million fish, with slightly more than one-half million reds, chums, kings and cohos counted.

Three king crab districts were established for the Kodiak area, each having a specific quota. This year's harvest of 15.5 million pounds of king crab represents the first increase in the harvest since 1965. Total landings for tanner and dungeness crab for 1972 were 11.8 and 2 million pounds, respectively.

The 1972 razor clam harvest was 159,000 pounds, and a razor clam research project was conducted on Swikshak Beach in 1972 by the commercial fisheries management staff. One million pounds of scallop meat were harvested off Kodiak during 1972.

Chignik

The 1972 red salmon run to the Chignik system was about 300,000 below the average over the past 10 years, with a total return of approximately 974,000 fish.

The pink salmon return was a near failure. By the end of July it was apparent that the run was not building as it should and the fishing was closed. Only 70,000 pink salmon were caught and half of these were taken incidentally in the red salmon fishery within the Chignik Bay district. Escapement of pink salmon was very poor with some streams receiving only token amounts.

The chum salmon catch of 80,000 fish was far below average. However, some of the major systems did receive fair escapements.

The lack of shellfish processors and fishing effort has limited crab production in the Chignik area. The highest production for the area was recorded in 1961 when 1.7 million pounds were taken. The 1972 catch was 133,252 pounds. The shrimp catch from this area was 3,184,753 pounds.

ALASKA PENINSULA-ALEUTIAN ISLANDS

Salmon - The 1972 South Peninsula salmon fishery was characterized by a disastrous pink salmon run, a fair local chum run and a relatively good catch of reds and chums at South Unimak. The overall catch totaled only 1.4 million salmon. The normal catch range is 2.5 to 3.5 million.

The pink salmon run totaled not over 200,000 from an escapement of one million in 1970. The exceptionally severe winter of 1970-71 resulted in a tremendous mortality on spawn and fry.

The chum salmon runs totaled 450,000 (local) plus 500,000 migrants taken in June.

The June fishery at South Unimak took 430,000 reds and 410,000 chums, which was exceptional in view of the poor return of reds to Bristol Bay. The Aleutian Islands pink runs were almost non-existant in 1972.

North Peninsula catches totaled only 275,000 vs. the norm of 300,000 to 400,000. Red salmon are the mainstay of the fishery around Port Moller and Ilnik, but as in Bristol Bay the runs were weak in 1972.

Shrimp - It is estimated the 1972 catch will total around 14 million pounds. A third processing facility operated briefly at Dutch Harbor this year and a fourth plant is scheduled to commence operations in the Shumagins early in 1973. Shrimp landings are expected to total approximately 30 million pounds for this area for calendar year 1973.

Dungeness Crab - Although total landings have been small, the increased value of dungeness may result in an up-swing of this fishery.

King Crab - The Peninsula-Aleutians king crab fishery during 1972 totaled approximately 53.14 million pounds, which compares favorably with the 1971 total landings. The Bering Sea king crab fishery has increased approximately 10 million pounds over the 1971 level to total 22 million pounds for 1972.

RESEARCH PROGRAMS

Shrimp Research - The Kodiak based research project entitled "Pandalid Shrimp Studies" is funded in part under the Commercial Fisheries Research and Development Act (Public Law 88-309 as amended). The primary goal of this project is to provide management with basic biological data necessary for effective management of the Kodiak-Shumagin-Aleutian Island shrimp fisheries.

In 1973, the stock abundance (biomass) determined from trawl surveys will again be used to establish harvest levels in major fishing areas. These surveys in 1971 and 1972 were partly responsible for the reduction in Kodiak shrimp catch to 58 million pounds from the 1972 record high of 83.2 million pounds. Present research indicates the maximum sustained yield for all historic major fishing areas will fall within the 45-65 million pounds range.

PINK SALMON FORECASTING STUDIES

Chignik and Alaska Peninsula

Pink salmon pre-emergent fry data was collected from five Chignik area and 18 Alaska Peninsula area streams. Sampling indicated high winter mortality in both management areas.

A poor return of 400,000 or less has been forecast for 1973 in the Chignik area. No forecast has been made for pink salmon in the Alaska Peninsula area because of insufficient data from previous years. However, the Alaska Peninsula area is not expected to provide good pink salmon returns during 1973.

Kodiak Area

Pink salmon pre-emergent fry data collected from 31 streams in the Kodiak area produced a 1972 forecast of 9.5 million pink salmon. The actual return was 6 million less than the prediction. Returns to the various districts appeared to be uniformly depressed below the forecast levels developed from pre-emergent fry data. This evidence suggests that the exceptionally harsh climatic conditions experienced during the 1970-71 winter caused larger-than-average

mortalities in the estuaries and/or ocean areas. If this is the case, it is not unreasonable to suppose that the 7.8 million return expected for the Kodiak area in 1973 might also be severely depressed, because the harsh 1971-72 winter climatic conditions were very similar to the previous year.

KING CRAB RESEARCH PROJECT

Peninsula-Aleutians Area

The purpose of the Westward Area King Crab Research project is to conduct a series of studies designed to determine, establish and monitor the various parameters of existing king crab stocks essential for the proper management of these fisheries. Continued assessments of these studies have indicated areas where more emphasis is necessary, as well as the validity or invalidity of various procedures and techniques.

