

## **Regional Information Report 5J12-04**

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# **Alaska Fisheries Enhancement Program 1993 Annual Report**

by

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**J. S. Holland, Ph.D**

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Divisions of Sport Fish and Commercial Fisheries



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# PREFACE

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This report marks a beginning of a new era in the recounting of fisheries enhancement information in the State of Alaska. Up to now, the single repository for all fisheries enhancement information has been the Fisheries Rehabilitation, Enhancement and Development (FRED) Division's "Annual Report to the Alaska State Legislature," published annually between 1973 and 1992. With the advent of the Commercial Fisheries Management and Development (CFMD) Division in 1993, both the department's Commercial Fisheries Division and the FRED Division ceased to exist, but the functions of both will continue under the new division. In order to continue satisfying the former FRED Division's statutory mandate to submit an annual report to the legislature, we now initiate, for 1993, the "Alaska Fisheries Enhancement Program, 1993 Annual Report."

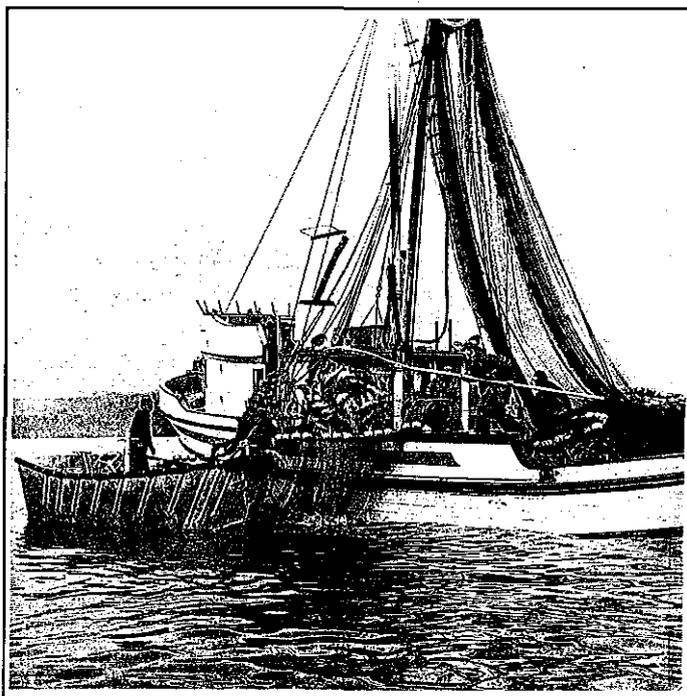
The new report has a format that will provide all of the essential enhancement information provided in the past. By eliminating the built-in redundancy of the former format and standardizing and combining information between the state and private nonprofit sectors, our goal is to reduce the overall size of the document.

Fisheries enhancement in Alaska is in a state of tremendous flux. The program has shifted its focus away from general fish production to concentrating its resources on specialized production and increasing services to the fisheries enhancement industry, while also maintaining the necessary functions of planning, permitting, and reporting. The private sector enhancement industry is coping with the operation of hatcheries, including those contracted by the state, and meeting many challenges of changing fishery markets.

One of the major, perhaps unwritten goals of the early modern enhancement program was to prove

that it could work; i.e., that worthwhile additions to commercial, sport, and personal-use fisheries could be made on a sustained basis. There is no longer any question that Alaska's enhancement efforts can produce commercially viable numbers of fish for the common-property fisheries. The challenge now is to go beyond this primary goal and to utilize the skills, thus far attained, to fine-tune the production of enhanced fish to maximize the benefits of the state's fisheries to all of its citizens.

As the fisheries enhancement program in Alaska continues to evolve, the information concerning the production of fish will continue to be vital to those trying to understand the enhancement industry and Alaska's fisheries. It is one of the duties of the state to record and publish such information. With this change in mind, we go forward with a new report series.



*Figure 1. A commercial seine fishing vessel.*



# FUNCTIONS AND SERVICES

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Alaska's fisheries enhancement program is undergoing a transformation. In the new scenario, the private sector is assuming a role as the primary producer of salmon to enhance the state's fisheries. The public sector's role, on the other hand, now encompasses planning, permitting, technological development, data management, and technical services to the fisheries enhancement community.

Upon merging the FRED and Commercial Fisheries Divisions to form the Department of Fish and Game's (ADF&G) new CFMD Division, the statutory responsibilities of the former FRED Division now lie with the CFMD Division. As such, the CFMD Division will continue providing the same services and have the same function as the FRED Division, with a diminished role in hatchery production.

The CFMD Division will continue working with the private sector on region-wide salmon planning. This function involves working with regional planning teams and coordinating planning efforts throughout nine planning regions, including a new drainage-wide salmon plan for the Yukon River.

The Private Nonprofit (PNP) Program continues to oversee the aquaculture industry, including issuance of all permits required by statute to operate hatcheries, transfer eggs or fish, or release fish into state waters.

The enhancement program generates a great deal of information that contributes to the understanding and regulation of the industry. This information is collected, archived, and made available in reports such as this.

