ALASKA DEPARTMENT OF FISH AND GAME

1974
Annual Report

STATE OF ALASKA

JAY S. HAMMOND, *GOVERNOR*

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

SUBPORT BUILDING
JUNEAU 99801

March 17, 1975

The Honorable Jay S. Hammond
Governor of Alaska
Pouch A
Juneau, Alaska 99811

Dear Governor Hammond:

We are pleased to submit this summary of Department of Fish and Game activities in 1974.

This report provides information on the accomplishments, purpose and duties for each division of the department.

Sincerely,

James W. Brooks
Commissioner

1974 ANNUAL REPORT

ALASKA DEPARTMENT of FISH and GAME

JAY S. HAMMOND
GOVERNOR

JAMES W. BROOKS
COMMISSIONER

prepared by
Information and Education Section
Alaska Department of Fish and Game

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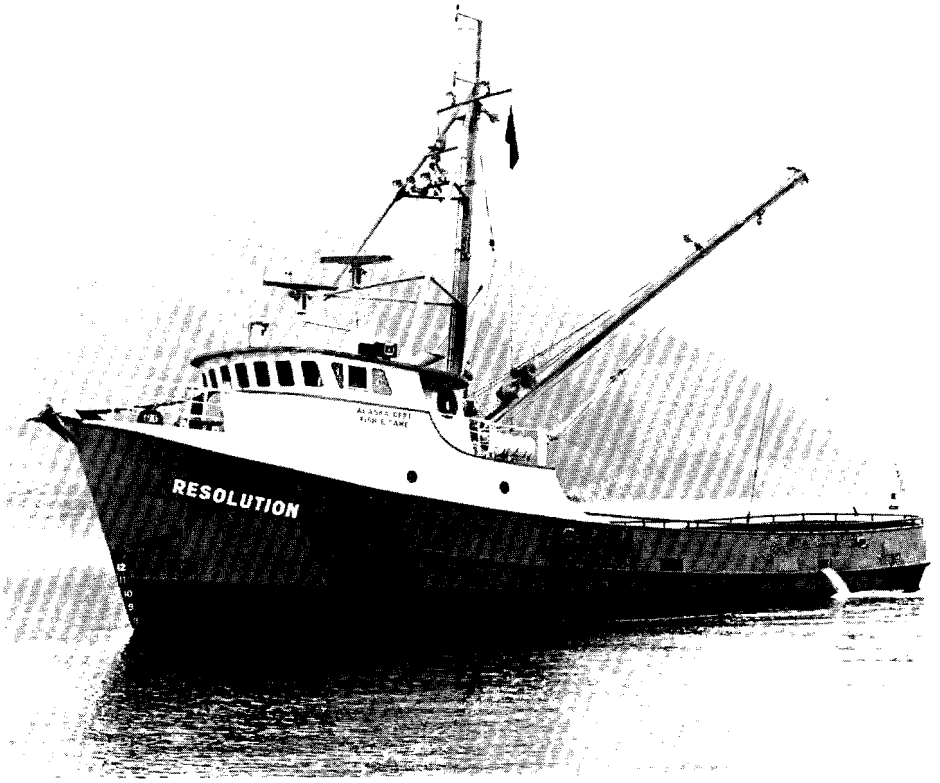
DEPARTMENT OF FISH AND GAME

1974-75 Budget Authorization

Administration	$ 1,501,300
Hatchery Services	681,400
Habitat	288,000
Commercial Fisheries	4,484,800
Game	2,752,500
Sport Fisheries	1,952,000
Vessels	628,700
Alaska King Crab Marketing and Quality Control Board	107,000
Fisheries Rehabilitation, Enhancement and Development	1,407,900
Pipeline Monitoring	894,500
DEPARTMENT TOTAL	$14,698,100



Administration Division

I. PURPOSE AND DUTIES:

The Division of Administration serves as business manager for the Department of Fish and Game, providing an efficient, economical program of support for the other operations of the department. Services provided include personnel, payroll, accounting, systems analysis, supply, communications, property, warehousing, office and repair facilities, budget counseling and monitoring as well as administrative guidance at regional offices. The director also has responsibility for operation and maintenance of department-owned vessels.

II. ACCOMPLISHMENTS:

The Division of Administration continued its trend in improving the quality of services furnished other divisions and departments through streamlining operations. The library section was transferred to this division, enlarging the scope of services.

The director's office was instrumental in completing over 200 contracts/leases with institution of new procedures and furnished liaison services regarding acquisition of access land and excess buildings.

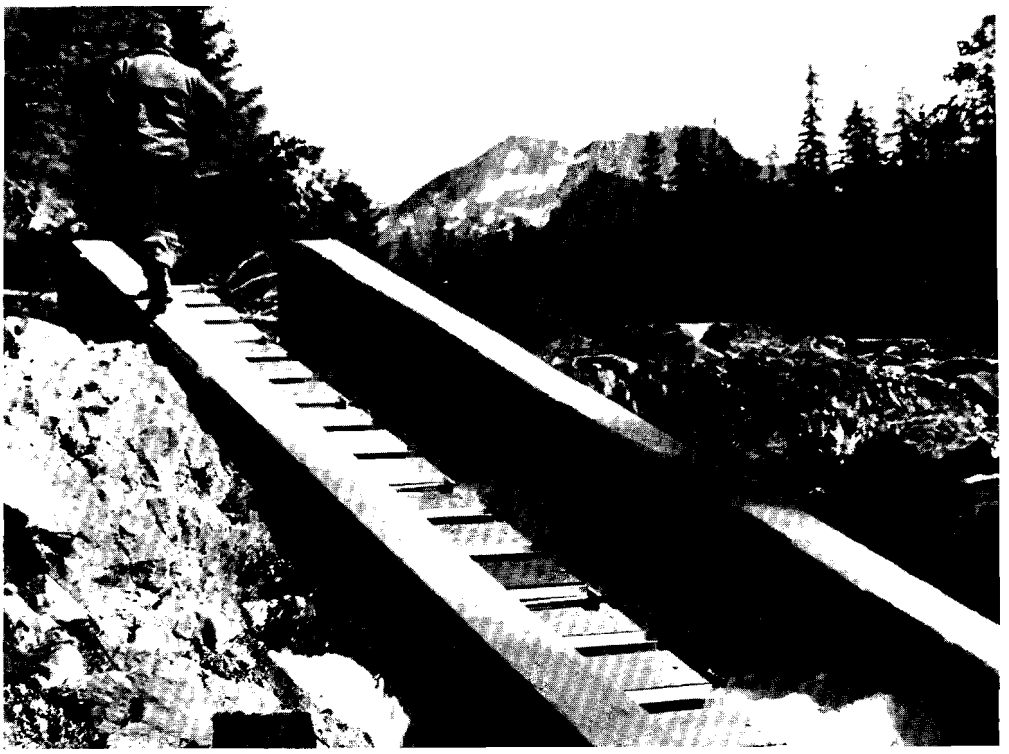
In transacting department business, the accounting section issued 11,450 field warrants. Expenditures, excluding payroll, amounted to over $5.5 million. Claims were prepared for over $3.7 million in federal reimbursements.

The statistics section continued to reduce operating costs by improving existing systems — resulting in a savings of 116 man-days and $5,100 in computer time. The section compiled, printed and distributed 3,300 formal publications and 23,300 shellfish and salmon casepack reports. In support of departmental activities, the section produced over 600 computer printed reports. Source documents processed totaled over 382,000.

The personnel section maintained records on an average of 392 permanent and up to 450 temporary employees. In doing so, it established 34 new positions, processed over 1,100 appointments and separations and more than 2,500 personnel action forms. This section also completed two exacting and time consuming statistical reports regarding the Civil Rights Act (Equal Opportunity). In conjunction with the payroll section, retroactive longevity adjustment computations were completed. The payroll section instituted new procedures applicable to the automated leave format.

The supply section, which includes the mailroom, processed more than 108,000 pieces of mail. Inventory records maintained by the property officer cover more than 4,500 items with a value in excess of $3.5 million. Purchasing activity increased by 60 per cent as a result of the additional authority extended to the supply officer with the ultimate reduction in the volume of purchase requests submitted to the Department of Administration.

The vessels section maintained and operated 11 vessels in support of department programs and the Department of Public Safety's enforcement activities in westward Alaska. These vessels operated for 1,039 days over a distance of 56,800 miles and carried 314,800 pounds of freight. Major repairs to the M/V Resolution's power plant and gear resulted in an unexpected loss of time. Planned structural repairs on the M/V Kittiwake and M/V Shad were completed.



Engineering Section

ENGINEERING

I. PURPOSE AND DUTIES:

The purpose of the Engineering Section is to provide qualitative engineering input in the fisheries and game management programs planned by the Department of Fish and Game. Duties and responsibilities can be generalized into the following basic functions:

A. Project Development

Provide the management divisions with engineering input in the form of site investigations, preliminary plans for project layout, estimated construction costs and related information that the management director needs to evaluate project concepts and to determine if the expected benefits exceed the estimated costs of the project.

B. Project Design

Provide final plans and specifications for funded construction projects. Final design may be inhouse or through consulting engineering firms.

C. Construction Administration

Insures quality construction in conformance to the design plans and specifications. Construction is performed by contract and force account methods with

the contracting method becoming more dominant. Engineering performs the contract administration and field inspection duties during the construction phase.

II. ACCOMPLISHMENTS

Because of a personnel shortage, 1974 was a difficult year for the Engineering Section. All four of the professional engineer positions within the section were vacated due to resignations and retirement. The first replacement was not hired until mid-July with additional personnel reporting in September and November. The fourth replacement has been hired but will not report to work until January. Because of the reduced staff engineering construction activities in 1974 were limited.

Some of the more notable accomplishments in 1974, in which the Engineering Section played a significant role were: the installation of steeppass fish ladders at Pavlof Harbor on Chichagof Island and at Control Creek in Prince William Sound, construction of the gravel incubation facility at George Inlet near Ketchikan, construction of a water intake structure for the Kenai-Crooked Creek incubation facility, design and installation of underground utilities for the Crooked Creek residence housing unit, project study and site selection for the Big Lake incubation facility, project study and cost estimates prepared on a steeppass fish ladder for the Kenai Peninsula Russian River, preliminary plans and a cost estimate for reconstructing the fish counting station on the Chignik River, review of the El Paso Alaska Company's construction proposal for its Trans-Alaska natural gas project and daily technical input to project managers working on fisheries rehabilitation programs.

Habitat Section

I. PURPOSE AND DUTIES:

The major objective of the Habitat Protection Section is to coordinate the department's review of land and water use activities having impacts upon fish and wildlife habitat and related recreational resources. This coordination is designed to minimize those impacts through involvement in the formative stages of developmental planning. The Habitat Section fills three of the department's statutory responsibilities (protection of anadromous fish streams, protection of game refuges and delineation and protection of critical habitat areas). In addition the newly formed Pipeline Surveillance Team monitors the construction phase of the Trans-Alaska Pipeline with the purpose of insuring the future productivity of the renewable resources impacted by the project. This section is also responsible for review of permits issued and requested by other state and federal agencies.

II. ACCOMPLISHMENTS:

In addition to the usual review of applications and proposals for various land and water use projects, the section coordinated departmental involvement in several large projects during 1974. These included the Alaska Native Claims Settlement Act, BLM's multi-modal corridor study, gas pipeline proposals, outer continental shelf oil and gas leasing and land use studies in Southeastern Alaska's National Forests. Most of the projects require a great deal of coordination with other state agencies and involve major state policy considerations.

The following is a brief summary of the major accomplishments of each of the section's programs in 1974:

Lands Protection:

Planning activities were the major emphasis of the lands project in 1974.

Until July, when the Land Use Planning Commission's Resource Planning Team was disbanded, this section participated in the establishment of a framework for a regional planning process for Alaska. Later in the year the Habitat Section was involved with the Planning Commission and National Park Service in developing a use plan for the Mount

McKinley planning and management zone, identified by the Secretary of the Department of the Interior. Work on this and other regional plans will continue in 1975.

Information was also provided to Sea Grant for a series of regional resource profiles. Their working drafts were reviewed and comments submitted.

The upper Cook Inlet area is demanding increasing attention. The section is working on developing a habitat status system to help identify important or critical areas of concern such as the Matanuska Valley moose range and waterfowl use areas, e.g., Stump Lake, Potter Marsh, Palmer Hay Flats, McArthur River and Coffee Point.

Attempts to provide legislative designation of critical habitat areas have and will continue to take a great deal of input from the lands project.

The section continued to administer the 1,700-acre Fairbanks Wildlife Management Area and an advisory committee composed of interested persons and representatives of various user groups was established. The purpose of the group is to encourage input from the community to reduce conflicts, provide for maximum use of the area and assist the department to accomplish its management objectives. The section oversaw the acquisition and installation of more than 1,900 feet of split rail cedar fencing and other necessary administrative efforts until late in the calendar year when the Division of Game assumed administration of the FWMA.

Many hours were spent in review of plans for proposed construction projects and in field review of construction activities. Construction of the Chena River flood control project by the U. S. Army Corps of Engineers continued. The Tanana levee was nearly completed, the foundation of the flood control dam on the Chena River was prepared and construction of the interior and borrow pit drainage ditches was initiated during the year. The section also monitored increased gold mining activities, installation of sewer and water lines in the bed of the Chena River and several highway projects and oil development activities. The section, working closely with the Department of Highways, was able to affect a major change in the proposed alignment of the Alyeska Pipeline haul road in the vicinity of the Sawgun Bluffs on the Sagavanirktok River. The proposed road was relocated to reduce the impact of the road on raptors nesting on the Sawgun Bluffs. The Sawgun Bluffs and several other areas within Region III were submitted to the Legislature as areas critical for wildlife. Review of the proposed plan and management policies for the Chena River Recreation Area administered by the Division of Parks, Department of Natural Resources, required considerable input.

All demands of the Alyeska Pipeline project were handled by lands staff members until the establishment of the Pipeline Surveillance Team in June.

The section continued its involvement in the field surveys and review of environmental impact statements for potential wild scenic rivers as proposed by the Bureau of Outdoor Recreation (BOR).

Late in the calendar year the proposed "Jack Frost" military maneuver, which involves several townships in the Tanana Valley, was reviewed by the section to guard fish and game values in the area. Coordination by the Department of the Army for the maneuver, the most massive to date in the Fairbanks area, was excellent.