KODIAK KING CRAB INDEX CHARTER - 1972

Seventy days of vessel charter were utilized in June and July, 1972 to initiate the Kodiak area king crab index program. The majority of the fishing occurred in stocks IV and III, currently the two most important commercial king crab stocks in the Kodiak area.

The main purpose of the index is to monitor the relative abundance and catch per unit effort of recruit (entering the fishery) and post-recruit male king crabs.

ARCTIC-YUKON-KUSKOKWIM REGION MANAGEMENT

The 1972 season in the Arctic-Yukon-Kuskokwim Region was highlighted by better-than-average chum and average king salmon runs. Kings and chums are economically the most important species in the region. Pink and coho salmon runs were below average.

Commercial fishermen harvested 903,357 salmon of all species. This was the second largest catch recorded for the region. Fisherman registration and effort in the region exceeded that of previous seasons.

The king salmon run to the Yukon River produced a below-average commercial harvest of 92,000 fish. Aerial surveys of index spawning areas indicate that the 1972 king salmon escapement was fair. The chum salmon run was average and the commercial harvest of 280,000 fish was the fourth greatest recorded. The coho salmon run was above-average and produced a record commercial catch of 23,000 fish.

Yukon River subsistence fishermen had a below-average harvest of 13,500 king salmon. The catch of the other species, mainly chums, totaled 130,000 for the smallest harvest on record. This small chum salmon harvest was the result of declining fishing effort and diminishing subsistence dependence upon this species.

The Kuskokwim River king salmon run and commercial harvest of 40,700 fish was considered average. The below-average coho salmon

run produced a catch of 22,000 which was 15,000 fish below the 1961-1971 average. The 1972 season marked the second commercial chum salmon fishery on this river since the early 1920s and approximately 78,000 fish were harvested.

An average subsistence harvest of 39,000 king salmon was made in the Kuskokwim River. The catch of the other salmon species, mostly chums, totaled 118,000 fish which was 96,500 fish below the 1960-1971 average.

Average chum and pink salmon runs to the systems of the Norton Sound area produced a commercial harvest of 101,200 chums and 45,100 pinks. The 1972 Kotzebue area chum salmon run was excellent and produced a record commercial catch of 170,800 fish. Excellent escapements were achieved in the Noatak and Kobuk rivers.

ARCTIC-YUKON-KUSKOKWIM REGION RESEARCH

Spawning salmon are counted and sampled for age, sex and size data in index areas. Results indicate relative magnitude and quality of escapement which are indicative of the effectiveness of the management program.

Salmon catches are sampled throughout the runs to obtain age, sex and size compositions. Studies are under way to determine if certain age/sex classes can be selectively harvested by allowing fishing at certain times.

Subsistence salmon fisheries are surveyed to determine harvest, fishing effort and relative success of the fishery. Approximately 1,500 fishing families are surveyed annually by biologists traveling 2,500 river miles by boat and 1,500 air miles in single-engine aircraft.

A tag and recovery study to estimate the population of chum salmon in the Unalakleet River was initiated.

Test fishing sites, located at the mouths of the Kuskokwim and Yukon rivers, provide information on relative abundance and timing of king and chum salmon runs. Studies are also conducted to obtain age, sex and size composition of salmon taken in gill nets of varying mesh size. Results are used to obtain maximum sustained yield for a "mixed" chum and king salmon fishery.

Special whitefish studies were continued in 1972 in order to obtain biological and population dynamics information necessary to manage whitefish resources on the basis of maximum sustained yield.