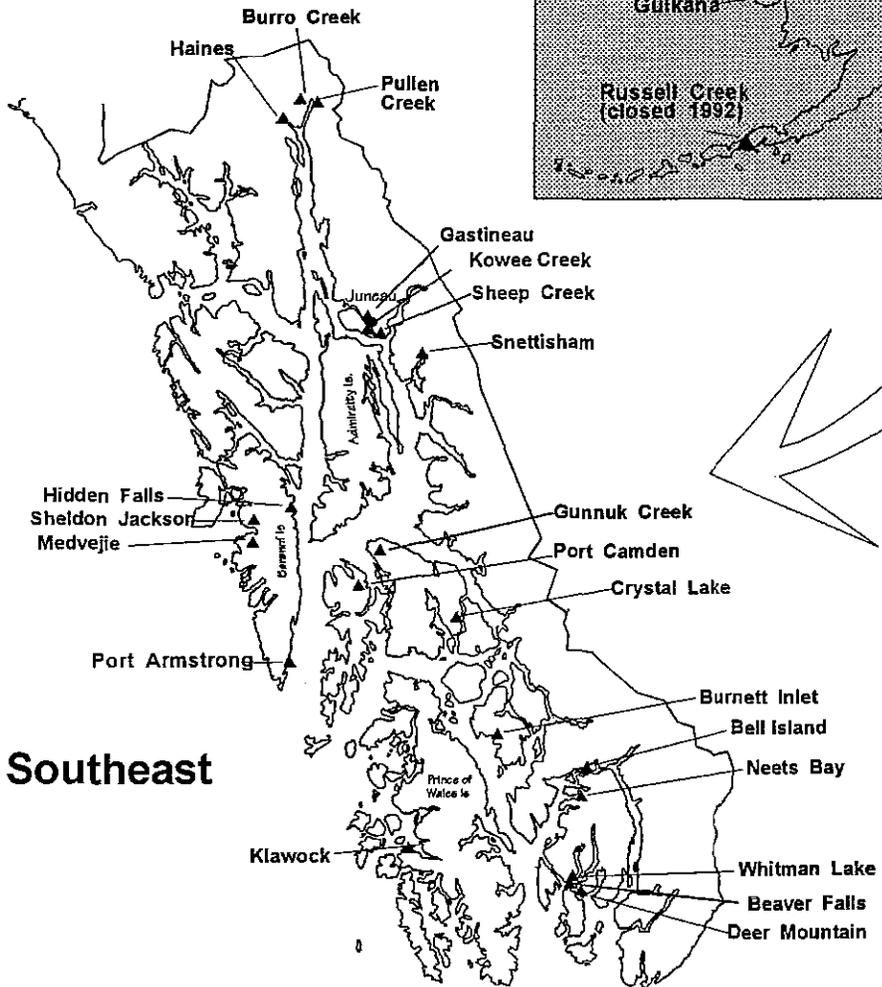
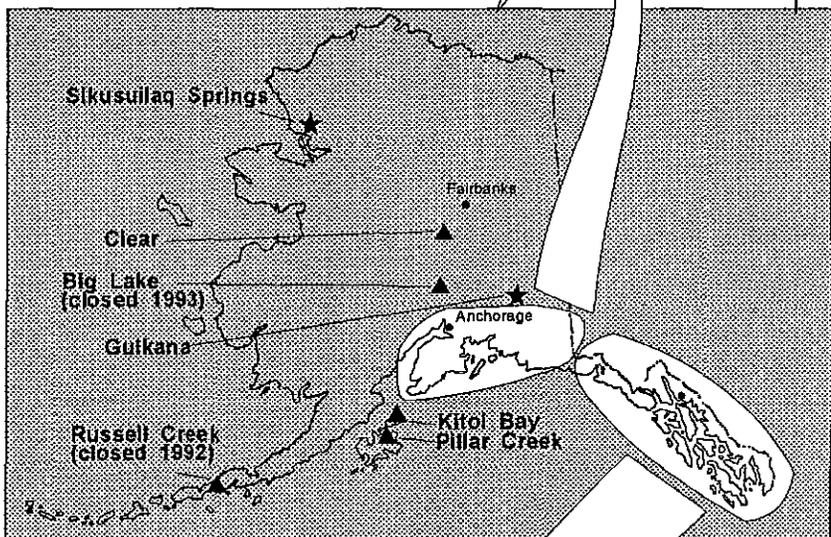
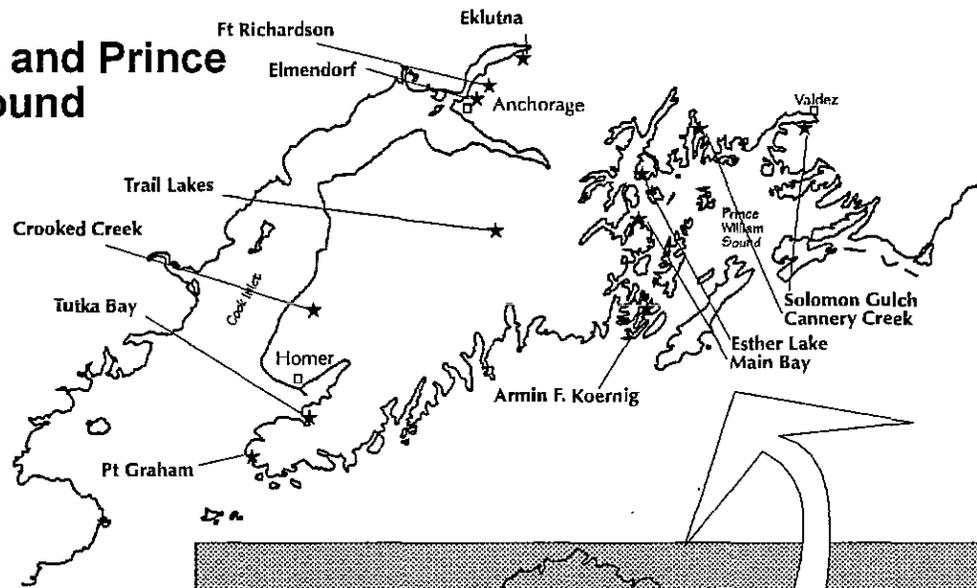
The CFMD Division provides technical services to five laboratories across the state. The limnology, genetics, coded wire tag, and two pathology

laboratories all contribute to the well-being of both the salmon enhancement program and the state's mariculture industry.

Resource economics provided by the division continues to play a major role in the statewide enhancement program. The CFMD Division continues to operate five hatcheries, including Crystal Lake, Deer Mountain, Snettisham, Clear, and Sikusuilag Springs Hatcheries, and to cooperate with the department's Sport Fish Division in its operation of the Fort Richardson and Elmendorf Hatcheries and Broodstock Development Center. Several of the state-operated hatcheries primarily produce salmon for sport harvest, and one, Snettisham, has international treaty fish production obligations.