Waters Protection:

Much of the work in the waters protection element centered on pre-logging resource studies in Southeastern Alaska in conjunction with the U. S. Forest Service. Major efforts were at Tenakee Inlet, Port Frederick, Kelp Bay and Long Island. Results of this work will be used to prepare environmental impact statements on these areas.

A proposal for the establishment of the Honker Divide Scenic River Recreational Area on Prince of Wales Island was written and submitted to the state clearinghouse for review.

The Haines-Skagway land use study was continued this year. The land management plan for state lands in the area was formulated and several public meetings were held.

The anadromous stream catalog updating was finalized and readied for publication. The catalog should be printed early in 1975.

Projects Review:

The following table summarizes both the Habitat Section's statutory permit activity and its required input to similar activities of other agencies for the 1974 fiscal year:

Coastal Habitat Protection:

The Coastal Habitat Protection Programs came into being as a result of environmental-fisheries conflicts stemming from the State of Alaska's 28th oil and gas submerged land lease sale, which encompassed portions of the rich, highly productive crustacean reproduction and fishing areas of Kachemak Bay. Since the inception of this program on July 1, 1974, the CHPP has undertaken the following:

Kachemak Bay studies:
Studied were: crustacean larval transport in lower Cook Inlet to determine the pattern of distribution of various stages of larval development in the western approaches to Kachemak Bay and lower Cook Inlet; macrophyte (attached green, red and brown algae) ecosystems to determine the role and importance of the algal belt to the survival and rearing of juvenile crustaceans and sea migrating salmon smolts; crustacean population dynamics to assess the relationships of Kachemak Bay — lower Cook Inlet and contiguous offshore areas; impacts of chronic, low level concentrations of hydrocarbons upon developing of crustacean larvae (in coordination with the NMFS Auke Bay Laboratory); the state of knowledge of impacts of hydrocarbons upon larval and juvenile stages of marine life, through search and analysis of available scientific and technical publications.

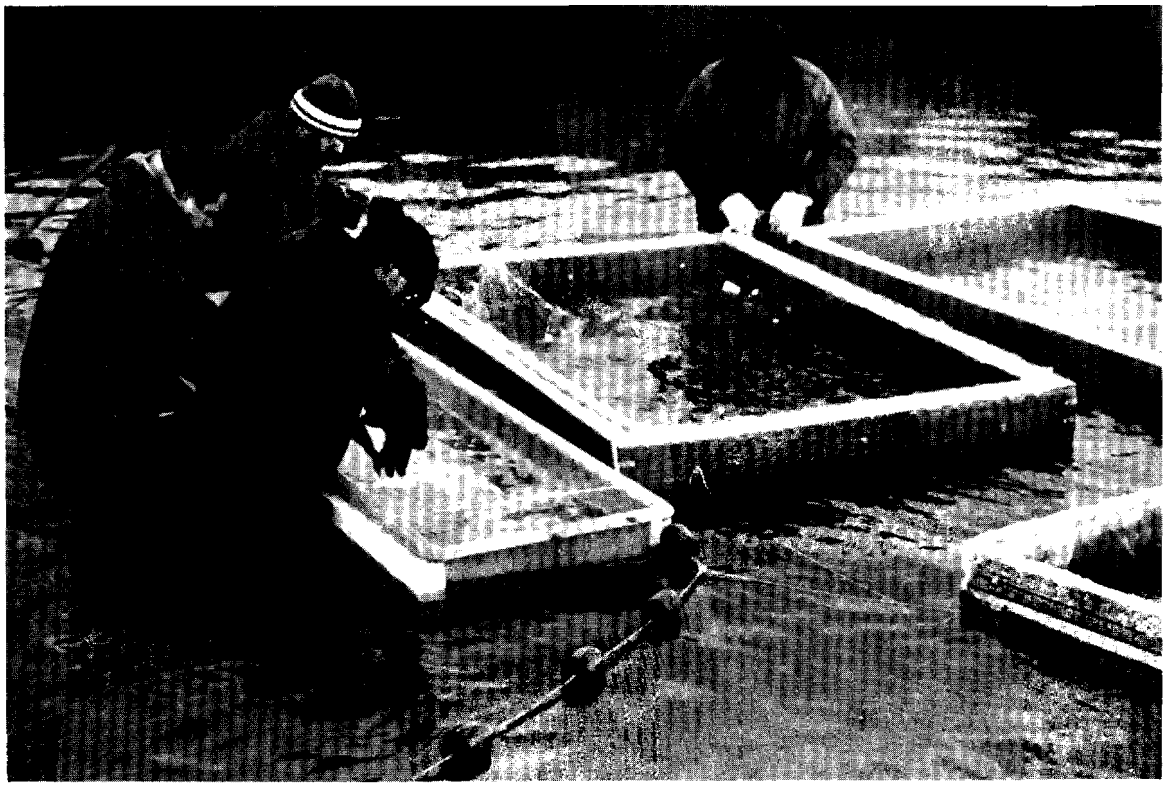
Permits for exploratory drilling for oil and gas:

The CHPP has assumed a lead role as part of a state-federal multidisciplinary interagency coordination team to formulate and enforce stipulations to protect and maintain the quality of marine life at exploratory drilling sites.

Outer continental shelf oil and gas leases and coastal zone management:

The CHPP has also been responsible for formulating and advising the state on scientific and technical matters relating to environmental and resource management, conservation and oil and gas development.

Agency	
Federal:	
Corps of Engineers	359
U. S. Coast Guard	13
U. S. Geological Survey	61
BLM	2
State:	
Dept. Natural Resources	
Seismic	148
Drilling	19
Water Use	115
Gravel Removal	54
Timber Sales	25
Mining	5
Tidelands	56
Misc. Land Use	64
Dept. of Highways	
Highways	17
State Clearinghouse	36
ADF&G	
Anadromous Streams	319
Total	1193



Hatchery Services Section

I. PURPOSE AND DUTIES:

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

1. Completion of new fish hatchery facilities as funded by the fish hatchery construction statutes.
2. Becoming operational with the new and existing fish hatchery facilities and developing stable sources of salmon and trout eggs for use in the production programs.
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:

The Fire Lake-Fort Richardson Hatchery Complex this year became the first fish hatchery in Alaska to successfully carry rainbow trout brood stock and take their eggs. These first eggs came from a Montana source of rainbow trout which bear their eggs early — in their second year. They also provide fish earlier in the season, with feeding fry by early March in the temperature controlled environment. These rainbow were from eggs hatched at Fire Lake in early 1973 and reared at the Fort Richardson rearing

ponds. One quarter million eggs were obtained from the two-year-old spawners in December, 1974.

A second step in the rainbow trout broodstock program was to start developing an Alaskan strain of brood fish. Eggs were taken from three sources—the Naknek River, Talarik Creek and Swanson River. A decision was made to concentrate on two stocks, and fish of Talarik Creek and Swanson River origin are being held.

Fish from all lots of native stocks have adapted well to hatchery rearing. Surprisingly few problems have been encountered so far. The greatest problem to date has been the high level of activity compared to the domestic stocks. Extra precautions have been necessary to prevent them from jumping out of the rearing units. Growth in all lots of the native stocks has been comparable to the best growth obtained with domesticated rainbow.

Additional facilities were required for the rainbow broodstock program and an entirely new cooperative program was initiated with Elmendorf AFB using its power plant cooling pond. The design and construction of the facilities was nearly completed at the end of the year.

Three wooden circular ponds which were used to rear trout at Elmendorf AFB were adapted to rearing the separate groups of rainbow fingerling. The major project at Elmendorf was the design, construction and installation of large screened ponds in the main five-acre cooling pond. These 15- by 25- by 4-foot-deep ponds have a volume of 1,500 cubic feet each. Water moves laterally through the ponds as in a raceway. Hence, they are called floating raceways. Two ponds are now in operation holding the adult rainbows and more will be constructed.

The largest part of the rainbow eggs acquired in 1974 were still provided by the U. S. Fish and Wildlife Service from their brood stocks in Washington state and Montana.

The largest single source of coho salmon eggs in the state was the Sport Fish Division's Bear Lake and Seward Lagoon development at Seward. These fish are a brood stock started over a period of years by fish reared at the hatchery. Other work to establish stable sources of coho salmon, king salmon and steelhead trout in Southcentral is still dependent on the uncertainties of unsupported natural stocks.

A stable source of king salmon eggs is still in the future. Improved techniques and facilities resulted in the largest take statewide from Ship Creek near Anchorage for the Fire Lake-Fort Richardson complex. A "white spot" disease (coagulated yolk sac with delayed mortalities) was experienced in all lots of king salmon at the hatchery. The disease cancelled out the gain. Abnormally high water temperature experienced during the early development stages in midsummer is suspected as the cause but is not confirmed.

Smaller lots of king and coho salmon were spawned by the Sport Fish Division, F.R.E.D. Division and Hatchery Services in Cook Inlet and the Interior. Grayling and sheefish were also spawned in the Interior.

The upgrading of the hatchery facilities continued during the year. Work was nearly completed on converting the two remaining rock and oyster shell downflow bacterial filters at Fire Lake to the more efficient styrofoam bead up-flow filters. The first prototype up-flow filter bed was also modified and strengthened.

A Pluralis high-speed filtration unit and an Ellner ultra-violet unit were acquired on loan from F.R.E.D. Division for testing this method of treating the raw water supply. Lack of time and the necessary pumps has prevented their installation, but this will be completed soon and the information will be used in final design of the water treatment upgrading.

Gill disease continued to be a problem at both Fire Lake and Fort Richardson. Regular treatments with Diquat and Roccal provided reasonably good control on most lots. Further work in control of disease will be conducted with the aid of the state fisheries pathologist during 1975. It is anticipated that the current upgrading of the water

treatment system will provide a better control of the environment at Fire Lake. It is also planned to alleviate the critical midwinter low water flow at the Fort Richardson rearing facility by increasing the well water supply and aerating the water.

The Fire Lake-Fort Richardson complex operated at peak levels in 1974. Both the survival rate and condition of the fish were adversely affected during critical periods. The improved water control measures will be a significant factor in providing fish at the level requested by the using divisions. Increased survival and growth rate can be expected.

During calendar year 1974, fish were planted into 99 lakes and three streams and transfers were made to Crystal Lake Hatchery at Petersburg, saltwater rearing pens at Homer and an incubation station at Kasilof.

A total of 105 individual trips, 1,200 direct man-hours and 16,000 vehicle miles were required for fish distribution. In addition, 13 trips utilizing a Department of Public Safety Grumman Goose for a total of 28.5 hours were required and seven air shipments of small quantities of fry and fingerling were made.

During the year, objections were raised regarding the discharge of hatchery effluent into the creek. Some corrective measures were taken and the Fish and Game Bond Issue approved in November will provide funds for final correction of the problem.

The Crystal Lake Hatchery is a functioning facility. It has now reared fish from egg take to smolt (and returning jack salmon) and it has demonstrated the ability to operate in Alaska's cold weather regime. Numbers and weights of fish stocked and remaining on hand at the end of the year are listed in Tables 1, 2, and 3.

The raw water treatment with ultra-violet has given positive results in providing disease-free water. The efficiency of the biological filtration systems has increased as operation procedures have been developed. An essential modification was also completed during the year.

The temporary nylon netting installed in the large biological filter beds at time of hatchery construction was replaced with stainless steel slotted wire screen. This modification was necessary to keep the beds at a high level of bacterial action and waste removal efficiency by providing an even water flow. The required periodic backwashing and cleaning can now be accomplished.

Planning and design was completed on several improvements for the hatchery. The most important, reinstatement of the high capacity rearing ponds, was not predictable until a favorable vote on the Fish and Game Bond Issue (Chapter 133, SLA 1974) was passed in November. Consequently, design and planning for it started late in the year. It is planned to have the latter work ready for bidding before spring. The ponds will increase the capacity of the rearing program from 60,000 pounds to the designed 100,000 pounds. They will also, and just as important, provide over three times the flexibility in operations to permit keeping stocks of fish separate for various projects of the using divisions. The other projects were held in abeyance when inadequate construction bids were received.

The advent of the "energy crisis" a year ago last fall had important implications for Crystal Lake. First, the projected growth rates for the rearing fish were decreased to conserve energy and meet increased fuel costs. Later, the increase in fuel prices was amplified by rate increases for electrical power. This imposed further restrictions to stay within the budget.

Development of stable egg sources is in the preliminary phases. Coho and king salmon smolts were stocked in Crystal Creek and Blind Slough during the spring migratory period.

A few steelhead spawned by the Sport Fish Division are being reared at the hatchery for the first time to initiate a start for that species. Coho eggs from the National Marine Fisheries Service's Little Port Walter facility contributed significantly to the program.

The temporary adult holding and spawning facilities were improved and used again this

year. Planning and design for permanent improvements were accomplished in cooperation with the Engineering Section.

The coho egg take from all sources in Southeastern Alaska did not produce the projected requirements. The shortage of coho for spawning was not anticipated in time to successfully mount alternate egg takes. The 1.25 million coho being incubated are being augmented by eggs from Southcentral to meet minimum requirements.

King salmon egg take plans were reviewed in the department but logistical difficulties in available areas were not surmounted and eggs were not obtained. Some king salmon eggs were shipped in from Southcentral Alaska.

The large, 3,000-gallon flatbed-mounted fish transportation unit made eight trips to transport fish via the Alaska Marine Highway system. Several trips had transportation-related malfunctions which caused mortalities or aborted the stocking plan. On one trip, half of the fish were lost. This loss appeared to be caused by contaminated water in the tanks—possibly from disinfectants or additives in the cooling ice. Another serious threat was encountered when the unit's 15-kw diesel generator failed. These fish, migrant king salmon smolt, were stocked in the closest location (the Mendenhall River system but below the intended location at Mendenhall Ponds.) It was possible to stock the fish in apparent good condition with emergency bucket aeration and change of location for planting.

Modifications to the unit and added experience are improving the record. However, a unit designed to meet the comparatively difficult and time-consuming ferry transportation trips is considered a priority.

The Kitoi Bay Hatchery expanded its support of F.R.E.D. Division gravel incubation projects for pink salmon. The previous year's preliminary findings on endemic IHN virus in the area's red salmon decreased other aspects of the Hatchery Services program. Some were directly related to red salmon but it also affected planning and implementing of egg takes for king and coho salmon because of the possible dangers in spreading the virus. Programming for the station was under review at the end of the year.

The 1972 and 1973 brood red salmon were carried in 1974 to provide fish for IHN virus determinations. No red salmon eggs were taken in 1974.