COMMERCIAL FISHERIES LICENSE REGISTRATION AND RECEIPTS 1963 through 1972

STATE OF ALASKA
FISH & GAME LICENSING
DEPT. OF REVENUE
240 S. FRANKLIN
JUNEAU, AK 99801

CODE NO.	TYPE OF LICENSE	1963	1964 EARTHQUAKE	1965	1966	1967	1968 RESTRICTED SALMON NET	1969 MORATORIUM POSSIBLE ANTICIPATION RESTRICTED SALMON NET	1970 OF FURTHER RESTRICTIONS	1971 GEAR ELIGIBILITY REQUIREMENT REMOVED	1972 REGISTRATION IN AREA
		$	$	$	$	$	$	$	$	$	$
270	Vessel	134,592.00	129,916.00	131,932.00	140,650.00	138,366.00	143,955.00	146,898.00	161,863.00	156,490.00	156,624.00
271	Troll	26,650.00	30,055.00	35,025.00	34,470.00	33,515.00	36,605.00	42,740.00	48,450.00	42,965.00	43,185.00
272	Long Line	17,625.00	9,850.00	11,935.00	19,830.00	15,770.00	9,620.00	18,530.00	29,740.00	29,260.00	33,075.00
273	Drift Gillnet	93,620.00	88,260.00	86,150.00	97,425.00	98,410.00	93,820.00	107,100.00	125,800.00	116,490.00	117,100.00
274	Set Gillnet	30,110.00	27,905.00	29,005.00	31,795.00	29,955.00	30,995.00	33,950.00	37,355.00	34,460.00	35,600.00
275	Beach Seine	380.00	485.00	1,490.00	700.00	725.00	600.00	975.00	1,075.00	1,210.00	1,175.00
276	Purse Seine	144,340.00	140,420.00	125,810.00	126,500.00	113,270.00	135,080.00	118,790.00	131,150.00	126,160.00	119,290.00
277	Beam Trawl	875.00	637.50	750.00	712.50	1,087.50	675.00	650.00	750.00	1,100.00	1,600.00
278	Otter Trawl	1,550.00	950.00	1,400.00	1,850.00	3,200.00	1,700.00	1,650.00	2,550.00	4,550.00	5,850.00
279	Shellfish Pots	13,455.00	14,115.00	10,365.00	11,175.00	12,060.00	14,970.00	17,430.00	18,225.00	14,415.00	17,685.00
280	Clam Diggers - 40% GF	690.00	330.00	364.00	246.00	290.00	336.00	290.00	382.00	670.00	928.00
281	R-Commercial - 40% GF	44,648.00	43,376.00	44,124.00	50,260.00	48,944.00	59,488.00	50,436.00	57,480.00	56,704.00	57,476.00
282	NR-Commercial- 40% GF	40,230.00	38,202.00	38,418.00	43,224.00	71,220.00	77,844.00	75,816.00	92,616.00	76,656.00	81,132.00
283	Scallop Dredges	-0-	-0-	-0-	-0-	-0-	-0-	2,500.00	900.00	350.00	350.00
286	Comm. Ext. Fees	-0-	-0-	-0-	-0-	-0-	-0-	-0-	1,665.00	2,925.00	2,970.00
SUBTOTAL		548,765.00	524,501.50	516,768.00	558,837.50	566,812.50	605,688.00	617,755.00	710,001.00	664,405.00	674,040.00
560	60% To	1,035.00	495.00	546.00	369.00	435.00	504.00	435.00	573.00	1,005.00	1,392.00
561)	Fishermen's	66,972.00	65,064.00	66,186.00	75,390.00	73,416.00	89,232.00	75,654.00	86,220.00	85,056.00	86,214.00
562)	Fund	60,345.00	57,303.00	57,627.00	64,836.00	106,830.00	116,766.00	113,724.00	138,924.00	114,984.00	121,698.00
SUBTOTAL		128,352.00	122,862.00	124,359.00	140,595.00	180,681.00	206,502.00	189,813.00	225,717.00	201,045.00	209,304.00
TOTAL		677,117.00	647,363.50	641,127.00	699,432.50	747,493.50	812,190.00	807,568.00	935,718.00	865,450.00	883,344.00
	NUMBER OF LICENSES SOLD EACH YEAR										
270	Vessel	8,902	8,680	8,811	9,370	9,639	9,926	9,972	10,877	10,710	10,791
271	Troll	1,470	1,735	1,922	1,944	1,889	2,103	2,303	2,567	2,353	2,413
272	Long Line	593	326	419	733	556	342	700	1,109	1,074	1,221
273	Drift Gillnet	3,423	3,219	3,257	3,654	3,765	4,050	4,374	4,710	4,779	4,611
274	Set Gillnet	2,701	2,594	2,629	2,845	2,610	2,708	3,011	3,053	3,062	3,112
275	Beach Seine	23	23	44	40	38	38	64	77	86	81
276	Purse Seine	1,413	1,343	1,237	1,236	1,202	1,291	1,207	1,311	1,323	1,147
277	Beam Trawl	20	17	20	19	24	18	13	13	16	32
278	Otter Trawl	15	9	12	17	38	26	30	41	67	87
279	Shellfish Pots	477	456	355	425	474	524	593	617	576	605
280	Clam Diggers	202	131	114	102	127	148	135	149	237	336
281	Res Commercial	11,162	10,844	11,052	12,565	12,236	14,872	12,609	14,370	14,176	14,369
282	Non-Res Commercial	6,705	6,367	6,403	6,847	5,936	6,487	6,318	7,718	6,388	6,761
283	Scallop Dredges	-0-	-0-	-0-	-0-	-0-	-0-	18	8	7	5
286	Comm. Ext. Fees	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
TOTAL		37,106	35,744	36,275	39,797	38,534	42,533	41,347	46,620	44,854	45,571

PRELIMINARY[1/] 1972 ALASKA COMMERCIAL SALMON HARVEST BY SPECIES AND MAJOR FISHING AREAS.