The PNP enhancement program consists almost entirely of hatchery operations by regional fishermen's associations, although a significant number of non-association hatcheries are in operation, including one run by the City of Klawock. Thirty-eight salmon hatcheries are operated in the state (Figure 2). This includes seven operated by the state, eleven owned by the state but operated by the private sector, and twenty owned and operated by the private sector. The primary role of these hatcheries is to contribute to the Alaska's commercial, sport, subsistence, and personal-use fisheries. The contracting of state hatcheries to the private sector requires that these contracts be monitored and that all parties to the contracts fulfill their contractual obligations.

# Cook Inlet and Prince William Sound



## Locations of Hatcheries within Alaska

# CURRENT PROGRAMS

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## AREA

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### Southern Southeast

Southern Southeast CFMD Division staff support three state-owned hatcheries: Klawock and Beaver Falls Hatcheries, operated by the private sector, and Deer Mountain Hatchery, operated by the state. The operation of Klawock Hatchery was contracted to the City of Klawock in July 1993. Beaver Falls Hatchery has been operated by the Southern Southeast Regional Aquaculture Association (SSRAA) since 1992. SSRAA also operates its Whitman Lake and Neets Bay Hatcheries. Other privately owned and operated hatcheries in the area include Bell Island, and Burnett Inlet. Additionally, the Metlakatla Indian Community operates the Tamgas Hatchery.

The Deer Mountain Hatchery produces chinook and coho salmon and triploid rainbow trout for projects around the Ketchikan area. Ownership of the hatchery will revert back to the City of Ketchikan on 1 July 1994. The city owns the land and hatchery building, and was notified in 1993 that the state will no longer operate the facility beyond fiscal year (FY) 1994. The city published a Request For Proposals for a new operator and received one

response from the Ketchikan Indian Corporation. The City Council voted unanimously to lease the facility to the corporation.

Staff initiated a major fish pass project in 1993 at Old Franks Lake (Figure 3). A cooperative agreement was signed with Klawock Hatchery for the incubation and rearing of brood year (BY) 1993 coho salmon from Salmon Lake (part of the Karta River system), a stock designated for colonization of Old Franks Lake.

### Central Southeast

Central Southeast CFMD Division staff support operations and projects in the Petersburg/Wrangell area, including Crystal Lake Hatchery operated by the state. There are several private enhancement facilities and projects in the area, including Gunnuk

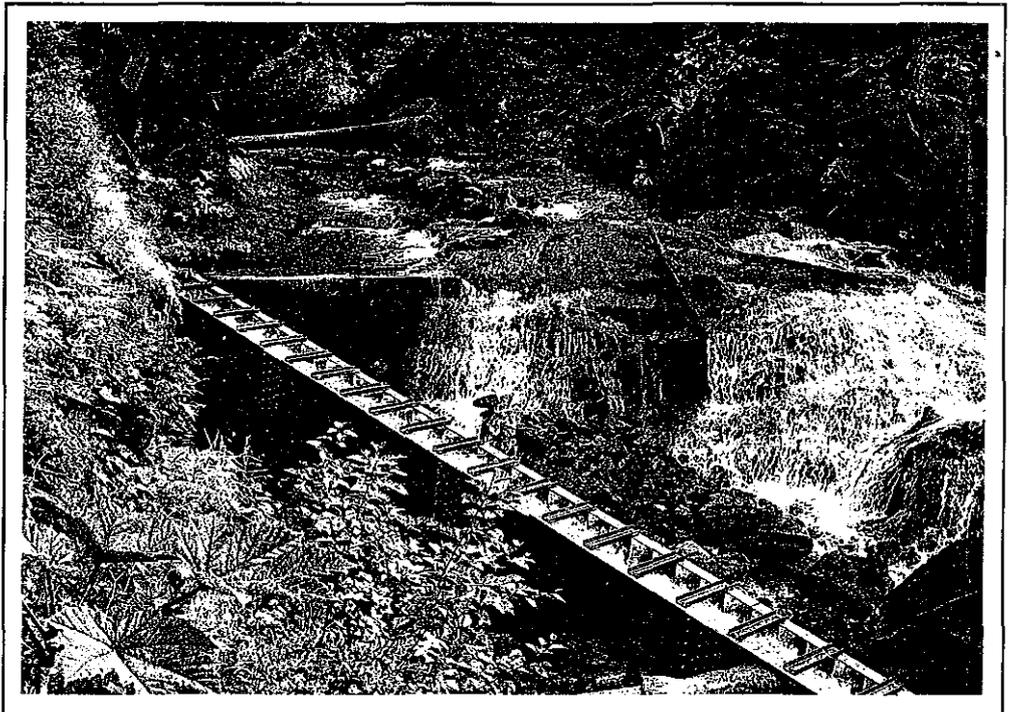


Figure 3. A fish pass in Southeast Alaska.

Creek, Port Camden, Port Armstrong, and Earl West Cove.

Crystal Lake Hatchery produces coho and chinook salmon for release around Petersburg, and also provides eggs to various projects throughout Southeast. The facility serves as a central incubation facility for several joint ADF&G/U.S. Forest Service (USFS) fish pass bioenhancement projects.

### Northern Southeast

In Northern Southeast, CFMD staff support a state-owned and -operated hatchery, Snettisham, as well as two federal hatcheries, Auke Bay and Little Port Walter. There are also eight privately operated facilities in the area. The Northern Southeast Regional Aquaculture Association (NSRAA) operates two of these, Hidden Falls, which NSRAA has operated for the state since 1988, and Medvejie Creek Hatchery. Other private organizations operate Burro Creek, Gastineau, Sheep Creek, Sheldon Jackson, and Port Armstrong Hatcheries.

In 1993, Snettisham Hatchery was retrofitted to function as a central incubation facility for sockeye salmon. The new facility is designed to service a diverse number of sockeye salmon lake

enhancement projects throughout Northern Southeast. The new program will expand the sockeye salmon smolt project to provide the facility with cost-recovery potential, a prerequisite before transferring the facility to a PNP organization. The chinook salmon program that benefits local sport anglers also continues. These projects have been part of the Snettisham program for several years, but the new facility incorporates new systems that provide better water quality and a more efficient operation.