Coho eggs were transferred as planned to the Fire Lake-Fort Richardson Hatchery complex in early spring.

One and one-quarter million pink salmon were incubated and provided to the F.R.E.D. incubators. Additional pink salmon were carried in the hatchery troughs as a control.

The urgency of major maintenance work increased at the station. A complete failure of one generator occurred last spring. Emergency repairs proved impractical and the generator was removed and sent to Anchorage for repairs. Fortunately, winter's peak electrical loads were over and the other generator remained operational.

Another extremely serious crisis occurred during record high waters last fall. The Big Kitoi Creek outlet flooded and eroded the channel around the bridge which supports the station's 14-inch water supply line. The bridge dropped but the water line remained usable.

The Fish and Game Bond Issue (Chapter 133, SLA 1974) was approved in November and provides funds for restoring the station to safe operational levels. Preliminary planning was underway but work had not been accomplished by the end of the year.

TABLE I. SUMMARY OF FISH AND EGGS STOCKED AND TRANSFERRED, BY SPECIES, DURING 1974.

	Fire Lake-Fort Richardson Hatchery Complex		Crystal Lake Hatchery		Kitoi Bay Hatchery		Total	
Species	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Silver	1,351,000	25,130	1,226,400	14,897	—	—	2,577,400	40,027
Salmon	60,000	eggs	—	—	886,600	eggs	946,600	eggs
King	212,500	11,341	287,100	17,618	—	—	499,600	28,959
Salmon	210,500	eggs	—	—	—	—	210,500	eggs
Red Salmon	1,602,500	eggs/fry	—	—	—	—	1,602,500	eggs/fry
Pink Salmon	13,400	eggs	—	—	1,227,800	eggs/fry	1,241,200	eggs/fry
Rainbow Trout	1,315,400	19,315	21,700	703	—	—	1,337,100	20,018
Grayling	516,500	fry	—	—	—	—	516,500	fry
TOTAL	5,281,800	55,786	1,535,200	33,218	2,114,400	—	8,931,400	89,004

TABLE II. SUMMARY OF FISH ON HAND, DECEMBER 31, 1974.

	Fire Lake-Fort Rich. Hatchery Complex		Crystal Lake Hatchery		Kitoi Bay Hatchery		Total	
Species	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Silver Salmon	25,600	6,548	—	—	610,600	17,500	636,200	24,048
	2,809,200	eggs	—	—	1,165,600	eggs	3,974,800	eggs
King Salmon	137,000	680	—	—	72,800	112	209,800	792
Pink Salmon	—	—	151,600	sac-fry	—	—	151,600	sac-fry
Rainbow Trout	102,700	12,967	—	—	—	—	102,700	12,967
	238,000	eggs	—	—	—	—	238,000	eggs
Steelhead Trout	—	—	—	—	18,600	210	18,600	210
TOTAL	3,312,500	20,195	151,600	sac-fry	1,867,600	17,822	5,331,700	38,017

TABLE III. DISPOSITION OF FISH AND EGGS IN 1974.

Hatchery	Lakes/Streams	Salt Water Rearing	Controlled Pond/Lake Rearing	Other Rearing/Incubation	On Hand	Total
Fire Lake-Fort Richardson Hatchery Complex	2,523,500	419,600	452,300	1,886,400	3,312,500	8,594,300
Kitoi Bay Hatchery	—	—	—	2,114,400	151,600	2,266,000
Crystal Lake Hatchery	471,000	727,900*	336,300*	—	1,867,600	3,402,800
TOTAL	2,994,500	1,147,500	788,600	4,000,800	5,331,700	14,263,100

*Number delivered was significantly affected by transportation malfunctions.

Information & 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 informational and educational programs which include news releases, films, a weekly television program, radio programs, a magazine, pamphlets, exhibits, photo displays and personal appearances. The section answers more than 5,000 letters per year from persons seeking information about Alaska's fish and game.

II. ACCOMPLISHMENTS:

Readership of the department magazine, "Fish Tales—Game Trails" continued to grow and at year's end the press run was 8,000 copies. Circulation is being expanded through sportsmen's clubs and the list of fish and game license holders. Utilization of an automated mailing system in the Department of Economic Development simplifies dispatch of the magazine. A full-color cover, the magazine's first, on the July-August issue drew favorable response.

The first annual Alaska Wildlife Photo Exhibit sponsored by the department toured the state and was well received in the numerous communities where it was displayed. Entries in the second annual exhibit increased by more than 30 per cent over 1973. Weekly radio programs and a weekly newspaper column were established in Anchorage. A new weekly newspaper column is also printed by all papers in Southeastern Alaska.

The Information-Education Section, in cooperation with the Sport Fish Division, produced one new film, "Clam Digging on Cook Inlet." Distribution of films from the section's library continued as heavy demand taxed the limited stocks. The section produced more than 200 news releases, plus various pamphlets and brochures. Reprinting of the Wildlife Notebook Series in standard format began.

The section was active in National Wildlife Week and National Hunting and Fishing Day activities and participated in environmental education projects on the state and local level.●

Commercial Fisheries Division

I. PURPOSE AND DUTIES:

The Division of Commercial Fisheries is charged with managing, extending and conducting research on all species of finfish and shellfish harvested commercially or for subsistence purposes in Alaska, except halibut which come under the International Halibut Commission.

Operationally budgeted at about $4 million in 1973, the division was responsible for managing commercial fisheries that provided $145 million to fishermen and were worth $308 million at the first wholesale level. On a national basis, Alaska's seafood harvest is the most valuable of all the coastal states' harvests, and, in fact, provided nearly one-fifth of the value of the entire United States commercial catch in 1973.

The foremost concerns of the division are to (1) insure that a sufficiently large brood stock is available to perpetuate the resource on a sustained basis and (2) to insure an orderly take of the harvestable surplus of those fish in excess of the number required to perpetuate the population. The primary method of achieving these objectives is through the use of fishery regulations, primarily the controls of the time and area where and when a fishery may operate on a stock of fish.

More recently, the division has broadened its approach to include nonregulatory methods of accomplishing its statutory responsibilities. Cooperation with the Division of Fisheries Rehabilitation, Enhancement and Development on artificially restoring depressed stocks and encouragement of salmon production by qualified private nonprofit corporations represent positive nonregulatory techniques utilized by the division.

II. ACCOMPLISHMENTS:

Southeastern Alaska:

The Southeastern region led the state in total numbers of salmon harvested during the 1974 season, although harvests were below historical averages. Generally restrictive management for pink salmon resulted in below average harvests of other salmon species

as well. Despite curtailed harvests of pink salmon, escapement fell below the desired levels in portions of the region.

The increase in gillnet effort witnessed in recent seasons was accelerated this year, partly because of unproductive attempts to gain an advantage under the limited entry law.

The valuable herring resource was the center of increased interest during 1974. The entry of Alaskan processors into the worldwide herring-for-human-food market developed an increased demand for winter herring. The addition of herring filleting machines to the region's processing capacity made increased winter production possible. A very closely regulated spring harvest for spawn herring also contributed significantly to the "off season" income of both the fishing crews and the shore based workers. Assessment of herring stocks by acoustical methods is progressing well. Although not fully developed, this management technique holds considerable potential and is expected to permit increased harvests of the valuable herring resource on a sustainable basis.

Shellfish continue to serve largely as a supplemental off-season fishery for the salmon and halibut fishermen. Tanner crab stocks appear to be in healthy condition. King crab catches have been slow throughout the season to date and it appears unlikely that the quota will be taken by season end, Jan. 31, 1975.

Dungeness crab stocks of the inside waters remain at a depressed level, but the offshore stocks appear to be continuing as a developing fishery. Shrimp catches are up slightly and hopefully indicate an improvement in the condition of the shrimp stocks that have been at a depressed level for several years.

An extremely exciting development is the interest being shown in the private nonprofit salmon hatchery concept. Heavy demands have been placed on the existing staff to provide guidance to prospective corporations. Southeastern Alaska, having received most interest, may anticipate increased salmon production through such projects.

Central Alaska:
In 1974, Bristol Bay, which has historically produced the largest sockeye salmon runs in the world, was managed to optimize sockeye escapements in all systems. This management philosophy was based on a preseason forecast that indicated about one-half of the number of salmon needed for escapement (9.5 million) would return. Unexpectedly the 1974 sockeye total inshore return amounted to 11 million fish compared to the preseason forecast of 5.0 million. The total catch amounted to 1.417 million sockeye. The total sockeye escapement to all river systems was 9.587 million, very close to the preseason escapement goal to all river systems of 9.515 million salmon. However, escapement goals were not achieved in the Kvichak River system or in the Ugashik system, while other systems, notably the Wood and Egegik, exceeded the escapement goal by a wide margin.

The 1974 salmon harvest in Cook Inlet was one of the poorest even-year harvests on record. A total of 1.688 million salmon were harvested this year compared to the even-year average since 1954 of 4.605 million. Pink salmon are usually the predominate species captured in an even year; however, in 1974 only 500,000 pinks were harvested which is about one-fifth the even-year average. The only bright spot this year was the coho catch which was close to the even-year average and was the best coho catch since 1970. Sockeye escapements in the gillnet districts north of Anchor Point were good in the Kenai system, poor in the Kasilof and Fish Creek systems and fair to good in the rest of the area. Pink salmon escapement was poor in the Northern District and fair to good in the Central District. Pink salmon escapements in the seine districts were poor.

Prince William Sound salmon harvests were generally reduced in 1974, as anticipated. Areawide harvests of pinks (459,000), chum (89,000), and coho (76,000) were 15-30 per cent below the average catch since statehood. The sockeye harvest was about average while the king salmon harvest was above average. The fishery in the Sound in 1974 was atypical as the general purse seine districts remained closed throughout the season. On a district basis the Coghill-Unakwik district produced the second highest sockeye harvest since 1961. Sockeye harvests in the Copper River, Bering River and Eshamy fisheries were below average, however. Both the Copper and Bering river coho fisheries were also below average. The relatively low coho catches were due to price disputes between

fishermen and processors and were not an indication of total run strength.

The total herring catch for Cook Inlet in 1974 was 2,692 tons, above the 1973 catch of 1,592 tons. Of the 1974 catch, the Kamishak District accounted for the majority of herring with 2,103 tons taken in that district.

The Cook Inlet trawl shrimp fishery remains stable with 4.939 million pounds landed in 1974 compared to 5 million pounds in 1973. The 1974 king crab catch of 4.557 million pounds was slightly higher than the 1973 catch of 4.5 million pounds. Stocks of both species appear to be in healthy condition. Pot caught shrimp doubled the 1973 production of 350,000 pounds with 677,847 pounds landed in 1974. The Cook Inlet tanner crab fishery remained relatively stable with 7.655 million pounds being landed in 1974 compared to approximately 8.5 million in 1973.

In Prince William Sound, an apparent unlimited market for herring roe plus a large increase in price for herring resulted in an estimated catch of 7,059 tons of herring in 1974. Lucrative foreign quotas and high prices resulted in a herring spawn on kelp harvest of 540,668 pounds. Harvests of both products exceeded harvests of 1973. Prince William Sound tanner crab production dropped from 12.7 million pounds in 1973 to 9.6 million pounds in 1974. This drop in production is attributed to poor markets during the latter part of the year.

Salmon Forecasts:

The Bristol Bay sockeye run for 1974 was forecasted at 5 million sockeye, a predicted return which was well below the escapement requirements, and no significant fishing for sockeye was anticipated. The actual return of approximately 11.0 million fish provided more than the required escapement to some systems and commercial fishing was allowed. After the initial opening on July 4 and 5, fishing was continuous in a number of districts and provided a harvest of 1.4 million sockeyes. The major Kvichak system was not open and did not reach the required escapement goal. The catch in 1974 was the second lowest harvest since the beginning of the fishery in the 1890 s and follows back to back the worst recorded catch in 1973 when only 757,000 sockeyes were taken.

The Bristol Bay sockeye run for 1975 is forecasted at 12.9 million, with a range of 8.4 million to 17.4 million. Projections based on this forecast predict a harvest of 2.4 million with a range of 0.6 to 4.3 million sockeyes. While 1975 is a peak cycle year for the Kvichak River system which would normally provide a large portion of the run, the forecast for the Kvichak River is only 4.5 to 9.2 million with an escapement goal of 14 million sockeyes. Thus the Kvichak River is expected to contribute no harvest except for a small number of fish that might incidentally be caught in other districts. The Nushagak and Egegik systems are expected to be the primary contributors to the 1975 harvest with 1.1 and 0.8 million fish, respectively. The inshore harvest, however, will depend considerably on the high seas harvest by the Japanese fishery. With the most important Kvichak system in a depressed state of production, any fish harvested from mixed stocks on the high seas will further hinder the ability of that system to rebuild to prior peak year magnitudes.

The Prince William Sound pink salmon forecast was for 2.0 million salmon to return in 1974. The actual return of 1.3 million was within the lower portion of the range, and a harvest of 459,000 fish was taken. That harvest is only 15 per cent of the even-year average since 1960. The point estimate return of 290,000 chum salmon with a forecasted harvest of 90,000 proved quite accurate when 284,000 chums actually returned and 89,000 fish were harvested. The chum salmon harvest was 20 per cent of the 1960 to 1973 average harvest. The forecasted harvest for Prince William Sound pink salmon in 1975 is 1.6 million salmon from a run of 3.1 million. The upper and lower range on the pink salmon forecast is 1.3 and 4.9 million fish. The chum salmon forecast of 140,000 fish to 290,000 fish for Prince William Sound indicates a below average harvest of less than 90,000 chums for the 1975 season.

The pink salmon run to the Southern and Outer districts of Cook Inlet was only 26 per cent of the predicted run strength and permitted a catch of only 50,000 pink salmon. This was approximately half of the anticipated harvest. The total pink salmon harvest for all of Cook Inlet was 535,000 fish for 20 per cent of the even-year harvest since

statehood and the lowest even-year harvest since 1932. The Southern and Outer district forecast for 1975 is for 620,000 pink salmon with an estimated range of 250,000 to 990,000. At the forecasted level, the corresponding harvest would be for 370,000 pink salmon with a probable range of 0 to 740,000 pink salmon.

Prince William Sound Rehabilitation and Research:
The migration rates were measured successfully in the Copper River from the lower river to the upper spawning areas in 1974. Unfortunately it was not possible to provide information from the fishery to these indexed areas based on tagging in the commercial fishery.