Number of Fish in Thousands

Area	Species					
	King	Sockeye	Coho	Pink	Chum	Total
Southeastern Alaska	250	794	1,306	11,900	2,300	16,550
Yakutat	4	132	51	3	8	198
SOUTHEASTERN REGION SUBTOTAL	254	926	1,357	11,903	2,308	16,748
Prince William Sound	23	979	124	57	46	1,229
Cook Inlet	15	934	73	583	700	2,305
Kodiak	1	221	14	2,500	1,154	3,890
Chignik	-	380	-	70	78	528
Alaska Peninsula-S. Side	-	540	-	140	690	1,370
CENTRAL REGION SUBTOTAL	39	3,054	211	3,350	2,668	9,322
Alaska Peninsula-N. Side and Aleutian Islands	-	250	-	-	110	360
Bristol Bay	66	2,390	15	76	615	3,162
Arctic-Yukon-Kuskokwim	152	4	43	48	652	899
WESTERN REGION SUBTOTAL	218	2,644	58	124	1,377	4,421
TOTAL ALASKA	511	6,624	1,626	15,377	6,353	30,491

1/ This data is based on preliminary in-season reports of commercial catches of salmon. Final commercial catch statistics are presently being compiled from fish tickets and will be available in 1973.

DIVISION OF FISHERIES REHABILITATION, ENHANCEMENT AND DEVELOPMENT

I. PURPOSE AND DUTIES:

The Division of Fisheries Rehabilitation, Enhancement and Development was created by the 1971 legislature (AS 16.05.092). The Division has the responsibility to (1) develop and continually maintain a comprehensive, coordinated state plan for the orderly present and long-range rehabilitation, enhancement and development of all aspects of the state's fisheries for the perpetual use, benefit and enjoyment of all citizens and to revise and update this plan annually; (2) to encourage the investment by private enterprise in the technological development and economic utilization of the fisheries resources; and (3) through rehabilitation, enhancement and development programs to do all things necessary to insure perpetual and increasing production and use of the food resources of Alaskan waters and continental shelf areas.

II. ACCOMPLISHMENTS:

Westward Region

Some rehabilitation and enhancement projects were active in the Kodiak area as a function of the Commercial Fisheries Division before establishment of the new Division (FRED). The major project was the establishment of a run of sockeye salmon in the Frazer Lake system. Fish ladder improvements at Frazer Lake were begun in 1972 and will be completed in 1973. Evaluation of fish passage facilities and increasing their ability to accommodate greater numbers of salmon will be a primary responsibility of FRED in future years. In 1972, an estimated 70,000 adult sockeye salmon returned to the Frazer Lake system. This provided ample evidence that a self-sustaining and increasing run has been established.

With the organization and assignment of full-time rehabilitation and enhancement responsibilities to FRED, significant advances have been made during the first year's operation in the region. Feasibility surveys of potential enhancement projects were expanded for the first time to the Alaska Peninsula. Two fish ladders and several stream clearance projects are being considered for the Peninsula area in fiscal year 1974. A weir and fish ladder constructed in 1951 on the Pauls Lake system of Afognak Island will be replaced in 1973 with a closed tube version of the Alaska steeppass. This will permit maintenance of the 10,000 to 24,000 sockeye run (catch + escapement) established in the early 1950s. Two new pilot projects were initiated at Kitoi Station. One is designed to evaluate salmon fry production by use of gravel incubators. The other is a study of freshwater rearing of sockeye fry to the smolt stage. Both methods have great promise in restoring depleted sockeye runs on Kodiak and Afognak islands. Studies also were started on streambed compaction and underground channel problems which limit salmon production in two stream systems close to Kodiak.

The major priority in this region is the restoration and enhancement of sockeye runs in the Kodiak area. The first project involves the restoration of the Akalura Lake sockeye run to historic levels. To attain this goal we are developing extensive plans for a large-scale rehabilitation of lake rearing areas and for increasing fry densities in the lake by supplemental production methods. This work would naturally progress to other lake systems in the region. The long-range goal is the rehabilitation of the once famous Karluk Lake system.

Arctic-Yukon-Kuskokwim and Central Regions

A biologist is now stationed in Anchorage with the duties of, (1) supervising the saltwater rearing program in Cook Inlet, (2) initiating planning for rehabilitation and enhancement projects in the two regions, and (3) carrying out authorized projects.

Kasitsna Bay was selected as the initial location for the saltwater rearing facility, though it was known that it would have to be moved prior to the fall storms. The objective was to have the fish adapted to full-strength sea water before Sept. 15.

The facility was moved in October to Jackalof Bay to protect it from the winter storms.

Surveys have been completed for a fishway on the Russian River, a control structure and beaver dam control at Packers Lake on Kalgin Island and a control structure at Lower Jean Lake. Plans are currently being prepared for these facilities.

A fishpass facility will be installed at a barrier falls in Control Creek, Prince William Sound, to allow fish passage into an extensive spawning area.

The razor clam project formerly conducted by a biologist in the Division of Commercial Fisheries became the responsibility of FRED beginning July 1, 1972.

Results to date of this program are as follows:

1. The razor clam areas of Cordova, Swikshak (Kodiak area), and Polly Creek (Cook Inlet area) are approved for commercial harvest of razor clams for human consumption. Razor clam products from these beaches which have been heat treated and vacuum packed may be utilized in interstate commerce.

2. Fresh and frozen razor clams obtained commercially for human consumption from these areas may be shipped only in intrastate commerce.