In 1993, staff operated a smolt-sampling project at Crescent Lake for the entire emigration period. Objectives included estimating the proportion of enhanced smolts from several different strategies: stocking fry, presmolts, and smolts. Results indicate the presmolts produce the largest benefit; adult returns will define the difference more adequately.

Efforts at Speel Lake were limited to collecting basic age and size information. Results have indicated that smolt size at both lakes is quite small for sockeye salmon—in some cases, below the presumed threshold size for survival. This information corresponds with the division's Limnology Section's findings with regard to plankton abundance: that production from the lake is density-dependent and may be overpopulated with sockeye salmon fry. In other words, too many adults are spawning in the lake, resulting in more fry than the lake's forage base can support.

### Prince William Sound

CFMD enhancement staff in the Prince William Sound area support a number of projects, including three state-owned hatcheries, Cannery Creek, Main Bay, and Gulkana, all operated by the Prince William Sound Aquaculture Corporation (PWSAC). PWSAC also operates several hatcheries of its own, Armin F. Koernig and Esther Lake,

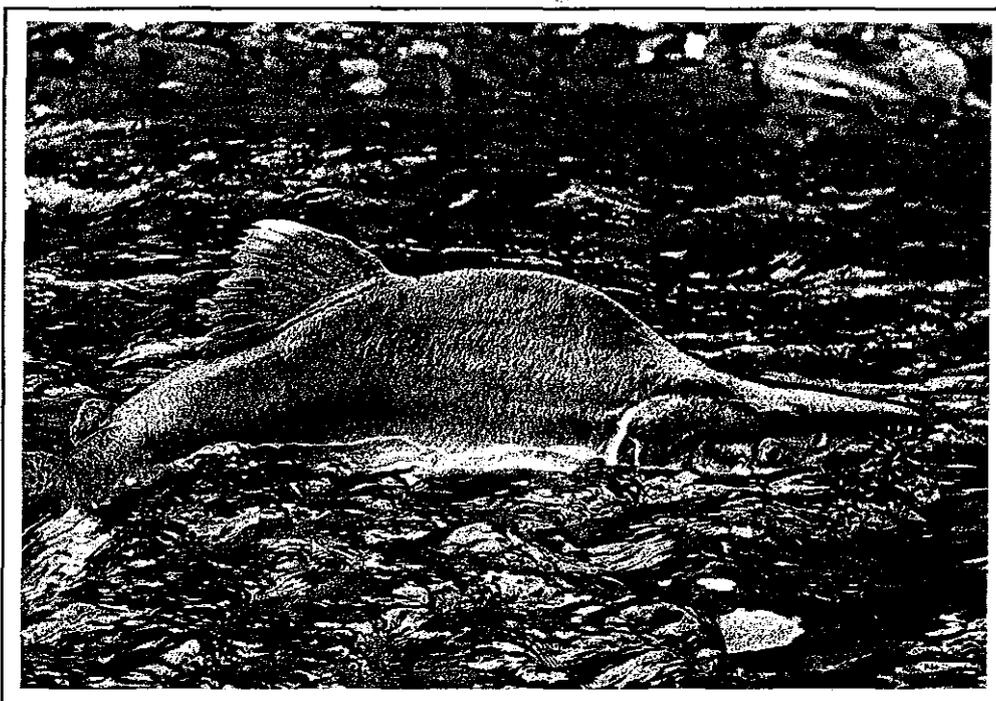


Figure 4. A pink salmon returning to its natal stream.

which were built and operated by the corporation. The Solomon Gulch facility is operated by the Valdez Fisheries Development Association.

In 1993, staff participated in extensive negotiations with PWSAC regarding evaluation studies needed to expand sockeye salmon production at Main Bay Hatchery to 20 million smolts. A five-year plan was prepared which outlines test fishing, tagging, and genetic studies to ensure development of the facility with minimal impacts on local wild stocks of salmon.

Enhancement staff developed a Fisheries Ecosystem Research Plan for Prince William Sound. The plan is designed to provide an understanding of the biological and physical processes that limit fishery production in the Sound. The plan underwent a peer review and has been endorsed by leading fishery scientists in the U.S. and Canada.

A project was initiated at Coghill Lake in the northwestern portion of Prince William Sound to restore the natural productivity of the lake and its resident sockeye salmon population. Fertilizer was applied to the lake and studies were conducted to monitor the effect of fertilization on the lake's ecosystem.

Prince William Sound area staff conducted a search for sites suitable for instream habitat and salmon stock rehabilitation. Six sites were identified for construction of spawning channels and two sites for construction of fish passes. In addition, studies of the early marine growth and feeding of juvenile salmon were continued in cooperation with the University of Alaska and PWSAC. Study results have indicated potential mechanisms that could have caused salmon run failures in the region in both 1992 and 1993.

### Cook Inlet

Cook Inlet has three area offices and eight major hatcheries supporting the area's salmon enhancement program. In 1993, the area saw several changes that affect hatchery management. The Fort Richardson and Elmendorf Hatcheries and Broodstock Development Center were transferred to the department's Sport Fish Division and will



*Figure 5. A young fisherman trying his luck.*

continue to be operated by the state. The Big Lake Hatchery was closed and is currently being transferred to the Matanuska-Susitna Borough, under whose auspices it will be operated as a tourist/educational hatchery. Crooked Creek Hatchery operations were contracted to the Cook Inlet Aquaculture Association (CIAA). CIAA also operates three other state-owned hatcheries, Tutka, Trail Lakes, and Eklutna. One other PNP hatchery is operated at Port Graham.

CFMD staff provided all of the hatcheries and a number of projects with technical support. Many of the projects are primarily designed to enhance recreational fishing opportunities in this densely populated area of Alaska. Chinook and coho salmon and rainbow trout from Anchorage area hatcheries are used in sport fish projects throughout the area (Figure 5). The established sport fish projects at Homer Spit, Halibut Cove, Seldovia Harbor, Whittier, and Seward continued in 1993. Hundreds of lakes throughout Southcentral Alaska were stocked with rainbow trout.