Rehabilitation work in Prince William Sound consisted of some experimental egg boxes in the Cordova area which met with limited success due to heavy freezing and low water conditions in the spring of 1974. An egg box on the Gulkana River near Paxson had extremely good success with 200,000 sockeye eggs which had been placed in that test facility. Four additional boxes were stocked in 1974 with sockeye eggs in an area that is watered by abundant steep spring fed streams to provide water for the boxes. In Prince William Sound egg and fry digging for pink and chum salmon was conducted for the 18th consecutive year and forms the basis for the highly successful forecasting program in Prince William Sound.

Cook Inlet Fisheries and Rehabilitation Research:
To estimate run strength sonar counters were again used for adult salmon on the Kenai and Kasilof rivers. Test fishing at the mouths of these two rivers was also conducted in an attempt to develop an index of the escapement from which run strength can be measured in a timely manner so that commercial fisheries may be better regulated. Counting towers are not possible on these streams due to the glacial turbidity of the waters. Fair sonar accuracy has been experienced on those streams but the equipment is due to be updated. In addition to the standard adult sonar counters a new side scanning sonar system was utilized to locate the passing salmon and determine their proximity to the adult sonar units. Measurements of velocity and precise location of passing fish can be observed from the side scanning equipment which is presently being developed in Bristol Bay for use on adults and on salmon smolt. In upper Cook Inlet, Susitna River research was continued with fishwheels and tagging in the turbid waters of that river. The tagging was utilized to estimate numbers and species of fish present at various sites. In the clear waters of the Talachulitna River, Shell Creek and Fish Creek visual counts were also made of the escapement. Research was continued in Cook Inlet on a number of salmon lakes to determine the optimum escapement levels and the ability of the lakes to produce additional salmon for Cook Inlet. A number of nursery lakes and stream rearing areas were townetted and studied in 1974 to determine the abundance, distribution and size of juvenile sockeye salmon and of competitor species. Similar research was carried out in Packers Lake, a system which was treated with rotenone, but a complete kill was not made. A classification is developing among the Cook Inlet lakes for those systems which are best suited to artificial enhancement.

In addition to ongoing salmon studies, shellfish research on king and tanner crab and all commercial shrimp species increased in 1974 to make population estimates for gaining a management base.

New programs required of the existing staff include an appraisal of salmon utilization of the Susitna River below the proposed Corps of Engineers dam site at Devil Canyon. Nonrenewable resource development required considerable staff effort related to offshore oil and gas lease projects, pipelines and offshore fisheries planning.

Bristol Bay Fisheries Rehabilitation and Research:
Bristol Bay research did not include test fishing and test fish analysis in 1974 because of the extremely limited sockeye run expected to that area. Smolt outmigration enumeration was continued with sonar equipment on the Kvichak River which now has had an operational smolt enumeration sonar program since 1971. A smolt sonar system was also utilized on the Ugashik River, primarily to determine the usability of sonar in that system and to relate catches in fyke nets with sonar counts. In addition to the sonar equipment presently in use in the Kvichak River, a new system of sonar equipment for

scanning laterally across the stream was tested on the Kvichak River and on Wood River prior to its being moved to Cook Inlet to watch the movement of adult salmon in the turbid Kenai River. The side scanning equipment will give an estimate of stream utilization from which the other sonar smolt counts may be accurately expanded to measure total outmigration of sockeye smolt. A sonic system was taken to the Wood River counting station below the last of the Wood River lakes toward the estuary. This work was completed to determine a site for the placement of a total smolt outmigration program in 1975. The side scanning sonar indicated that only half of the river is being utilized by smolt. A new beluga scaring program was put in the water at the mouth of the Kvichak River in 1974 for test purposes. New units of this electronic equipment are being built in the winter of 1974 and spring of 1975. These will enable the department to put a complete program in the water in the spring of 1975 to repel belugas from the mouth of the major sockeye systems. Repelling belugas from the mouth of the river should reduce considerably the consumption of sockeye smolt by beluga whales.

New efforts in rehabilitation got underway in 1974 as a result of the depressed condition of the sockeye runs. Intense effort was applied to the Becharof-Ugashik area by the existing Bristol Bay research staff to determine the limiting factors in those systems. The work included measurements of lake morphometry, a sonic survey for distribution of mature and immature fish species, a hydrological survey of the most important streams contributing to those lakes, a measurement of survey lake water quality and food production and townetting to determine distribution of juveniles, their age and size composition. Winter work is underway to monitor the temperature of the primary spawning streams. In addition to work by the ADF&G, staff contracts to National Marine Fisheries Service were let to complete similar work on the Snake River system and to the Fisheries Research Institute of the University of Washington for similar work on the Igushik Lake system.

Arctic-Yukon-Kuskokwim:
A record commercial harvest was made in the region during 1974, totaling 2.4 million salmon, which exceeded the previous high catch made in 1973 by approximately 843,000 fish. The 1974 commercial harvest represented 18.6 million pounds (round weight) of salmon worth in excess of $5 million to the fishermen, the majority of whom are resident Eskimos and Indians.

Record harvests were made for chum (1,854,500), coho (197,900), pink (207,900) and sockeye salmon (29,000). These catches were influenced by several interrelated factors including increases in fishing effort, fish prices and processing facilities in addition to the large chum salmon returns to the Yukon and Kotzebue areas. A-Y-K region chums produced 42 per cent of the statewide harvest of this species. The king salmon harvest of 130,000 represents 13,000 fewer fish than the previous five-year annual average. The Kuskokwim River king salmon catch declined for the third consecutive year and was the smallest since 1964. The Yukon River king salmon catch was similar to the previous 13-year average.

The regionwide license registration in 1974 of 2,685 commercial, 2,042 vessel and 2,285 gear licenses was a record high total. License registration for the region increased at a rate of about 6 per cent annually during the 1968-72 period. The annual rate of increase over the previous year's registration was approximately 15 per cent in 1973 and 20 per cent in 1974. Most of the increase during the 1974 season was experienced in the Kuskokwim and Kotzebue areas. This expansion to date has been largely the result of increasing numbers of local subsistence fishermen who are beginning to also participate in the commercial fishery. Increased numbers of fishermen not resident to the immediate fishing areas will probably participate in these fisheries due to results of the Limited Entry program in other areas of the state.

The projected 1974 subsistence harvest for the region should approximate 620,000 salmon, a moderate increase over the 1973 catch of 508,000. The average annual A-Y-K subsistence harvest recorded during 1960-1973 was 600,000 salmon. The subsistence catch of 300,000 chums in the Kuskokwim River alone represented a substantial increase over recent year harvests and was coincidental with legalization of the sale of salmon roe from subsistence caught fish. Combined commercial and subsistence chum

salmon utilization for the Kuskokwim River was the greatest since the 1940s.

Department studies have revealed that unharvested surpluses of pink and chum salmon exist in some areas. Barring significant increases in offshore utilization by foreign nations or unusually severe environmental conditions, the A-Y-K commercial salmon fishery can be expected to increase moderately in terms of production and economic value during the next few years.

A new state funded program to expand knowledge of Kuskokwim area spawning escapements was initiated and a project leader to direct future activities is currently being recruited. Limited reconnaissance surveys were conducted in 1974 and one new king salmon spawning area was located.

Approximately 10,000 salmon from representative catches and escapements were sampled for age, sex and size information. Because of the selectivity of some gillnet fisheries, the quality as well as quantity of spawning escapements is important in assessing the management program. For example, sex ratios of spawning king salmon have ranged from 1:1 to 7:1 in favor of males.

Recent emphasis has been directed to locating and monitoring fall chum spawning populations in the upper Yukon drainage. When this study was initiated two years ago, even the location of spawning grounds for these fish was not known. During 1974, 12 separate spawning populations totaling approximately 150,000 fish were located in the Tanana, Porcupine and Chandalar river drainages. Annual assessments of these populations are planned through use of aerial surveys, aerial photographs and possibly counting towers.

Spawner distribution studies on the Salcha River indicated that 32 per cent of the king salmon and 20 per cent of the chum salmon spawned in area which could be affected by a break in the trans-Alaska oil pipeline.

Unprecedented effort in the region is being made to survey the still important subsistence salmon fishery. In 1974 approximately 2,000 fishing families were contacted by biologists and fishery technicians traveling 2,500 river miles by boat and 1,500 air miles in single engine aircraft.

Most of the results of a new study incorporating test fishing, tagging and intensive spawning ground surveys to determine Noatak River chum salmon escapement magnitudes were destroyed in the Nome office during the recent storm and flood.

Other projects undertaken in 1974 include test fishing in both the lower Yukon and Kuskokwim rivers, smolt outmigration study in the Salcha River and tagging projects to determine spawning magnitudes in the Delta and Unalakleet rivers.

Westward Alaska:

The region consists of that portion of Alaska west of Cape Douglas on the south side of the Alaska Peninsula and west of Cape Menshikof on the north side. It includes all of the Bering Sea and Bristol Bay with respect to shellfish and groundfish management. The region supports important salmon, herring and halibut fisheries and contains the most valuable shellfish and groundfish resources in the state and in many cases, in the world.

Shellfish Fisheries:

Research is conducted on the more important shellfish species. Annual studies were continued to index the abundance of king and tanner crabs by fishing crab pots with standard methods. Crab tagging and recovery and logbook programs were continued to determine distribution, movements, growth and fishing mortality of major stocks and to refine catch-per-unit-effort measurements. Trawl surveys were conducted periodically to determine abundance of major shrimp stocks and a logbook program was expanded. Studies of various aspects of the life history of king crab, tanner crab, shrimp and razor clams were intensified.

Preliminary data show that fishermen caught 251.4 million pounds of shellfish in the Westward Region during 1974. This is compared to about 229.4 million pounds in 1973. The 1974 total would have been considerably higher except that major marketing problems curtailed shrimp and tanner crab production. Also a change in the opening of the 1974-75 Adak and Western Aleutian king crab seasons to Jan. 10, 1975 allowed only

minor catches in these areas during the calendar year. Total landings for the region by species with a comparison to 1973 are as follows:

The total 1974 shrimp harvest for the region was just under 100 million pounds, down about 12 million pounds from 1973. The primary reason for the decline was a long fishermen's strike in the spring and summer. This resulted in a sharp reduction in the Kodiak and Chignik harvest and also reduced the expected increase in the South Peninsula catch. Also contributing to the lower catch was a poor shrimp market that caused processors to operate at reduced levels and, in several cases, close operations for much of the year. The Unalaska area made its first significant contribution with 5.7 million pounds landed.

Regional king crab production increased dramatically to 91.6 million pounds, up from 69.3 million in 1972. The largest increase was in the Bering Sea where an increasing crab population allowed the catch to reach 49.4 million pounds, an increase of over 21 million pounds, the previous high U. S. catch. The Kodiak harvest in 1974 was nearly 9 million pounds greater than in 1973. The regional increase is even more dramatic when it is considered that a change in the time of the Adak season resulted in only a small catch from the minor production portion of the area that was open in early 1974.

The tanner crab harvest in 1974 increased to 43.9 million pounds, up from 37.7 million pounds in 1973. The largest increases were in the Bering Sea and Chignik areas, with Kodiak declining to 25.7 million pounds from 31.3 million pounds in 1973. The Kodiak decline was due to an oversupplied market which precluded processors from buying tanner crab when the Kodiak season opened in November. These same market conditions also prevented the catches in the other areas from increasing significantly.

The dungeness crab catch, almost entirely from the Kodiak area, declined from 2.1 million pounds in 1973 to 0.8 million pounds in 1974. This highly cyclical fishery is dependent on a single age class and fluctuates in response to its strength. Market conditions also contributed somewhat to the reduced catch.

The scallop resource of the region supports a minor fishery. Landings in 1974 increased to 15 million pounds, up from 8 million pounds in 1973.

Razor clams are harvested commercially in the region from only one area. The harvest has been fairly stable and the 1974 landings of 0.2 million pounds were the same as in 1973.

Shellfish Research Program:
Studies of catch-per-unit-effort (CPUE) from logbooks, size and sex composition of commercial catches and assessment of pandalid shrimp stocks in the Kodiak, Chignik and Alaska Peninsula areas were continued. Whereas overall unstandardized CPUE rates in the Kodiak area have remained fairly constant during the last six seasons, there was reason to suspect that increased gear efficiency may have masked changes in stock abundance. Therefore, standardization of these data was essential. The analysis of standardized data indicated some differences in relative year class strengths from those based on percentage year class composition. Certain alterations were made in the stock assessment survey strategy in an attempt to increase accuracy, efficiency and reliability of results. An initial shrimp stock abundance survey was conducted in the Chignik Bay and Mitrofania Island areas utilizing the same strategy as in Kodiak. This survey was quite successful in terms of establishing an initial abundance index as well as delineating areas of shrimp concentration.

During 1974, 105 days were spent at sea studying the king and tanner crab populations of the Alaskan continental shelf from Kodiak Island to Atka Island. Four Alaska commercial king crab vessels were chartered for this project. Fifteen incidentally captured species were studied. Codfish, halibut and octopus appear to have the greatest commercial potential.

Ten thousand king crabs and two thousand tanner crabs were tagged and liberated with subsequent recoveries by commercial fishermen during the 1974 fishing seasons. One valuable use of the tag recovery information is to allow managers to monitor the fishing mortality and close areas to fishing when the catch approaches the optimal, thus

preventing overexploitation and insuring continuous healthy annual yields.

In addition to the population research, a growth-per-molt study of tanner crab of both sexes, immatures and adults, was conducted and logbooks were collected from approximately 40 per cent of the commercial king and tanner crab fishermen in the Kodiak and South Peninsula areas.

Salmon Fisheries:
Pink salmon are the major commercial species within the region and the normal catch has been slightly over 10 million in the last ten years. Poor escapements of pink salmon in 1972 resulted in very low returns in 1974. The fisheries generally were managed on a day-to-day test fishery basis in the Chignik and Peninsula-Aleutians area. The few pink salmon taken were caught as a result of test fishing or were taken incidentally to other species. Better than anticipated winter and spring survival resulted in a total return (catch plus escapement) to the Kodiak area of about 4.5 million pink salmon. The commercial catch of 2.6 million pinks was still well below the average of 7.1 million. Escapement of pink salmon was generally poor all along the Alaska Peninsula but did show improvement over the parent year. On Kodiak Island escapements were good to excellent with the exception of a few systems.