3. Alaska's shellfish sanitation program is in nearly completed format. However, changes in the State Administrative Code regarding shellfish sanitation as recommended by the Food and Drug Administration are subject to approval by the legislature. If the changes are approved, they will help Alaska's enrollment in the national shellfish sanitation program which

means that fresh and frozen razor clams harvested commercially for human consumption may then be shipped in interstate commerce to other member states and nations.

The study of whitefish in the Kuskokwim River drainage was transferred from the Division of Commercial Fisheries to FRED on July 1, 1972. The goal of this study is to obtain the basic life history data which can be used for orderly management of this freshwater fisheries resource. The commercial demand for freshwater fish is slowly increasing while the subsistence use is declining.

A new operator has leased a large freezer barge at Bethel and plans a large freshwater fishery operation next year for that area.

Southeastern Alaska Region

The saltwater salmon rearing unit at Sitka was completed and it and the unit at Little Port Walter were stocked with salmon fry in 1972. The unit near Sitka at Starrigavin Creek is carrying king, coho and sockeye salmon with freshwater flow pumped into each pen to create an artificial lens. Though still in the experimental stage and undergoing modifications to improve salmon rearing capabilities, results to date are promising, with exceptional growth achieved by the sockeye salmon. A cooperative venture with the National Marine Fisheries Service at Little Port Walter in rearing coho in saltwater near the stream where the water is less saline (natural lens) was carried on the past season.

Engineering surveys were made at five locations selected for fishway installation: Salt Chuck Creek in George Inlet near Ketchikan, Aiken Cove Creek in Moira Sound on Prince of Wales Island, Klakas Lake outlet stream on Prince of Wales Island, Survey Creek on Kosciusko Island and Pavlof River on Chichagof Island. Plans for the fishways are now in the design stage. Spawning area for pink, chum and coho salmon will be increased in all of these systems and access for sockeye salmon will be improved at Klakas Lake and Pavlof River.

A stream clearance program, funded by FRED and conducted by the Division of Commercial Fisheries, resulted in improving access to spawning grounds for upstream salmon migrants, recovery of spawning area and preventing channel diversion in 26 streams.

Work consisted of removing windthrown trees, stumps, logging debris and beaver dams and was conducted from mid-April to June 30.

A gravel incubation pilot project is currently being conducted by the National Marine Fisheries Service and the Department at Auke Bay on land owned by the Territorial Sportsmen, Inc.

Fry production in 1972 from gravel incubators utilizing only one-fifth of the potential egg deposition of the Auke Creek pink salmon escapement was roughly equal to natural production utilizing four-fifths of the potential egg deposition.

In conformity with AS 16.05.092, a detailed report covering the Division's activities for 1972 will be submitted to the legislature by Jan. 28, 1973.

GAME DIVISION

I. PURPOSE AND DUTIES:

The Game Division, in accordance with the concept of sustained yield as specified in Section 4, Article VIII of the Constitution of the State of Alaska, has the responsibility of conducting a conservation program involving all species of land animals and marine mammals in the state. Basically, the goal of the Division's program is to provide maximum benefits to the citizens of Alaska through orderly utilization of the state's game resources.

Game Division operations, which are directed toward managing, maintaining and improving game resources while knowledgeably directing the utilization of harvestable surpluses, are divided into three distinct categories: management, research and survey-inventory. Management activities include administration of guide examinations, enforcement of guide and hunting regulations, administration of controlled hunts, preparation of regulatory proposals and public relations work. Research activities and survey-inventories of game populations and their habitat provide information necessary for the proper management of Alaska's game resources.

II. ACCOMPLISHMENTS:

After serving nearly two years as acting director, Frank Jones was appointed director of the Game Division in August, 1972. Two new field stations--Wrangell and Delta--were staffed with biologists during the year. Addition of these stations will help Alaskans and their wildlife resources receive the necessary on-the-spot game management.

Species management policies for all of Alaska's major game animals were completed early in 1972 and development of comprehensive game management plans for all species and game management units statewide is now underway. Formalized species management policies will be printed for distribution to the public early in 1973.

During 1972 a major portion of the Division's financial and manpower resources was directed toward the development of a statewide wildlife inventory. This catalogue of Alaskan wildlife populations and their habitat will be published early in 1973. This treatise will prove invaluable to biologists and other land use planners involved with the Native Land Claims settlement, pipeline construction and many other development activities scheduled for the state.

The past year was marked by an increase in publications by Game Division staff members. One booklet entitled "The Alaska Hunter's Guidebook" was produced to help inform Alaskan and nonresident hunters of the wheres, hows and whens of hunting in the state. In addition, a series of attractive wildlife technical bulletins was initiated with the publication of "The Distribution and Movement

Patterns of Caribou in Alaska," "Effects of Hunting on Rock Ptarmigan Along the Steese Highway" and "A Bibliography of the Parasites, Diseases and Disorders of Several Important Wild Ruminants of the Northern Hemisphere." Staff research biologists authored approximately 10 manuscripts on such diverse subjects as moose feeding habits, lightning-caused deaths of caribou and the survival of orphaned brown bear cubs and submitted them to the scrutiny of the scientific community through journal editorial boards. In addition, staff biologists made many formal presentations at scientific meetings during 1972.