Fisheries enhancement by both the state and PNP sector continues to play an important role in salmon production for the numerous gear groups who fish in Lower Cook Inlet. Homer's location at the end of the road system also attracts a popular and intense sport fishing effort, with demands increasing each year. In cooperation with the department's Sport Fish Division, the CFMD Division has been developing local sport fish stocking programs to try to meet the increasing public demand in the Homer and Kachemak Bay areas.

**Kodiak and Alaska Peninsula**

In 1993, CFMD enhancement staff in the Kodiak and Alaska Peninsula areas supported several state-owned hatcheries, Pillar Creek and Kitoi Bay, both of which were operated by the Kodiak Regional Aquaculture Association (KRAA) for the first time this year. Each hatchery retained state-employed hatchery managers, but all other personnel and operations were supplied by KRAA. Russell Creek Hatchery on the Alaska Peninsula was closed in 1992 and successfully transferred to the Aleutians

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In other Westward area projects, 75 tons of fertilizer were applied to five Kodiak area lakes for rehabilitation and enhancement purposes.

**Arctic-Yukon-Kuskokwim**

The CFMD enhancement program in the Arctic-Yukon-Kuskokwim (AYK) area consists of an area



Figure 6. One method of collecting milt from a chinook salmon.

office in Nome and the state-operated Sikusuilag Springs and Clear Hatcheries. There are no PNP facilities in the area, although there are a number of educational facilities at surrounding schools. Nome area staff is involved in exploratory work, seeking sites where instream or streamside incubation technology can be used. This area of Alaska is in great need of economic development for which fisheries technology holds great promise. Economic development projects in the AYK area are discussed in more detail in the Economic Development Section of this report.

Three of the more seriously depressed populations of chum salmon in Nome area rivers currently have active salmon restoration programs using instream incubation technology. Staff continue their investigations of other area streams in an effort to locate additional incubation sites.

The Clear Hatchery currently produces Arctic char, Arctic grayling, lake trout, and coho and chum salmon. Since Clear is Interior Alaska's only hatchery, it is a center for developing rearing programs for Interior fishes. The Arctic char project at Clear is developing and maintaining a domestic brood stock to provide fingerlings, subcatchables, and catchable Arctic char for Interior and Southcentral recreational fishery programs. The Arctic grayling, lake trout, and coho salmon projects continue to provide fry and fingerlings for recreational fisheries statewide. The chum salmon project is an important pilot study for the Toklat River chum salmon restoration effort. In 1993, the Chena River Arctic Grayling Conservation and Rehabilitation Plan was successfully completed, and catchable Arctic grayling were successfully planted in the Chena River.

1993 marked the sixth year of production at Sikusuilaq Springs Hatchery using equipment installed during the 1987 hatchery expansion. The production of adult chum salmon at Sikusuilaq was not as great as expected in 1993. The generalized failure of chum salmon in Western Alaska also apparently impacted the returns to the hatchery, although not nearly as severely as for the rest of the region. Excess hatchery fish were shipped from the hatchery to Yukon River villages as part of an airlift ordered by Governor Walter Hickel. In response to a catastrophic decline in chum salmon returns to the Yukon River, villagers were unable to catch traditional food for their dog teams. Two hatcheries, Medvejie Creek (NSRAA) and Sikusuilaq Springs (ADF&G), had excess fish they were willing to donate to the villagers. With assistance from the Governor's Office and ADF&G, government, business owners, and numerous volunteers mobilized to transport the fish. By the end of September, more than 68,000 pounds of fish had been flown to the villages of Ruby, Beaver, Tanana, and Chalkyitsik.

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## TECHNOLOGY AND DEVELOPMENT

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Technology and development have been key elements in Alaska's modern fisheries enhancement program. A great deal of the success of Alaska's

salmon enhancement program, and a measure of the difference between Alaska's enhancement program and that of other states, is Alaska's adherence to guidelines developed by Technology and Development staff. This function is comprised of fisheries professionals working in four disciplines at five laboratories and numerous field projects across the state. The laboratories include genetics, pathology (2), limnology, and coded wire tag processing laboratories.

### Genetics

The need for stock identification, wild stock protection, and information concerning hatchery/wild stock interaction has led to an expansion of the CFMD Genetics Program. In 1993, a major effort continued to be the review of fish transport permits. Genetic considerations, because of potential wild stock interactions, are of paramount interest in the movement of fish and eggs around the state. Research continues with cryopreservation of rainbow trout sperm at the BDC. Ploidy studies at both the BDC and Deer Mountain Hatchery also continued in 1993.

### Pathology

The Pathology Section operates out of two laboratories, one in Anchorage and the other in Juneau. This section performs inspections for all hatchery and mariculture operations across the state. With fish health of both natural and enhanced stocks being the cornerstone of the Alaskan enhancement program, the work of this section in processing samples for disease, reviewing fish transport permits, performing hatchery and fish culture inspections, and researching the diseases of Alaskan fish is critical to maintaining the enhancement program.

In 1993, the Pathology Section continued performing hatchery inspections, processed thousands of samples, reviewed hundreds of fish transport permits, published scientific papers, and made technical presentations at a number of professional meetings. The sockeye salmon disease problem in 1993 was studied by the section and found to be due to a failure to follow through with accepted sockeye salmon culture policy procedures. In all instances involving major fish losses, specific

criteria were identified that would be followed in subsequent years to minimize mortality and contain the disease if it occurred. Having made a landmark discovery of viral hemorrhagic septicemia virus (VHSV) of Pacific cod several years ago, Pathology Section scientists discovered the same rhabdovirus in Pacific herring in Alaska this year. Work continues on the Bitter Crab Disease Syndrome and utilizing the enzyme-linked immunoabsorbent assay (ELISA) test for bacterial kidney disease (BKD).