The total chum salmon harvest for the region was 390,000 fish, about 20 per cent of normal. The main factor contributing to the weak return appears to be the severe winter of 1970-71 when the majority of the age classes returning in 1974 were in the gravel. Although chum escapements were generally well below average, the restrictive salmon season prevented them from being even lower.

The regional harvest of 1.5 million red salmon was about the same as the last three years. Several local runs showed great improvement in escapement. All the small systems on the South Peninsula had very good escapements as did Upper Station and Akalura systems in Kodiak. The Frazer system continued to build and received the highest escapement ever.

Salmon Forecast Program:
Forecasting pink salmon returns to the Kodiak, Chignik and South Peninsula management areas involves hydraulic sampling in index streams to determine densities, or relative abundance, of pink salmon alevins and statistically relating these densities and subsequent returns. From these data, a numerical forecast is calculated that assesses the strength of the annual returns to the respective management areas.

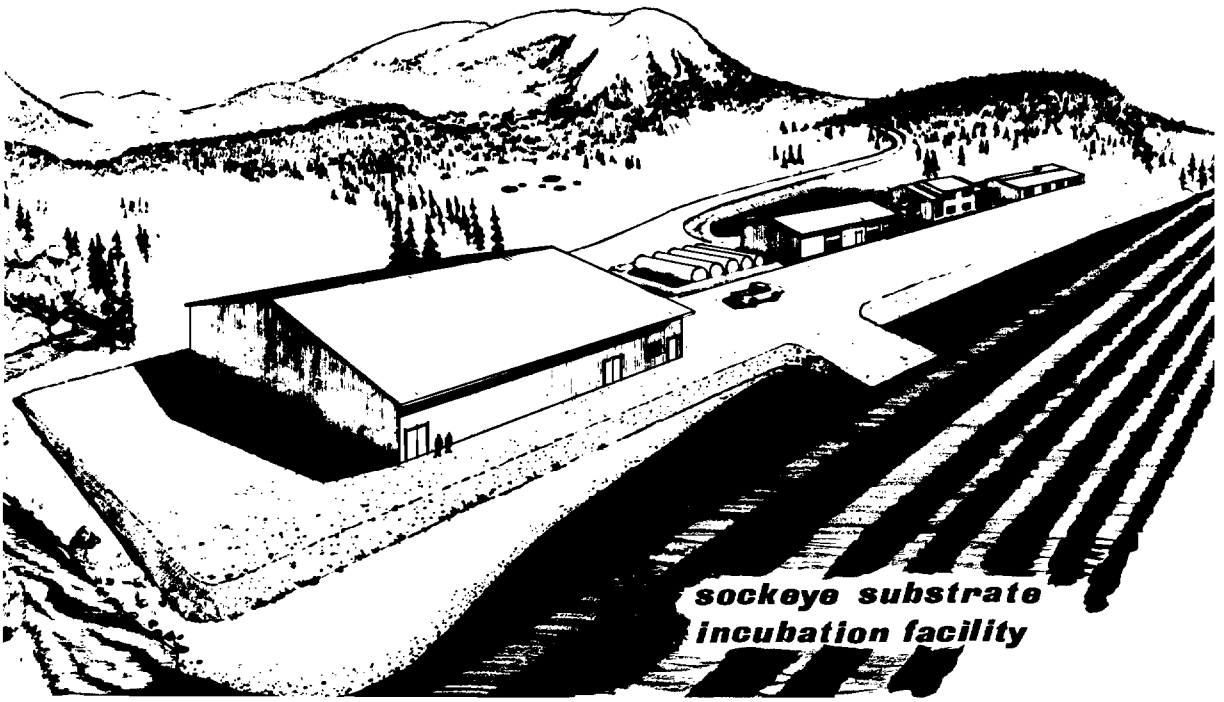
For 1975, relatively poor pink salmon returns are forecasted for the Westward Region. The effects of the severe winter of 1971-72 will still be felt as they were in the cyclic year of 1973. Individual area forecasts are as follows: Kodiak, 2.1 to 4.4 million; Chignik, .18 to .75 million; South Peninsula, .10 to .70 million. If the actual returns are of the magnitude forecasted, only the Kodiak area will support a viable fishery on pinks.

Returns of red salmon to the Chignik River system have been forecasted since statehood.

The forecast for 1975 calls for a red salmon return in the range of 757,000-1,479,000; the midpoint of this range is slightly below average.

Herring:
The Westward Region harvest of herring occurred only in the Kodiak area. A 3,400-ton quota was in effect during the roe season (March 1 to June 30). Twenty-five vessels harvested 868 tons of herring in 1974. Four companies processed herring primarily for roe: however, one of the processors also utilized the carcasses for meal and oil. Small amounts of herring were also taken for bait.

Halibut:
The International Pacific Halibut Commission maintains catch records of halibut for the Westward Region and manages the fishery. The 1974 quota in area 3 (Kodiak) was 12 million pounds. The season ended on Sept. 15 before the quota could be attained. As in 1973, halibut seemed to be much less abundant than in previous years, with the decline attributed primarily to the large incidental catches made by foreign trawl fleets operating on the continental shelf.



Division of Fisheries Rehabilitation Enhancement & Development (FRED)

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) 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 do all things necessary to insure perpetual and increasing production and use of the food resources of Alaskan water and continental shelf areas.

Methods currently employed to accomplish the above are as follows:

Saltwater rearing:

This concept of salmon rearing was initiated in Alaska in 1972. The basic reason for using pens in saline water is to take advantage of the sea water which has temperatures

higher than fresh water during the late fall, winter and early spring months. Within limits, the warmth of the water in which the fish are reared has a direct bearing on the rate at which they feed and grow. As this increased temperature does not require artificial heat, the operating costs of the estuarine rearing facilities should be less than that of a hatchery where heated recirculated water is used to obtain rapid growth. The saline water also has an inhibiting effect on several fish disease organisms.

Gravel incubation boxes:

A system has been developed by R. A. Bams of Canada and the National Marine Fisheries Service (NMFS) to incubate salmon eggs in a carefully controlled environment.

The Department of Fish and Game is cooperating with NMFS in developing a test production facility at Auke Creek on land owned by the Territorial Sportmen. A complete test of such a system must include an evaluation of adult returns. Fry produced in incubators of two types are being compared with fry from a standard hatchery incubator and wild fry from Auke Creek.

Both of the above types of gravel incubators are basically alike in that salmon eggs are incubated in an upwelling flow of water. The Bam's box, which measures 4' x 3' x 3' deep, utilizes a system of perforated pipes and horizontal layers of graded gravel to achieve uniformity of flow through the eggs and gravel. The NMFS box of the same dimensions utilizes a space-saving perforated false bottom and a different configuration of graded gravel to achieve uniform flow. The water flowing through the boxes is filtered to remove sediments which could smother the eggs. Prior to placing in the gravel incubation boxes, the eggs are incubated to the eyed stage in troughs or hatcheries.

In another type of gravel incubator, newly fertilized eggs are placed on screen trays and suspended in a water column with an upwelling flow. After the eggs hatch the alevins drop through the trays and repose on the surface of the shallow layer of gravel. Lids exclude light. The Oregon State University Sea Grant Program developed this system which is called "Netarts Gravel Incubation Hatchery."

Lake rehabilitation:

This approach, removing competitor and/or predator fish species by chemical treatment and restocking with the desired species, is used to restore salmonid runs which have become depleted or to establish runs of desirable commercial or sport fish where none previously existed. It has proven to be a very useful tool in enhancing existing runs or extending the habitat to unutilized areas. This approach may be useful on relatively small lakes.

Fishways:

Various types of fish pass facilities have been employed in many countries to extend the spawning range above either complete or partial barriers to salmonids.

An aluminum Denil-type, with angled vertical baffles, developed by the former department chief engineer Gil Ziemer has proven to be very effective at several locations in Alaska and also is used in Canada.

Stream clearance:

Removal of beaver dams, plus log and debris barriers which cover spawning areas, impede or completely block the migration of salmon upstream has proven to be beneficial in improving the spawning and rearing habitat. To date, this work has been concentrated in Southeastern Alaska which is heavily forested. Severe windstorms result in windthrown trees which create obstacles to fish movement and cover spawning areas.

New Methods:

Also under study is the feasibility of making very large plants of juvenile salmon in lakes having indigenous populations of various species. This study seeks to determine if self-sustaining runs can be established without chemical treatment which is a relatively "sure fire method" but is extremely expensive.

II. ACCOMPLISHMENTS FOR 1974:

Administration:

The fisheries pathology laboratory in Anchorage is very near completion. The fall workload has encompassed sampling of pre-spawning adult salmon, juvenile salmonids and water supplies at various installations for bacteriological analyses. A number of diagnostic and inspection reports were completed and will be carried out on a routine basis in the future.

Westward region:

Akalura Lake

Akalura Lake (45,000 acre feet) on Kodiak Island has been scheduled for rehabilitation and stocking with sockeye salmon as the existing run has undergone a long-term decline resulting in only token returns of salmon in most recent years. However, in 1974, the salmon escapements into this lake of 31,700 sockeye, 2,900 coho and 25,000 pinks (as of Sept. 11) exceeded all previous records since the department began monitoring this system in 1968.

This return appeared to be the result of an exceptional increase in survival in both the freshwater and marine environments, not only at Akalura, but also at Upper Station Lake across the bay. Upper Station Lake sockeye escapement of 275,700 as of Sept. 11 was greater than any recorded since 1945.

The exceptional return of sockeye into Akalura Lake provides a rare and unique opportunity to attempt to rebuild the run by supplementing natural production rather than by lake rehabilitation. The revision of plans for Akalura sockeye restoration results in the following phases:

1. Supplement 1975 sockeye escapements by spawner transplants and possibly egg incubation systems. Supplemental production to be continued until at least 1980, with the goal of maintaining a minimum egg deposition each year equivalent to approximately 30,000 female spawners.
2. Construction of outlet monitoring facilities and control structure in the lake outlet as originally planned upon approval of the Environmental Impact Statement.
3. Evaluation of supplemental restoration efforts. If unsuccessful, plans to rehabilitate the lake as originally proposed will be considered as an alternate method.

Frazer system:

The return of adult sockeye to the Frazer system on Kodiak Island this year has far surpassed that of previous years.

Sockeye salmon passage through the Frazer fish ladder since its construction is as follows:

1962	1,290
1963	2,357
1964	8,166
1965	5,074
1966	11,728
1967	14,500
1968	16,708
1969	13,981
1970	24,039
1971	55,366
1972	67,302
1973	56,255
1974	82,350
Total	359,116

This run was started in 1951 with green egg plants, followed by fry and adult spawner transplants.

The very good 1974 return of adults plus the record outmigration of smolts in the spring of 1974 indicates that this run is rapidly building toward its maximum production level.

Kitoi incubation:

Approximately 12,500 pinks returned to the Big Kitoi weir this season which is double the escapement of past years. This exceptional return in part originated from the release of nearly 500,000 fry from the Kitoi Hatchery gravel incubators and troughs.

A total of 1.19 million eyed pink salmon eggs have been distributed in five incubator boxes at the Kitoi Hatchery. Gravel was used as in the past for substrate in four of the incubators. Nine layers of astroturf were used in the fifth incubator. Plexiglass windows were installed on the sides of the incubator containing astroturf to permit observation of hatching and development of the pink salmon alevins.

Karluk investigations:

The Karluk sockeye runs, once the major source of sockeye production in the entire Westward Region, were decimated by overfishing many years prior to statehood. Long-range plans of the division include bringing this once famous fishery back to its former production level.

Mapping of potential sockeye spawning areas at Karluk Lake was completed. Optimum sockeye spawner density was determined to be 803,000. This projection is in close agreement with 800,000 derived by Dr. McNeil of the National Marine Fisheries Service based on escapement and return data.

Volumetric determination of Karluk Lake remains to be completed before an optimum rearing density can be projected.

Central Region:

Snake Lake:

Work is progressing satisfactorily on the Snake Lake incubation system. The Department of Highways completed preparation of the pad gravel source, the pad access road and completed construction of the pad on Dec. 3. A meeting was held with R & M Consultants, Inc. on Dec. 11 in Anchorage to review preliminary plans for the East Creek (Snake Lake tributary) incubation facility. A 15 million fry capacity incubation facility is planned for this location and will be operating at one-fourth capacity in the fall of 1975. Preliminary facility design was done by the Juneau staff engineer. Final design will be done by a consulting firm.

Crooked Creek incubation:

A total of 326,500 sockeye salmon fry incubated at the Crooked Creek facility were stocked in Packers Lake which had been rehabilitated in 1973. A total of 36,000 coho fry from Crooked Creek were transferred to Halibut Lagoon estuarine rearing pens. Construction of this facility was completed in late fall of 1973 and became operational in January, 1974. In October, 1974, two stacks of a new design incubator, the "Auke Bay Incubator," were installed in an aluminum pre-fab building for test purposes during the winter of 1974-75. Egg takes in the summer and fall of 1974 totalled 3.03 million chum, pink, sockeye and king salmon eggs which are currently being incubated at this facility.

Other projects:

A fishway at Control Creek in Prince William Sound was completed in August. Extensive area for pink salmon spawning was made accessible by installation of this fishpass facility.

Investigational work and planning is in progress for incubation facilities at Big Lake, Tutka Creek in Kachemak Bay and Humpy Creek in Prince William Sound. A comprehensive report of Big Lake studies was completed and submitted for review.

A report entitled "A Critical Analysis of Some Razor Clam Populations of Alaska" has been completed and is now ready for final typing.

Bristol Bay exploratory fishing:

Diminishing red salmon runs have precipitated a declining economy in Bristol Bay. An exploratory fishery was conducted in August to determine if other commercially important marine resources were available which would benefit the local residents.

Bottom fish and shellfish sampling was accomplished by the use of Bristol Bay gillnet vessels equipped with trawls and longline gear. Clam surveys were also conducted at a number of locations. No species of finfish or shellfish were found of sufficient size and abundance to warrant a commercial fishery.

Further exploratory work will be conducted in the spring of 1975 to sample the populations of capelin, smelt, whitefish and char in Togiak and Nushagak bays to determine if commercially important quantities are available.

Halibut Lagoon estuarine rearing:

The estuarine rearing project at Halibut Lagoon suffered a setback during a severe windstorm on Oct. 1 which resulted in the collapse and beaching of the rearing pens. A total of 302,083 coho fingerlings and 92 king salmon escaped. In addition, 7,000+ coho fingerlings died on the beach, leaving a remainder of 69,000 coho fingerlings. The facility has been restored to normal operating condition.