Caribou research and management activities received major effort during the past year. Early in June the Porcupine caribou herd of northeastern Alaska was accurately censused for the first time. Later that month other workers completed the first thorough census of the Nelchina herd in the past four years. Weather and logistics problems had caused cancellation of this project during 1969, 1970 and 1971. A milestone in caribou management was achieved in 1972 with the inception of "Operation Caribou." This joint venture of the Game Division, Department of Public Safety and the U. S. Bureau of Land Management was very successful in upgrading the quality of roadside caribou hunting along the Taylor Highway. A combination of extensive public relations work, intensive patrols by biologists and law enforcement officers and routine litter clean-up along the highway did much to alleviate the bad sportsmanship, crowded conditions and widespread littering normally associated with this type of hunt.

Moose research, for which the Game Division is now receiving considerable acclaim, continued to provide invaluable information for the management of the state's moose populations during 1972. The Division's Moose Research Center on the Kenai Peninsula was the site of much high-quality research, and establishment of a program centered in Fairbanks will insure that Alaska will continue to lead the way in this important field. Wolf research conducted in the Arctic and Southcentral areas was extremely productive in 1972 as was research on marine mammals such as the walrus, several species of seals and the sea otter. Studies of brown bears and the effects of logging upon their populations, which were recently initiated in Southeastern Alaska, contributed to the understanding of this important game resource. Still another major accomplishment during 1972 was the completion of the first thorough assessment of the harvest of migratory waterfowl in the state.

Not all important projects were as successful as those previously mentioned, however. Throughout 1972 Game Division biologists attempted to retain management authority over the state's marine mammal populations. In spite of the fact that most, if not all, of the country's professionally trained resource managers believed that Alaska was adequately and efficiently managing its marine mammals, Congress passed an Ocean Mammal Protection Act late in the year which places these species under the jurisdiction of the federal government. As a result of this act, at present only Alaska natives are allowed to harvest any of the following species: polar bears, walrus, sea otters, sea lions, whales and seals.

SPORT FISH DIVISION

I. PURPOSE AND DUTIES:

The Sport Fish Division's primary function is to insure a sustained yield of the game fish resource through proper regulatory management and research.

The importance of sport fishing to Alaska is demonstrated by the fact that about 40 per cent of the adult residents engage in this recreation. Fishermen spent more than 2.4 million man days and about $26.6 million on their sport in Alaska in 1972.

The Division's management objective is to supply quality fishing for the greatest number of anglers with a minimum of restrictions and regulations. Research programs have been developed to fulfill management's needs as follows:

1. To increase sport fishing opportunities while maintaining a balance between human demands and the resource which will permit a diversity and variety of individual choice of use.

2. To gather biological, physical and water chemistry data related to specific recreationally desirable fish species within the state.

3. To investigate the limiting environmental factors influencing the spawning, rearing and carrying capacities of the state's waters.

II. ACCOMPLISHMENTS:

REGION I (Southeastern Alaska)

During 1972 the southeastern region of the Sport Fish Division continued to pursue the objectives established to meet the increased resource development occurring in the panhandle. Programs were refined as new knowledge and data were collected to fully utilize this information. The reassignment of several staff members was accomplished so that specific projects may more fully benefit from their particular field of knowledge.

Logging Studies - 1972 represents the first complete field season of a study entitled "A Study of Land Use Activities and Their Relationship to the Sport Fish Resources in Alaska." This new study evolved from a study of Dolly Varden and now centers on all types of rearing fish. Three major accomplishments were achieved by this program in 1972. One was the staff's assignment to the U. S. Forest Service "Multiple-Disciplinary Team" where we were able to provide on the ground industrial guidance. A second was the presentation of the educational program on protecting fish habitat to various logging camps in the region. The third accomplishment was the publication of a pamphlet entitled "Logging and Fish Habitat"

in conjunction with the Department of Natural Resources and the U. S. Forest Service. The booklet illustrates beneficial logging methods in areas near streams.

King Salmon - Commercial king salmon production has declined from 17 million pounds in 1937 to 2.5 million pounds in 1972. On the other hand, sport fishing effort is steadily increasing. We felt that it was imperative to determine if the declining harvest in inside waters of Southeastern Alaska was being caused by over-harvest of native runs or whether depletion of stocks that originate to the south was the cause.

Studies undertaken this year are designed to determine if it is feasible to separate races of king salmon stocks by biological characteristics. If a method is found, we will be able to sample king salmon from various commercial and sport fisheries and determine the percentage that originated in Southeastern river systems. Methods under examination are scale analysis, enzyme analysis and x-ray spectroscopy.

Catalog and Inventory - Under this program, anglers were surveyed in the Haines, Juneau, Ketchikan and Bell Island areas to determine utilization levels of the sport fish resource. This information provides data to formulate stocking priorities and access needs. Surveys were also conducted along the proposed routes of new highways between Juneau and Haines and between Petersburg and Kake to estimate impact and enhancement possibilities.