### Limnology

The Limnology Section provides technical support for the CFMD Division's lake enrichment and lake stocking programs (Figure 7), and participates in cooperative projects with state and federal agencies, universities, PNP aquaculture associations, and commercial fishing organizations. Since 1979, the Limnology Section has operated a centralized laboratory in Soldotna, where both water quality and biological samples from statewide projects are analyzed. The laboratory has developed unsurpassed analytical capabilities for low-level nutrient determinations, zooplankton enumeration, and evaluation of fish growth from juvenile salmonid otolith extractions (Figure 8).

New or expanded limnology projects include (1) the fertilization of Coghill Lake after nearly a year's delay in obtaining approval for the Environmental Assessment report; (2) the initiation of fisheries and limnological assessments on nine major sockeye salmon-producing lakes within the Susitna River drainage to determine the productivity potential and system-wide escapement goal for sockeye salmon; (3) the assessment of four lakes to determine the

impacts from development, and to investigate any remedial action as part of the national Environmental Protection Agency's (EPA) clean lakes program; (4) the limnological assessment of recently colonized sockeye salmon lakes in Southeast Alaska; and (5) the limnological assessment of fifteen lakes on the Alaska Peninsula to determine the potential for increasing sockeye and coho salmon production.

### Coded Wire Tag Processing Laboratory

The division's Coded Wire Tag Processing Laboratory is one of the most efficient and effective laboratories of its kind in the Pacific Northwest. In operation for nearly twelve years, it has developed into a model that has been visited and emulated by other agencies in the Pacific Northwest where the coded wire tag has become integral to the effective management of salmonids. The laboratory's goal continues to be processing samples from fish by the Friday of the week after they are sold. The need for quick turnaround of the data, as well as accuracy in finding, reading, and recording data from the microscopic markings on the tiny wire tags, makes the job of processing up to 78,000 heads in a season an unbelievably difficult task.

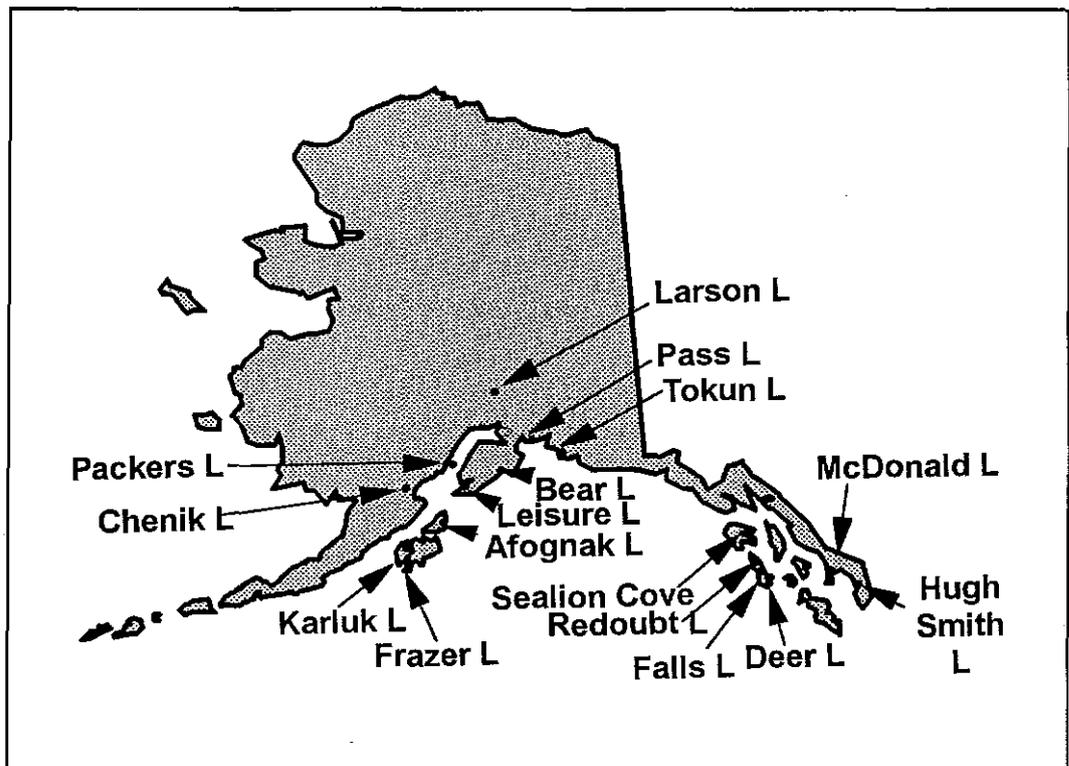


Figure 7. Lake fertilization projects.

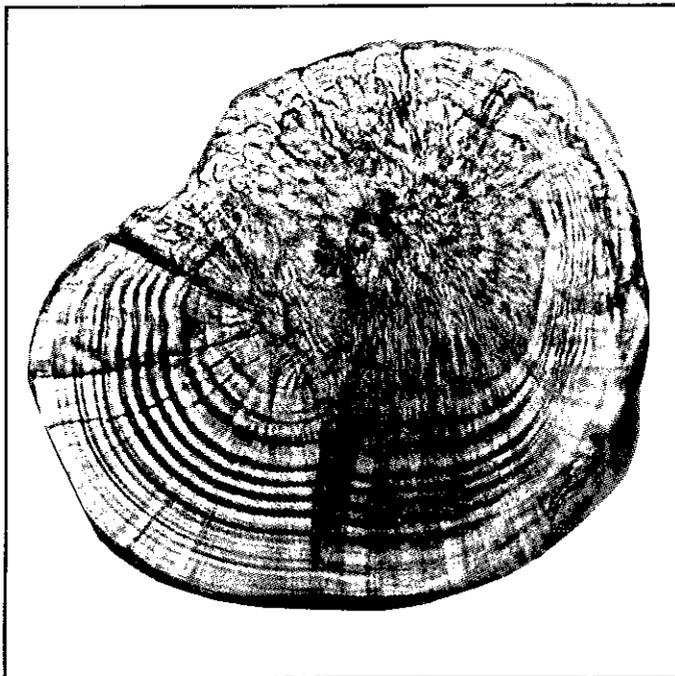


Figure 8. Thermal banding patterns on fish otolith.