Southeast Alaska:

The division added an administrative and planning function in the Southeastern region in July, 1974, by creating the positions of regional supervisor and program biologist.

The regional program involves salmon incubation and rearing, expansion of freshwater habitat through installation of fishpasses and debris removal and the protection of spawning habitat through flood control.

Estuarine rearing facilities:

Coho and king salmon are presently being reared in floating pens off stream mouths at Juneau and Sitka. These estuarine rearing pen (ERP) facilities have shown promise for rearing cohos and kings to release size as smolts in only one year. The diet provided them and the warmth of the ocean water results in food conversion and growth superior to that achieved in colder stream waters.

Young coho and king salmon are not adaptable to salt water. A freshwater source is piped to the pens and mixed with salt water to achieve the desired level of salinity. Gradually, the salinity is adjusted from 5ppt in the summer to 12ppt in late fall when all cohos and kings achieving a length of about 3½ inches can adapt to full strength sea water. Subsequently, they are not dependent on the operation of the freshwater systems during extreme cold weather.

Sitka ERP:

The ERP at Sitka is the only FRED project in Southeastern Alaska which has released fish to date. About 225,400 cohos were released there in 1974, the third year for releases. About 62,400 king salmon smolts were also released. All the king salmon and about half the cohos were imported to Alaska as eggs, so their return to the point of release is questionable. Now, as in the future, only salmon stocks indigenous to Southeastern Alaska will be considered for use in these projects.

Fewer fish are being reared in 1974-75 at the Sitka ERP facility because of a shortage of eggs in 1973. About 238,560 fish were on hand at year's end and most were being maintained without benefit of pumped circulation, which cuts costs and maintenance.

The 1974 run of coho salmon returned the first known pen-reared fish to the Sitka area. Adipose clipped cohos ascended Starrigavan Creek and an adjacent spring-fed creek, where they were captured, held to ripen and were spawned. Approximately 90,000 eggs were transferred to the Crystal Lake hatchery for incubation and return to the rearing pens.

Juneau ERP:

The ERP facility at Juneau is incomplete in that no fresh or saltwater pumping system is yet included. Therefore, the coho salmon being reared there were received after they had achieved the size for adaptation to saltwater. About 30,000 fish were carried into the winter in four 12 x 12 x 12-foot pens.

The facility is scheduled for expansion next year, and engineering design and cost estimates are near completion. Prohibitive costs of a freshwater system may result in a two-phase rearing program in which the Sitka ERP is utilized to produce large fingerlings for the Juneau area ERP facility.

George Inlet egg incubation facility:

Maintenance and enhancement of pink and chum salmon stocks are high priority objectives of the agency. Initial work on artificial incubation of pink salmon is already being performed in British Columbia and Southeastern Alaska. Therefore, we elected to study chum salmon and to evaluate methods of incubating fry while producing commercially important numbers of salmon. About 1.4 million chum salmon eggs were spawned at Disappearance Creek and eventually loaded into 20 outdoor incubator boxes near Ketchikan. Hatched fry will rest in astroturf, through which intake water upwells. The outmigrant fry will be fed for about one month before release.

Salmon habitat improvement and extension:

Selected salmon streams were cleared of logs and debris in May and June to provide fish access to spawning grounds and to reclaim spawning gravel. Two crews worked throughout the months of May and June on 18 different streams. Evaluation of this work is difficult because of annual variations in numbers of fish utilizing the spawning grounds. As a result, these activities will be de-emphasized in the future, and enhancement of salmon stocks in historically productive streams will be emphasized.

The second phase of this program deals with the placement of aluminum fishpasses at stream barriers to aid salmon migrations. In 1974, a ladder placed at Pavlof River, Chichagof Island was an immediate success in passing a run of coho salmon upstream. The Forest Service cooperated in placing a fishpass at Survey Creek on Kosciusco Island. Other surveys for potential fishpass sites included Klakas Creek, Prince of Wales Island; Navy Creek, Etolin Island; and the modification of the fish pass at Anan Creek, Bradfield Canal.

Cooperative programs:

The National Marine Fisheries Service (Auke Bay Laboratory) cooperates with the FRED Division in studies of pink salmon gravel incubation, estuarine pen rearing and dynamics of stocked coho populations in hanging lakes. The methodologies and results generated by these projects are directly applicable to the development of full scale operational enhancement projects.

Contracted studies:

The Snettisham hydroelectric facility near Juneau appears to offer a number of possibilities for fishery development work. A consultant hydrologist and oceanographer were contracted to assemble background information pertinent to the use of the constant water supply and salmon rearing potential in the estuary. These studies were completed and will be utilized when further biological and engineering surveys are conducted in the spring.

Fish Creek flood control:

A stock of exceptionally large chum salmon utilizes Fish Creek near Hyder. This stream is tributary to the Salmon River, which is glacial and subject to flooding when a glacier-blocked lake dumps each September. The Salmon River is diked to prevent flooding and scouring of Fish Creek and the chum salmon spawning area. We have cooperated with the Alaska Department of Highways and the U. S. Forest Service in surveys of the area and repair of the dike following flooding. This unusual chum salmon gene pool is thereby preserved.

Game Division

I. PURPOSE AND DUTIES:

The Game Division, in accordance with the concept of sustained yield as specified in Section 4, Article VII 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 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:

Implementation of recently passed federal legislation produced a tremendous drain upon the Game Division's financial and manpower resources in 1974. Staff biologists were called upon to provide much of the wildlife-related information regarding public interest

lands to be considered by Congress for inclusion in the federal system of National Parks, Wildlife Refuges and National Forests. For the second year a moratorium on the taking of marine mammals in Alaska, imposed by passage of the Marine Mammals Protection Act of 1972, has been in effect. Provisions of this Act allowed for return of marine mammal management authority to the states involved however, and throughout 1974 biologists labored to have this authority restored. Should this complex and controversial piece of federal legislation be resolved, with the State of Alaska regaining management and control over all or some marine mammal species, the benefits to our citizens will be great. Staff marine mammal biologists contracted with the Department of Commerce to monitor seal harvests along Alaska's northwestern coast and to conduct belukha whale control using recorded killer whale sounds during this period.

The Endangered Species Act, passed into law late in 1973, also required considerable input by state biologists, but its initial impact on state resource management was of a much lesser magnitude because Alaska's fauna is relatively intact. Because the Alaska State Legislature had previously enacted a State Endangered Species Law, Alaska was one of the few states already possessing a bona fide endangered species program. Initial input consisted of demonstrating (through the Attorney General's office) that such a program existed and preparing a cooperative agreement for the management of peregrine falcons.

Pursuant to the Game Division's ultimate objective of having comprehensive plans for Alaska's wildlife resources, a divisional planning coordinator was appointed to oversee development of species and area management plans during 1974. Several pilot plans were drafted, guidelines for wildlife data input were established and much time was spent gathering and analyzing available information on Alaska's other related resources. It is hoped that a strategic management plan for all major game species will be completed by the end of fiscal year 1976. In keeping with divisional planning activities a policy on statewide subsistence hunting was developed and disseminated during 1974 and the catalogue of Alaska's wildlife entitled "Alaska's Wildlife and Habitat" was reprinted.

In 1974 the division, recognizing increased demand for high-quality hunting opportunities, established several new quality hunting areas. One, the Tok Management Area, set aside a portion of the eastern Alaska Range for quality sheep hunting by limiting the number of hunters afield. No less significant, but certainly more controversial on a national scale, was the decision to allow hunting for a limited number of wolves on the Kenai Peninsula. Alaskans can point with pride to the natural reestablishment of wolves in this area after nearly 60 years' absence.

Alaska's hunter safety program, originally operated by the Department of Public Safety and absorbed into the Game Division late in 1973, made considerable gains in 1974. Through efforts of its coordinator, the Rabbit Creek Shooting Range in Anchorage was made available to the public and negotiations were initiated to assist other communities in the development of public shooting facilities. The instructional phase of this program similarly received a boost with completion of a formal hunter safety manual to be used in classroom instruction.

With initiation of the pipeline haul road construction in Alaska's arctic early in 1974, considerable time and effort were required to solve human/animal conflicts. High bear populations in the Valdez area during the summer of 1974 similarly resulted in major problems for the division's management staff. In related actions, two new programs to be funded ultimately by the Alyeska Pipeline Service Corp. were developed in response to anticipated moose/pipeline and caribou/pipeline problems. Two new biologist positions were filled and research programs were designed to monitor the impact of pipeline activities on these two species.

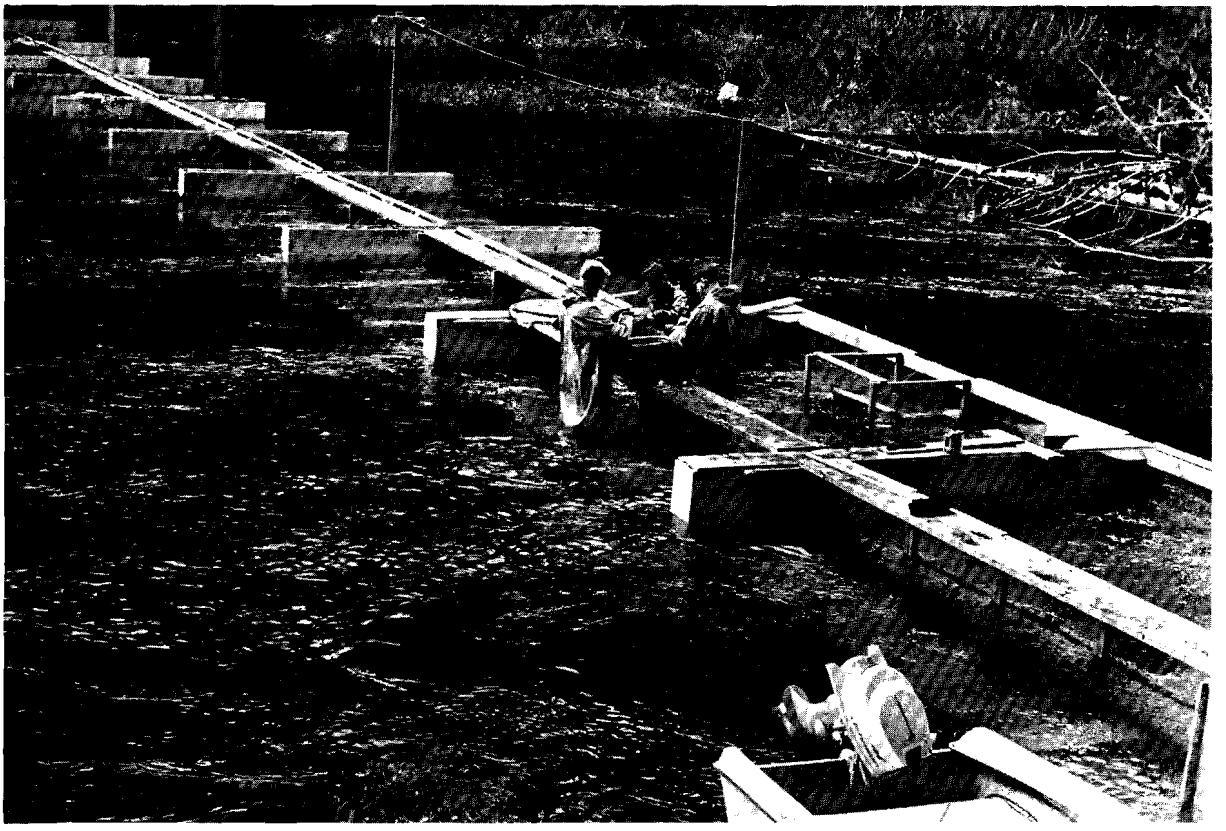
During 1974 staff biologists achieved accurate aerial censuses of several major caribou herds in the state: the Nelchina, Mulchatna, Mentasta and 40-Mile herds. Most of the state's major moose herds were surveyed from the air to assess their status. In addition, the harvest reporting system was updated and streamlined, thereby insuring acquisition of game harvest data in a timely manner.

Information gathering by members of the division's research staff continued to be an important element of the wildlife management program. Staff research biologists had 11 papers accepted for publication in scientific journals in 1974, thereby demonstrating the high quality of the work being done in Alaska. Contributions by researchers were not limited to technical information however, and a philosophical discussion of hunting ethics presented by a division biologist at the annual Wildlife Federation meeting in Denver was widely acclaimed and reprinted in at least six periodicals. Game's Wildlife Technical Bulletin No. 4, entitled "Game Transplants in Alaska," was printed and disseminated early in 1974.

A major sheep research program on the Kenai Peninsula was completed (except for long-term population monitoring) during 1974 and a new study on mountain goats was initiated. The goat study and a newly-instituted study of black bear are the division's initial efforts to provide management-oriented biological information on these species. Burgeoning hunting pressure on black bears and goats has necessitated this initial evaluation of their biology and their population status. In another change affecting division activities, the wolf research centered for several years in the arctic is being shifted to the more heavily populated Interior and reoriented towards an assessment of the wolf/prey relationship.

Field research in 1974 was again highlighted by brown/grizzly bear studies on the Alaska Peninsula and the North Slope. Continued heavy hunting pressure on the Alaska Peninsula, primarily by guided nonresidents, has necessitated intensive brown bear population studies in this area. There was no spring season in 1974 on the Peninsula because the quota of 150 bears was achieved during the fall hunt, but the popularity of this area for bear hunting requires continued close scrutiny of its bear populations. The North Slope study, now in its second year, was necessitated by accelerating petroleum development activities, increased hunting pressure and a paucity of information on the bears of this area.

Continued input into U. S. Forest Service timber sales in attempts to insure that wildlife values receive adequate recognition, annual assessments of the population status of important game species and public informational activities of many types rounded off the division's accomplishments during 1974.



Sport Fish Division

I. PURPOSE AND DUTIES:

The Sport Fish Division is responsible for providing the sound management techniques and development research programs which will insure an optimum harvest and utilization of the recreational fishery resources of Alaska. This division provides the basic vehicle for public expression on the management and ultimate use of the recreational fishery resources. In this respect, it establishes the needs and recommends the methods of regulation for the resource user. The division also evaluates and recommends guidelines for various industrial developments that may have impacts on the fisheries habitat and fish species.