Steelhead-Cutthroat - The steelhead-cutthroat life history project on Petersburg Creek has revealed new, significant information. Tagged sea-run cutthroat were found to migrate into different systems, which means the cutthroat in one stream may be dependent on other stream systems. Through this study we have discovered that the number of steelhead and cutthroat entering our best producing streams may be less than 1,000 for each species. Approximately 50 per cent of the cutthroat entering Petersburg Creek were found to be immature and almost 50 per cent of the steelhead had spawned in a previous year. This information means that close regulation of these species will be necessary in order to maintain population levels. This information has been used to justify recommendations to the U. S. Forest Service that would classify some of the more outstanding fishing waters as Dispersed Recreation Areas.

Mendenhall Ponds Fishery Development - The initial phase of the Mendenhall Pond fishery development program was completed during 1972. This project is designed to control water flow and fish migration between nine lakes adjacent to the Mendenhall Glacier. To accomplish this, a 2,350-foot dike with a two-way fish weir was constructed along the bank of the Mendenhall River. A pond was constructed immediately above the weir to hold adult salmon. The nine lakes will be stocked with trout and salmon for rearing in 1973. When of sufficient size, the salmon will be released into the Mendenhall River. Their return as adults in two to four years following release is expected to add considerably to the local Juneau area commercial and sport catch.

REGION II (Southcentral, Bristol Bay, Kodiak)

Southcentral Alaska receives the bulk of the state's resident and tourist angling effort. The largest portion of the Division staff is located in this region, as are most of the programs. Program emphasis is on managing and enhancing, where possible, both resident roadside fisheries and anadromous fish stocks important to the recreational angler.

Cook Inlet Salt Water King Salmon Fishery - In the past year, anglers have discovered that king salmon can be taken in salt water off the southern Kenai Peninsula beaches. This fishery occurs during June and July and is confined primarily to that portion of Cook Inlet south of Deep Creek. Analysis of creel census data shows that 2,200 king salmon were taken by 3,650 man-days of effort. The high catch rates suggest that it is currently the best marine king salmon fishery in the state.

Freshwater King Salmon Fishery - The Department issued 23,991 king salmon punch cards for four Kenai Peninsula streams and seven streams in Upper Cook Inlet. The latest tabulation indicates 803 kings were taken from the Kenai streams while only 570 kings were harvested in the Upper Cook Inlet streams.

Escapement counts conducted on Kenai Peninsula streams indicate that king salmon populations remain healthy and that they exceeded the 10-year average in 1972.

Resurrection Bay Silver Salmon Project - An estimated 30,130 man-days were expended to harvest 15,240 silver salmon as the popularity of this fishery continues to increase. Planted (and marked) silver salmon from Seward Lagoon contributed over 2,000 fish to the sport fishery. A substantially greater contribution of stocked silver salmon to the Seward silver salmon fishery should occur when fish produced in Bear Lake following the 1971 rehabilitation return as adults.

Bear Lake, completely rehabilitated in 1971, was stocked with 450,000 silver salmon fry in June, 1972. The fry acquired the size of one-year-old fingerlings in less than three months because of the lack of competition with other species. A large percentage of these fish have already approached smolt size and should migrate next spring. Adult silver salmon resulting from the 1972 Bear Lake stocking and 1973 smolt out-migration will return during the 1974 Resurrection Bay fishery.

Russian River Red Salmon Project - The Russian River on the Kenai Peninsula is Alaska's most popular freshwater salmon fishery. This fishery received record use in 1972, providing recreational fishing opportunity for an estimated 23,550 anglers. This represents an increase of over 350 per cent since 1964. The anglers harvested 20,300 red salmon. This large harvest is directly related to the magnitude of the run which also was the largest on record.

Cook Inlet Razor Clam Investigations - The purpose of this investigation is twofold: 1) to investigate and evaluate population trends

of razor clams in Cook Inlet with emphasis on Kenai Peninsula beaches; and 2) to estimate the magnitude and trends of the razor clam sport harvest from Kenai Peninsula beaches with major emphasis at Clam Gulch.

Surveys conducted on April 15 and May 14 indicated the growing popularity of this recreational fishery as the combined counts exceeded 4,000 diggers. This information, when combined with data collected at Clam Gulch and Deep Creek, indicated a total recreational harvest of 437,500 razor clams on all east side Kenai Peninsula beaches. It was further estimated that over 15,000 diggers participated in this expanding fishery. Clam populations remain at healthy levels.

Lake Rehabilitation - The Division treated 17 lakes with rotenone to remove competing scrap fish. These lakes have a combined surface acreage in excess of 1,500 acres. The lakes will be stocked with game fish in the spring of 1973. In practically every lake, no game fish were present before treatment, thus this program will provide 17 completely new fisheries.

Bristol Bay Trophy Fisheries - Angler interest and fishing effort has increased markedly in the Iliamna trophy fishing area in the past several years. The Department, in recognition of the exceptional stocks of natural game fish species and their unique value, has intensified research efforts in this area.

A steel weir was finished and put into operation in Talarik Creek. This weir allows counts to be made of all fish moving through the stream. Population levels, natural and fishing mortalities and various other population parameters can now be computed.