In 1993, Coded Wire Tag Processing Laboratory personnel processed 60,600 heads from adipose-clipped salmon recovered from commercial, sport, and hatchery sampling programs across the state. Sampling programs in Southeast Alaska accounted for 62% of this work. Poor pink salmon returns to Prince William Sound resulted in fewer heads collected from fisheries sampling programs in the Sound. As a result, Prince William Sound produced only 22% of the lab's work in 1993. In 1992, a large-scale coho salmon tagging program in Upper Cook Inlet was initiated to determine the success of Cook Inlet urban stocking programs and to assess the status of Kenai River wild coho salmon stocks. In 1993, Upper Cook Inlet sport and commercial fisheries were sampled for those tags; the tags found by that program amounted to 15% of the laboratory's work. In response to fishery managers' needs for real-time stock contribution data, the laboratory staff processed numerous samples from commercial fisheries in Southeast and Prince William Sound within hours of receipt at the lab, normally within 24-48 hours of the sale of fish to processors.

Laboratory staff hope the upcoming season will be the last season spent in the overcrowded space the lab has occupied for the past twelve years. In 1993, the legislature funded the department's CIP request for acquisition of new laboratory space for the

Coded Wire Tag and Otolith Processing Laboratories. The search for that space in Juneau is underway. The database management system first installed in 1985 will be replaced in 1994 with a new system that will facilitate access and use of the database by more users in the state.

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## ECONOMIC DEVELOPMENT

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In recent years, the CFMD Division has been actively involved in rural economic development programs in the AYK Region. This is a vast area geographically, spanning more than half of the state's land mass. Many of the communities in this area are among the most depressed economically in the state. The needs here are great. Fish are critically important to the people's culture, subsistence needs, and local economy. A mixed commercial-subsistence economy is typical of much of this area. Critically important cash obtained through the commercial fishery is used to heat homes and to obtain equipment and gas for subsistence food gathering.

The division's only Interior facility, Clear Hatchery, is providing support for rebuilding and restoring a depressed chum salmon run to the Toklat River on the lower Tanana drainage of the Yukon River. The Toklat project is a cooperative effort with the Yukon River Drainage Fisheries Association (YRDFA). The Toklat project is a nine-year effort which received initial funding from the legislature in FY94. Additional support for the project has been requested for FY95 through an AYK Initiative.

Work has been underway in the Nome and Yukon-Kuskokwim Delta areas as well. Salmon stocks in northern Norton Sound, near Nome, are among the most depressed in the AYK Region. Local staff has been utilizing streamside incubation boxes on groundwater springs in streams near Nome to aid in the restoration of salmon populations. In cooperation with the Bering Sea Fishermen's Association and local villages, CFMD staff is examining opportunities for fisheries development in the Nelson Island, Chevak, and Nunivak Island areas. The Nunivak Island area is most promising because of the extensive number of groundwater-fed

streams. In addition, the CFMD Division is assisting the community of St. George to evaluate an opportunity to develop a run of salmon to St. George Island where salmon do not currently migrate.

Planning efforts to rebuild and restore salmon stocks are now underway for both the Yukon River and Norton Sound. CFMD staff is working with YRDLFA to gather ideas for rebuilding and restoring salmon stocks this winter. The plan is expected to be completed by 30 June 1995. Funding for the effort was received from the Alaska State Legislature in FY93. The planning effort in Norton Sound is in cooperation with the NSEDC. This effort is underway, and ideas for rebuilding and restoring Norton Sound salmon stocks are now being gathered. Similar to the effort on the Yukon, CFMD staff expects to complete the Norton Sound Salmon Stock Rebuilding and Restoration Plan by the end of FY95. The planning effort in Norton Sound was funded by the legislature in FY94, and is jointly supported by both the state and NSEDC. Additional CIP funding is requested through the AYK Initiative in FY95 for Norton Sound restoration survey work as a followup to the planning effort. These planning efforts on the Yukon River and Norton Sound are a state/private consensus-building process devoted to rural economic development.

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## HATCHERY CONTRACTS

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The modern hatchery program in Alaska was initiated at a time when the economy of Alaska was in a major boom following the discovery of oil on the North Slope. Within a decade, the boom economy was at a peak, and many began to realize that the oil money would not last forever. The state's hatcheries, construction of which had been overwhelmingly supported by popular vote in the 1970s, began to be seen as financial liabilities in a declining economy. The concepts of "user pay" and "privatization" of the enhancement program began to hold sway.

In 1983, a bill introduced in the Senate by which state-owned hatcheries could be sold, leased, or granted to a regional aquaculture association passed

through the legislature. The bill (SB 156) was ultimately vetoed by the Governor because of a question concerning the legality of disposing of state property in such a manner.

In subsequent years, both the legislature and administration, while looking for ways to lower the levels of general funds in state budgets, requested the department look for ways to cut costs associated with hatchery operation, including the transfer of hatchery operations to the private sector. The following provides a brief scenario:

1. In 1985, a major source of funding for state sport fish-oriented hatcheries was tapped and Dingell-Johnson/Wallop-Breaux federal aid funds began to pay most of the operational costs for Fort Richardson, Elmendorf, and Clear Hatcheries and the BDC.
2. In 1988, the legislature passed a bill, AS 16.10.480, authorizing the contracting of hatchery operations and a process by which it could happen.
3. In 1988, four state hatcheries were contracted to the private sector. Three were to be operated entirely by the private sector (Hidden Falls, Trail Lakes, and Cannery Creek), and the fourth would be paid for by the private sector but operated by the state (Kitoi Bay).
4. In 1991 and 1992, under continuing pressure to lower the general fund budget for hatcheries, including a \$2.0 million budget veto by Governor Steve Cowper, the department contracted the Main Bay, Tutka, Gulkana, Pillar Creek, and Beaver Falls Hatcheries under either long- or short-term contracts.
5. Programmatic portions of the Big Lake, Crooked Creek, Snettisham, Crystal Lake, Deer Mountain, and Klawock Hatcheries were paid for either by the private sector or by federal funds beginning in 1991.
6. In FY93, funding for the Klawock and Big Lake Hatcheries was restored to the department's budget by the legislature along with intent language. The intent language

indicated these facilities were to be operated for one year as an interim bridge to private funding. The Russell Creek Hatchery was closed in FY93.