Anglers spent approximately 1.44 million man-days of effort fishing in Alaska in 1973 and contributed in excess of $52 million to the Alaskan economy. This is reflective of Alaska's outdoor recreational potential and the demands placed on this resource. In the past decade, sport fishing license sales have had an average annual increase of approximately 10 per cent. The division's program is directed toward providing a satisfying and quality recreational fishery and a diversity of choice consistent with the

resource potential for which the angler is the sole financial contributor.

II. ACCOMPLISHMENTS:

REGION I (Southeastern Alaska)

During 1974, the Southeastern region made its first experimental releases of salmon smolts reared at the Mendenhall fish rearing facility near Juneau. The economic survey of the sport anglers in the Juneau area was further refined and it was determined that they spent approximately $2 million in pursuit of salmon.

Land Use Studies — Inter-disciplinary team studies were conducted in cooperation with the U. S. Forest Service and other resource agencies in several extensive areas in Southeastern Alaska. Of prime interest are those watersheds in Tenakee Inlet, Port Frederick, Pavlof Bay and Kalinin Bay-Sinitsin Cove on Kruzof Island. These areas are being considered for clear-cut logging. The watersheds were surveyed and their sport fishing and recreational values assessed. Recommendations for protection of these resources will be presented to the U. S. Forest Service for inclusion in an environmental statement.

In addition, a proposal for the establishment of the Honker Divide Scenic River Recreational Area was submitted in an effort to preserve the last unaltered watershed system on the north end of Prince of Wales Island.

Studies on the effects of logging on juvenile salmon and trout were continued at Starrigavin Creek near Sitka. Preliminary results indicate that as many as 4,000 fish leave the mainstream to overwinter in small tributaries. These fish leave the side streams and migrate to sea as smolts or return to the mainstream of the watershed during the spring. This demonstrates the importance of tributaries, which have been overlooked during logging operations and receive the brunt of logging damage.

It has also been found that the debris which often blankets the stream bed after logging can reduce the aquatic insect biomass (the primary food source of juvenile salmonids) by as much as 50 per cent as compared to unaltered areas.

Continuing studies on the removal of the forest canopy indicate that this changes the hydrological nature of the study stream, producing floods that displace many of the juveniles to unfavorable downstream areas.

King Salmon Studies — A method of partial separation of king salmon stocks by scale characteristics has been successful. These differences are not great enough to classify stocks from individual rivers, but are of sufficient magnitude to separate Alaskan from non-Alaskan king salmon in various mixed stock fisheries. Results indicate that just over 50 per cent of the 1973 sport and commercial king salmon harvested in the Juneau area were of Alaskan origin. In the Ketchikan area 28.5 per cent of the sport troll harvest of king salmon were of Alaskan origin, and on the Fairweather Grounds almost no king salmon of Alaskan origin were harvested.

During the last week of April and the first week of May, catch per unit of effort data collected in the commercial gill net and sport troll fisheries indicated an extremely weak return of maturing Taku River king salmon. All commercial and sport fishing was closed from May 12 through June 15 in the major schooling areas to protect the returning run. Resulting escapements to the various spawning tributaries were disappointingly low.

Catalog and Inventory Studies — A saltwater creel census was conducted in the Juneau area during 1974. The census revealed that 3,110 king, 3,091 coho, 843 pink and 73 chum salmon were taken by boat anglers in the Juneau area from May 6 through Sept. 2. Census estimates show that 23,742 anglers spent 105,582 hours and 9,653 boat trips to catch 7,117 salmon and 2,563 halibut.

An evaluation of a Ross Fineline Echosounder for determining the distribution and abundance of fish in lakes was made. Test results indicate the instrument is capable of detecting individual fish within six inches of the lake bottom. Further modifications will include the addition of an oscilliscope and tape deck which will allow separation of fish

species by length and determine their abundance.

The effect of Dolly Varden on the production of stocked coho smolts in lakes is being studied in a cooperative program with the National Marine Fisheries Service. Preliminary work was accomplished this year at Osprey Lake on Baranof Island. Distribution, size food and abundance of Dolly Varden were also assessed. In 1975, coho salmon young will be stocked in the lake and the degree of competition between the two species will be determined.

Steelhead-Cutthroat Life History Study — The anadromous fish study "Steelhead and Sea-Run Cutthroat Life History in Southeastern Alaska" was continued during 1974. Adult steelhead were trapped as they entered Petersburg Creek in the spring and 41 per cent were found to be repeat spawners in a run of 369 fish. A small portion of this run was utilized for an experimental egg take. These eggs will be hatched and reared to smolt size at the Petersburg hatchery. The smolts will then be marked and transported to Petersburg Creek for imprinting and subsequent release to salt water. Returning adults in 1976 and 1977 will be checked to determine the contribution of the marked fish to the total run.

This year, the cutthroat trout study revealed that two separate populations of these fish use the Petersburg Creek watershed. One population is anadromous and enters the system in the fall and overwinters in Petersburg Lake. These fish migrate to sea in the spring. The second population is a resident group that never leaves the system. They spawn in tributaries to the lake, then use the lake for rearing and maturing.

Mendenhall Pond Rearing — During 1974, coho and king salmon fry were successfully reared to the smolt stage at the experimental Mendenhall rearing ponds near Juneau. A total of 89,246 coho and 93,075, king salmon were reared and released to the Mendenhall River as smolts. In addition 124,309 king salmon reared at the department's Crystal Lake Hatchery were imprinted and released at the facility. Adult returns of the coho are expected in 1975, and the kings should contribute to the local saltwater fisheries from 1975 through 1977.

In the fall of 1974, a total of 140 wild adult coho from natural production returned to the rearing facility and 114 were artificially spawned. Sixty-two females yielded 180,000 eggs. These eggs are presently being hatched at the Crystal Lake Hatchery for subsequent return and rearing at the Mendenhall Ponds. In addition, 210,000 coho salmon young are being experimentally reared for release into the Juneau area as smolts in the spring of 1975.

REGION II (Southcentral, Bristol Bay, Kodiak)

Programs conducted in 1974 continued to be directed toward the regulation of the harvest of some of the most intensively utilized fisheries in Alaska, and the enhancement of additional recreational fisheries where biologically feasible to meet increasing public demands.

Lake Research Study

The lake research program in the Matanuska Valley continued during 1974 on 10 selected study lakes.

Various strains of rainbow trout and silver salmon are being comparatively evaluated to determine desirable management characteristics through stockings at differing sizes, times of year and into waters of varying natural productivity or capacity to produce food for fish.

Evaluation and ranking of managed lakes is being determined through limnological sampling on a bi-monthly basis. Plankton and benthic samples monitor the biological productivity. Water chemistry, dissolved oxygen and temperatures indicate changes in the physical characteristics of the lakes.

The overall goal of this program remains the same—to increase the return of stocked fish to the anglers' creel.

Trophy Rainbow Trout Studies

The Lower Talarik Creek rainbow trout study was continued during 1974 to further existing knowledge of the life history requirements of the trophy rainbow trout stocks inhabiting the Kvichak River drainage.

A weir was installed in lower Talarik Creek on April 29, and an estimated 1,100-1,200 rainbow trout migrated upstream to spawn. Additional biological data collected included age, weight, length and sex. All fish were tagged for future determinations of migrational timing and routes.

Information collected to date and that obtained in the next year will greatly assist the management biologist to wisely regulate, harvest and protect this unique resource.

Russian River Red Salmon Study

An intensive creel census was continued on the Russian River red salmon sport fishery. The estimated harvest of red salmon was 6,440 and 8,500 for early and late runs. Effort expanded during these runs was estimated at 11,090 and 10,030 man-days respectively.

The research weir located at the outlet of lower Russian Lake provided total enumeration of the adult escapement. Early and late run escapements were 13,155 and 24,000. The early run escapement was considered excellent for this system. Late run escapement was substantially below the 13-year mean of 39,000.

Prior investigation revealed that a small, spring fed system in upper Russian Lake, Bear Creek, is the primary spawning system of the late run red salmon. In 1974, a cooperative project of the ADF&G—U. S. Forest Service turned over gravel in the system and flushed out the fine sand and debris. It is hoped this project will increase egg and fry survival for this area.

Kenai Peninsula King Salmon Fisheries

A six-day king salmon punch card fishery was held on the Kenai Peninsula. Although final data has not been completed, preliminary figures indicate 11,300 punch cards were issued to prospective anglers. Punch cards returned to date show that 680 anglers were successful. The estimated harvest was 1,000 king salmon. Escapement counts made of the lower streams indicate an average minimum escapement of 2,480. The harvest and effort dropped considerably this season in the Deep Creek saltwater king salmon fishery due to rough waters in Cook Inlet. The estimated harvest was 600 fish and effort was 4,800 man-days. A creel census was conducted for the first time on the Kenai River between the outlet of Skilak Lake and the Moose River confluence. An estimated sport harvest of 1,300 king salmon was recorded. Effort was estimated at 11,300 man-days.

Resurrection Bay Silver Salmon Study

This past year the Resurrection Bay silver salmon fishery received 24,520 man-days of effort, with an estimated harvest of 18,800 silver salmon. A total of 2,800, or 15 per cent of the harvest, was comprised of marked silver salmon from Bear Lake. Indications to date suggest good silver escapement. The 1974 Bear Lake smolt outmigration was 70,000, which is substantially above pre-rehabilitation levels.

Logging Investigations

Kodiak area sport fish biologists obtained essential physical data on eight lakes and five streams within the boundaries of the proposed Paranosa timber sale on Afognak Island. All pertinent data are being coordinated with the U. S. Forest Service to protect recreational fisheries on Afognak Island.

King Salmon Escapement-Upper Cook Inlet

Enumeration of chinook salmon escapement in key upper Cook Inlet streams was conducted in 1974 for the second consecutive year. A total of 15,800 spawning king salmon were estimated to be in the streams surveyed during 1974, as compared to a total of 15,000 in 1973. While total escapement appears nearly identical for the two years, the 1974 escapement reflects a significant increase in the west side Susitna River tributaries and a marked reduction in the east side tributaries.

Talachulitna River Investigations

Concern over increased angling pressure on the Talachulitna River, long noted for its quality grayling and rainbow trout fishing, necessitated a study to provide fish population estimates, age and growth data. In addition, a creel census program to obtain angling effort and harvest data was conducted. The 1974 sport harvest of rainbow trout and grayling was not considered excessive because abnormally low stream flows made float trips difficult.

Indications are that, in a year of normal stream flows, increasing angler effort and harvest can be expected to stem from new lodge operations and increasing numbers of recreational fishermen in general. Future departmental surveillance will be required to insure that this resource is adequately maintained.

Egg Takes

In the spring of 1974 an egg take of wild rainbow trout was undertaken for the purpose of establishing a hatchery brood stock of native Alaskan trout.

A total of 55,100 rainbow eggs were taken from Bristol Bay, and 20,700 from the Swanson River area of the Kenai Peninsula. The brood fish obtained will be held at the Fire Lake-Ft. Richardson hatchery complex until they reach maturity and can be artificially spawned.

Arctic Char

Preliminary investigations of Wood River arctic char were conducted at Lake Aleknagik to determine feasibility of controlling predation upon downstream migrating sockeye salmon smolts.

Various capture techniques, distribution characteristics and recreational values were studied. The Wood River arctic char were determined to be quite valuable from a recreational standpoint and recommendations made regarding future char control techniques reflected the need for nonlethal predation control.

Kenai Razor Clam Project

A creel census was again conducted on the east side Cook Inlet razor clam beaches. Preliminary estimates indicate that 25,700 man-days of effort were expended to harvest 895,000 razor clams. Clam Gulch continued to be the most popular area and accounted for 62 per cent of the harvest and 68 per cent of the effort. Diggers averaged 35.4 clams per trip to Clam Gulch. Approximately 34 miles of additional beach were surveyed to determine the extent of existing razor clam populations.

Lake Rehabilitation

During FY-1974 a total of 12 Southcentral Alaska lakes, with approximately 1,000 surface acres, were chemically rehabilitated to remove undesirable species of fish. Following treatment with the fish toxicant, rotenone, the lakes were restocked with game fish. Recreational fishermen can normally expect outstanding angling following rehabilitation due to increased lake productivity achieved by the elimination of competitive scrap fish.

Land Acquisition

Negotiations were completed for purchase of public access to the lower Pasagshak River on Kodiak Island. Approximately 12 acres of land were obtained which will provide direct access to over one mile of streambank and indirect access to an additional four miles of streambank. Over 5,000 people hunted and fished the Pasagshak River area in 1973 and the return of this river to public domain marks a major accomplishment for outdoor recreationalists in the Kodiak Island complex.

REGION III (Arctic Interior)

Region III, Arctic Interior, consists of some 400,000 square miles north of the Alaska Range, including the Seward Peninsula and North Slope.

Management

From the inception of the trans-Alaska Pipeline haul road construction in December 1973 until mid-June 1974, when the Department of Fish and Game monitoring team was put into the field, the Region III Sport Fish Division was assigned all monitoring functions along the haul road. A substantial effort has continued toward assisting the joint State-Federal pipeline surveillance team with knowledge of the North Slope fishery resources to minimize the impact of haul road construction on the aquatic environment and fish populations.

Early in 1974, construction began on the Moose Creek Dam on the Chena River above Fairbanks, causing increased reviewing and monitoring activity for the Department of Fish and Game. Because the Chena River has the largest grayling, the Sport Fish Division staff is playing an active and aggressive role in the planning and monitoring of the project.

Inventory and Cataloging of Arctic Area Waters

In 1974, major emphasis was placed on the special advisory function to the Joint Fish and Wildlife Advisory Team during construction of the oil pipeline haul road, studies of fish population in Prudhoe Bay adjacent to offshore drilling sites and other development projects and the continuation of annual aerial indexes of spawning char populations.

A Life History Study of Sheefish and Whitefish in Alaska

During a tag and recovery program concentrating on the middle Yukon River tributaries from 1971-1974, 1,257 sheefish were marked and 81 recovered. Recovery at Rampart of fish tagged in the lower Yukon River offers the first conclusive proof that sheefish spawning in the Yukon River above Rampart and in the upper Koyukuk River come from the lower Yukon River. Fish tagged at mouths of tributary rivers of the middle Yukon in early summer evidently belong to local populations as tag recoveries were in the same area as tagged. Age and growth, food habits and taxonomic studies of middle Yukon River sheefish were completed.

Searches for spawning grounds of middle Yukon River sheefish were conducted in the area between Rampart and the Yukon River haul road. No grounds were found. It is suspected that spawning may occur primarily in the main Yukon River above Stevens Village.