Cataloging and Inventory - During 1972, approximately 113 lakes and 14 streams were investigated for biological information. Data collected from the waters included the following: 1) biological baseline data from which to formulate management programs; 2) assessment of prior management techniques (for example, fish stocking); and 3) specific biological data as needs and priorities dictate.

Egg Takes - Sport Fish Division personnel in cooperation with the Hatchery Section took 1,750,000 silver salmon eggs, 470,300 king salmon eggs and 900,000 grayling eggs. Upon hatching and rearing at the Fire Lake Hatchery or the Fort Richardson fish rearing facility, these fish will be utilized to continue existing salmon stocking programs in the Southcentral area.

REGION III (Interior Alaska)

Region III encompasses the area north of the Alaska Range. The major management activity in the Interior in 1972 was coordination of the Department's activities of various agencies and companies concerned with the proposed Trans-Alaska pipeline.

Clearwater Study - This new project for 1972 is being conducted on the Delta-Clearwater River. The study will ultimately test the feasibility of introducing rainbow trout to certain of the region's streams and will also provide much needed information on interactions and competition between grayling, whitefish, salmon and trout.

Evaluation of Interior Waters with Emphasis on Managed Lakes - To provide for efficient management of Interior waters, emphasis was shifted from inventory and cataloging activities to evaluation of managed lakes. Past stocking policies are being appraised and intensive studies of stocking rates, timing, size of fish stocked and interspecies competition are underway to formulate stocking recommendations for optimum fish survival and growth. Twenty Interior lakes presently stocked with rainbow trout or silver salmon are included in the program.

Population Studies of Northern Pike and Whitefish in the Minto Flats and Chatanika River - The Minto Flats-Chatanika River complex is the most heavily utilized northern pike angling area in the region as well as being a major producer of several species of whitefish and a limited producer of sheefish. This project is designed to study timing and movements of these fishes, their abundance and spawning ecology, and to assess their utilization. Creel census work provided data on summer harvest of pike and fall harvest of whitefish and sheefish. Extensive test netting and stream shocking were employed to determine timing, composition and size of fish populations and to determine aspects of whitefish spawning ecology. A weir for the Chatanika River has been prefabricated and will be installed in 1973.

Monitoring and Evaluation of Arctic Waters with Emphasis on the North Slope - Now in its fourth year, this project's objectives were to determine spawning areas and timing or migrations of fish in the Sagavanirktok River drainage and to index possible areas thay may be affected by gravel removal. To accomplish these objectives, a complete biological survey of the Sagavanirktok River system was conducted. There are approximately 71 streams to be traversed by the proposed pipeline and haul road in this drainage. Two-thirds of these streams were surveyed in 1971, with the remainder concluded this past year.

Spawning areas of Arctic char have been located and timing of out- and in-migration of char and grayling has been determined. Work on overwintering areas of the various fish species will continue in late winter-early spring. Major aspects of Arctic char life history have been documented and work will continue in other problem areas. Completion of major aspects was achieved with the help of cooperating agencies such as ATyeska Pipeline Service Co., Atlantic-

Richfield Co., British Petroleum Co., Bureau of Land Management and the U. S. Fish and Wildlife Service.

Distribution, Abundance, and Natural History of the Arctic Grayling in the Tanana River Drainage - Work continued on the Chena River with studies directed toward the upper river. The spring migration of grayling into the upper Chena was studied and yielded information on timing of the run, spawning times and locations, movements of various age groups and various biological characteristics of the fish.

The species composition, grayling population level and size makeup were determined for the Chena River adjacent to Fairbanks and at the proposed dam site. This information was also obtained for the Chatanika, Salcha and Goodpastor rivers.

Life History Study of Sheefish and Whitefish in Alaska - Emphasis on the sheefish project shifted to the middle Yukon River and those tributary streams of the Yukon between the mouth of the Koyukuk River and Fort Yukon. A tag and recovery program to determine migrations and population status, age and growth study, food habits study and location of spawning grounds are major objectives. Sheefish were tagged at the mouths of the Nowitna, Ray, Dall and Porcupine rivers and Hess Creek. The next two years of the study coupled with the electrophoretic protein analyses, taxonomic and age and growth studies should reveal if there is a single population as earlier hypothesized or if the fish in the middle Yukon River constitute a number of separate populations.

STATEWIDE FISH STOCKING

Fish stocked, by species, in Regions I, II, and III during 1972.

Region	Fish Species	Number
I	Rainbow trout	7,500
	Grayling	30,000
II	Rainbow trout	588,000
	Silver salmon	673,000
	King salmon	72,000
	Grayling	504,000
III	Rainbow trout	714,100
	Silver salmon	90,000
	Grayling	125,000
TOTAL		2,803,500

DEPARTMENT OF FISH AND GAME

1972-73 Budget Authorizations

Section	Amount
Administration	$ 1,348,200
Hatchery Services	439,500
Habitat	255,300
Commercial Fisheries	3,823,700
Game	2,650.400
Protection	936,200
Sport Fisheries	1,795,600
Vessels	485,000
Alaska King Crab Marketing & Quality Control Board	100,000
Fisheries Rehabilitation, Enhancement and Development	740,800
DEPARTMENT TOTAL	$12,574,700