Inventory and Cataloging of Interior Alaska Waters — Fairbanks District

Grayling species composition, population level and size makeup were determined for the Salcha River near Fairbanks. This work was concentrated around the trans-Alaska pipeline crossing to provide an index for future monitoring during actual pipeline construction.

Population estimates of whitefish were made in the Chatanika River, which is the location of a major whitefish spear fishery during September and October. A spawning population of 29,100 whitefish was estimated.

Survival of stocked silver salmon in Harding Lake in the presence of predatory species such as pike has been fair with silvers caught in test nets having fork lengths of 18-19 inches and weighing up to 2½ pounds.

Inventory and Cataloging of the Sport Fish and Sport Fish Waters of Interior Alaska Tok District

The major emphasis placed on this project was to explore and evaluate all potential sport fishery resources from Tok to the Canadian border. Numerous lakes and streams were tested, surveyed and censused, including some remote fly-in waters. Additional data on populations of silver salmon, grayling and whitefish in the Delta-Clearwater River were obtained to supplement the 1973 study.

Evaluation of Interior Waters With Emphasis on Managed Lakes

Now in its third year, this study is designed to provide information for more efficient

management of Interior stocked waters. Poststocking policies of several lakes are being monitored continuously and intensive studies of stocking rates, timing, size and race of fish stocked and interspecies competition are underway to formulate stocking recommendations for optimum fish survival and growth. Creel census programs were emphasized on important sport fishing waters of the area, including Quartz Lake, which continues to be the most heavily utilized rainbow trout lake of the Interior, often hosting more than 500 anglers on a summer weekend.

Distribution, Abundance, and Natural History of the Arctic Grayling in the Tanana River Drainage

A follow-up to an extensive tag and recapture and population dynamics study on the grayling in the Goodpaster River near Big Delta was completed and documented. Experiments designed to assess the effect of AC electrofishing equipment on grayling were continued.

Creel censuses were conducted on the upper Chena, Salcha and Chatanika rivers to provide continuous monitoring of these important sport fisheries.

Statewide Fish Stocking:
Fish stocked, by species during 1974

Region	Fish Species	Number
I	Rainbow	21,700
	Silver Salmon	324,704
	King Salmon	219,486
II	Silver Salmon	829,700
	King Salmon	204,000
	Rainbow	727,740
	Grayling	266,400
III	Silver Salmon	110,320
	Rainbow	558,900
	Grayling	250,100
	Total	3,153,050

GROSS COMFISH RECEIPTS 1965 THROUGH 1974

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

CODE NO.	TYPE OF LICENSE	1965 $	1966 $	1967 $	1968 RESTRICTED SALMON NET $	1969 MORATORIUM POSSIBLE RESTRICTED SALMON NET $	1970 ANTICIPATED RESTRICTION NET GEAR $	1971 GEAR ELIGIBILITY REQUIREMENT REMOVED $	1972 REGISTRATION IN AREA $	1973 BRISTOL BAY SLIDING GEAR SCALE $	1974 LIMITED ENTRY INTERIM-USE PERMIT REQUIRED $
270	Vessel	131,932.00	140,650.00	138,366.00	143,955.00	146,898.00	161,863.00	156,490.00	156,624.00	164,194.00	152,486.00
271	Troll	35,025.00	34,470.00	33,515.00	36,605.00	42,740.00	48,450.00	42,965.00	43,185.00	56,910.00	59,780.00
272	Long Line	11,935.00	19,830.00	15,770.00	9,620.00	18,530.00	29,740.00	29,260.00	33,075.00	52,005.00	40,540.00
273	Drift Gillnet	86,150.00	97,425.00	98,410.00	93,820.00	107,100.00	125,800.00	116,490.00	117,100.00	142,075.00	100,655.00
274	Set Gillnet	29,005.00	31,795.00	29,955.00	30,995.00	33,950.00	37,355.00	34,460.00	35,600.00	38,720.00	36,145.00
275	Beach Seine	1,490.00	700.00	725.00	600.00	975.00	1,075.00	1,210.00	1,175.00	1,385.00	1,120.00
276	Purse Seine	125,810.00	126,500.00	113,270.00	135,080.00	118,790.00	131,150.00	126,160.00	119,290.00	128,590.00	131,700.00
277	Beam Trawl	750.00	712.50	1,087.50	675.00	650.00	750.00	1,100.00	1,600.00	2,900.00	4,750.00
278	Otter Trawl	1,400.00	1,850.00	3,200.00	1,700.00	1,650.00	2,550.00	4,550.00	5,850.00	7,900.00	14,050.00
279	Shellfish Pots	10,365.00	11,175.00	12,060.00	14,970.00	17,430.00	18,225.00	14,415.00	17,685.00	29,025.00	35,445.00
280	Clam Diggers-40%GF	364.00	246.00	290.00	336.00	290.00	382.00	670.00	928.00	904.00	652.00
281	Res. Commercial-40%GF	44,124.00	50,260.00	48,944.00	59,488.00	50,436.00	57,480.00	56,704.00	57,476.00	66,500.00	62,796.00
282	Non-Res. Comm. - 40% GF	38,418.00	43,224.00	71,220.00	77,844.00	75,816.00	92,616.00	76,656.00	81,132.00	76,752.00	67,212.00
283	Scallop Dredges	.00	.00	.00	.00	2,500.00	900.00	350.00	350.00	250.00	450.00
286	Comm. Ext. Fees	.00	.00	.00	.00	.00	1,665.00	2,925.00	2,970.00	6,750.00	7,920.00
SUBTOTAL		516,768.00	558,837.50	566,812.50	605,688.00	617,755.00	710,001.00	664,405.00	674,040.00	774,360.00	715,701.00
560)	60% To	546.00	369.00	435.00	504.00	435.00	573.00	1,005.00	1,392.00	1,356.00	978.00
561)	Fishermen's	66,186.00	75,390.00	73,416.00	89,232.00	75,654.00	86,220.00	85,056.00	86,214.00	99,750.00	94,194.00
562)	Fund	57,627.00	64,836.00	106,830.00	116,766.00	113,724.00	138,924.00	114,984.00	121,698.00	115,128.00	100,818.00
SUBTOTAL		124,359.00	140,595.00	180,681.00	206,502.00	189,813.00	225,717.00	201,045.00	209,304.00	216,234.00	195,990.00
TOTAL		641,127.00	699,432.50	747,493.50	812,190.00	807,568.00	935,718.00	865,450.00	883,344.00	991,094.00	911,691.00
	NUMBER OF LICENSES SOLD EACH YEAR										
270	Vessel	8,811	9,370	9,639	9,926	9,972	10,877	10,710	10,791	11,777	11,338
271	Troll	1,922	1,944	1,889	2,103	2,303	2,567	2,353	2,413	3,190	3,238
272	Long Line	419	733	556	342	700	1,109	1,074	1,221	1,918	1,503
273	Drift Gillnet	3,257	3,654	3,765	4,050	4,374	4,710	4,779	4,611	6,425	4,248
274	Set Gillnet	2,629	2,845	2,610	2,708	3,011	3,053	3,062	3,112	3,504	3,137
275	Beach Seine	44	40	38	38	64	77	86	81	91	76
276	Purse Seine	1,237	1,236	1,202	1,291	1,207	1,311	1,323	1,147	1,341	1,372
277	Beam Trawl	20	19	24	18	13	13	16	32	54	79
278	Otter Trawl	12	17	38	26	39	41	67	87	106	167
279	Shellfish Pots	355	425	474	524	593	617	576	605	959	1,170
280	Clam Diggers	114	102	127	143	135	149	237	336	356	262
281	Res. Commercial	11,052	12,565	12,236	14,872	12,609	14,370	14,176	14,369	16,625	15,699
282	Non-Res. Commercial	6,403	6,847	5,936	6,437	6,318	7,718	6,388	6,761	6,396	5,601
283	Scallop Dredges	0	0	0	0	18	8	7	5	5	7
286	Comm Ext. Fees	0	0	0	0	0	0	0	0	0	0
TOTAL		36,275	39,797	38,534	42,533	41,347	46,620	44,854	45,571	52,747	47,397

GROSS SPORT FISH AND GAME LICENSE RECEIPTS 1965 THROUGH 1974

PREPARED JANUARY 15, 1975

RECEIPT CODE NUMBER	TYPE OF LICENSE	1965 $	1966 $	1967 $	1968 $	1969 $	1970 $	1971 $	1972 $	1973 $	1974 $
401	R-FISHING	130,490	142,450	143,095	167,555	177,905	197,210	202,515	220,695	239,415	252,965
402	R-HUNTING	136,934	126,805	119,476	135,366	146,475	155,036	150,171	139,699	167,125	137,893
403	R-HUNT - TRAP	8,300	8,380	7,320	7,280	9,090	10,420	8,540	8,420	10,590	11,090
404	R-FISH - HUNT	183,732	179,016	182,712	210,252	227,328	275,412	308,232	331,500	359,244	388,728
405	R-HUNT - FISH - TRAP	29,460	33,225	32,340	35,850	44,025	59,325	62,505	65,805	80,145	93,585
406	NR-FISH 10 DAY	36,680	44,735	57,770	70,155	82,495	86,935	88,310	97,430	221,660	217,020
407	NR-FISHING	107,000	106,330	132,200	158,200	175,530	207,900	184,050	192,690	287,480	320,180
408	NR-HUNTING	48,340	51,160	58,930	68,150	78,170	90,040	80,330	80,670	141,320	132,720
409	NR-FISH - HUNT	28,880	33,400	36,400	47,400	54,500	70,120	69,520	71,340	65,560	67,200
410	NR-HUNT - TRAP	700	900	400	1,400	1,800	900	1,600	1,000	4,600	4,800
411*	REG. GUIDES & MASTERS	14,200	13,850	16,600	17,950	17,250	17,300	17,600	18,950	11,650	0
412*	ASS'T. GUIDE	545	770	1,195	1,945	2,215	2,290	2,775	2,475	330	0
413**	RES. FUR DEALER TAXID.	2,220	2,460	2,580	2,740	3,020	3,180	3,320	3,420	0	0
414**	NR. FUR DEALER TAXID.	700	700	700	600	1,000	1,300	700	600	0	0
415	FUR-FISH&GAME FARM	30	35	50	35	40	80	105	90	400	500
419*	CLASS "A" ASST GUIDE	0	0	0	0	0	520	650	790	180	0
420	DUPLICATE LICENSE	0	0	0	0	0	0	0	2,308	3,074	3,222
421	RES. FUR DEALER	0	0	0	0	0	0	0	0	2,520	2,720
422	NON.RES. FUR DEALER	0	0	0	0	0	0	0	0	200	300
423	RES. TAXIDERMIST	0	0	0	0	0	0	0	0	2,700	2,100
424	NON. RES. TAXIDERMIST	0	0	0	0	0	0	0	0	450	0
401-B	RES. BLIND SPORT FISH	0	0	2	3	1	4	1	1	2	3
405-25c	HUNT - FISH - TRAP	1,263	1,166	1,088	1,229	1,271	1,339	1,398	1,484	1,664	1,564
417-3B	R-TRAPPING	2,208	2,058	1,374	1,988	2,571	2,445	2,016	2,466	3,411	2,670
SUBTOTAL		731,682	747,500	794,232	928,098	1,024,686	1,181,756	1,184,338	1,242,333	1,603,720	1,639,260
416	BIG GAME TAGS	236,445	290,545	303,510	346,350	384,975	424,415	393,840	404,410	753,625	744,950
TOTAL		968,127	1,038,045	1,097,742	1,274,448	1,409,661	1,606,171	1,578,178	1,646,743	2,357,345	2,384,210
401	RES. FISHING	26,098	28,430	28,619	33,511	35,581	39,442	40,503	44,139	47,883	50,593
402	RES. HUNTING	19,562	18,115	17,068	19,338	20,925	22,143	21,453	19,957	23,875	19,699
403	RES. HUNT - TRAP	830	838	732	728	909	1,042	854	842	1,059	1,109
404	RES. HUNT - FISH	15,311	14,918	15,226	17,521	18,944	22,951	25,686	27,625	29,937	32,394
405	RES. HUNT - FISH - TRAP	1,964	2,215	2,156	2,390	2,935	3,955	4,167	4,387	5,343	6,239
406	NR-FISH 10 DAY	7,336	8,947	11,554	14,031	16,499	17,387	17,662	19,486	22,166	21,702
407	NR-FISHING	10,700	10,639	13,220	15,820	17,553	20,790	16,405	19,269	14,374	16,009
408	NR-HUNT	4,834	5,116	5,893	6,815	7,817	9,004	8,033	8,067	7,066	6,636
409	NR-HUNT - FISH	1,447	1,670	1,820	2,370	2,725	3,506	3,476	3,592	1,639	1,680
410	NR-HUNT - FISH - TRAP	7	9	4	14	18	9	16	10	23	24
411	REG. GUIDES & MASTERS	284	277	332	359	345	346	352	379	233	0
412	ASS'T GUIDES	109	154	239	389	443	458	555	495	66	0
413	RES. FUR DEALER TAXID.	111	123	129	137	151	159	166	171	0	0
414	NR FUR DEALER TAXID	7	7	7	6	10	13	7	6	0	0
415	FUR-FISH-GAME FARM	6	7	10	7	8	16	21	18	4	5
419	CLASS "A" ASST GUIDE	0	0	0	0	0	52	65	79	18	0
420	DUPLICATE LICENSE	0	0	0	0	0	0	0	1,154	1,537	1,611
421	RES. FUR DEALER	0	0	0	0	0	0	0	0	126	136
422	NON. RES. FUR DEALER	0	0	0	0	0	0	0	0	2	3
423	RES. TAXIDERMIST	0	0	0	0	0	0	0	0	54	42
424	NON. RES. TAXIDERMIST	0	0	0	0	0	0	0	0	3	0
401-B	RES. BLIND SPORT FISH	0	0	2	3	1	4	1	1	2	3
405-25c	RES. HUNT-FISH-TRAP	5,048	4,664	4,354	4,919	5,085	5,359	5,595	5,936	6,658	6,256
417-3B	R-TRAPPING	736	686	458	638	857	815	672	822	1,137	890
416	BIG GAME TAGS	6,387	7,597	8,640	9,814	11,055	12,602	11,955	11,866	8,339	8,331
TOTAL SOLD EACH YEAR BY CLASS		100,777	104,472	110,463	128,810	141,861	160,058	159,644	168,301	171,544	173,352