7. In FY94, the state transferred operations of three sport fish-oriented facilities to the department's Sport Fish Division. As there was no funding for them in the FY94 Governor's Budget Request, seven additional facilities, including the Kitoi Bay, Pillar Creek, Gulkana, Crooked Creek, Big Lake, Deer Mountain, and Klawock Hatcheries, were either contracted or closed. Deer Mountain Hatchery received funding for state operation in FY94 and will be operated by the private sector beginning in FY95. The Big Lake Hatchery was closed; the facility is now being transferred to the Matanuska-Susitna Borough whose plan is to eventually reopen and operate the facility as a small production facility for education and tourism. The CFMD Division will continue to operate the Clear, Sikusuiqa, Snettisham, and Crystal Lake Hatcheries. The Sport Fish Division will continue to operate the Fort Richardson and Elmendorf Hatcheries and the BDC.

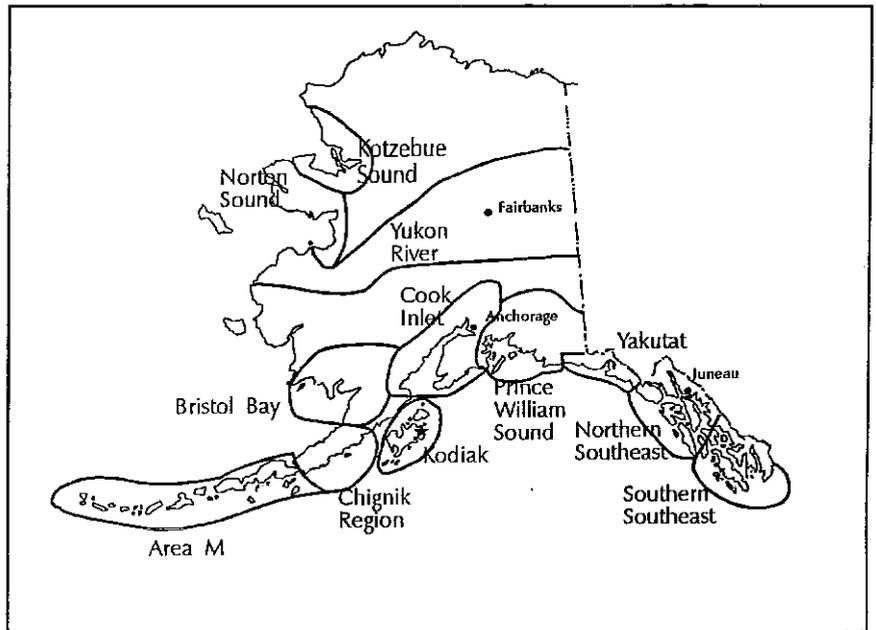


Figure 9. Comprehensive salmon planning regions in Alaska.

of statewide enhancement data and reporting, annual facility management plans for 38 facilities, and the permitting process for hatchery, fish transport, and fish resource or scientific/educational permits.

In 1993, the regional salmon planning process was actively conducted in ten regions of the state as follows: Southern and Northern Southeast, Prince William Sound, Cook Inlet, Kodiak, Chignik, Area M, Norton Sound, and the Yukon River (Figure 9). With the exception of Norton Sound and the Yukon, this planning process has been ongoing for a number of years.

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## PLANNING AND PRIVATE NONPROFIT PERMITTING

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The PNP Program is administered by the CFMD Division. PNP Program staff organize and implement regional comprehensive salmon plans through regional planning teams (RPT) that are comprised of ADF&G and regional aquaculture association members. In those regions where aquaculture associations have not been formed, nondepartment RPT representatives include members from fisheries gear groups, municipalities, and boroughs. Staff also coordinate the review of PNP hatchery applications, as well as management

The department has been cooperatively working with the Norton Sound Economic Development Corporation on an informational and educational program and an assessment of stock status as precursors to the development of a comprehensive salmon plan. The Norton Sound RPT was established in December 1993; RPT members will meet throughout 1994 to develop a comprehensive salmon plan for the Norton Sound Region.

The department has been working with the Yukon River Drainage Fisheries Association under a cooperative agreement that focuses on evaluating the opportunities for conservation, restoration, and enhancement of salmon stocks in the Yukon River drainage. The initial focus has been on an educational and informational program. As of

December 1993, the RPT was in the process of being formed, and development of a long-range comprehensive salmon plan focused on the issues above will be accelerated in 1994.

An integral part of the planning program includes direct participation in salmon treaty negotiations. The Pacific Salmon Treaty (PST) was signed in 1985 by the U.S. and Canada to address problems of mutual concern relating to intermingling salmon stocks. The PST consists of (1) general principles regarding conservation, optimum production, and equitable harvest sharing; and (2) fishery and stock management arrangements, or "annexes," that implement PST principles.

The Pacific Salmon Commission (PSC), the implementing body of the PST, has no direct fishery management authority. The PSC, however, makes recommendations to the respective governments regarding fishery and stock management arrangements, that when adopted by the governments, are implemented by the managing jurisdictions of each country.

The PSC meets annually to develop and negotiate fishery and other management arrangements relating to intermingling salmon stocks. Alaska is represented on the PSC by an Alaska commissioner, an alternate commissioner, and a twelve-member (six members and six alternates) Northern Panel with representatives from the state/federal governments and various fishing groups. The PSC, as well as the U.S. Section of the PSC, operates by consensus decisions. In the fall of 1993, a PNP Program staff member participated as chairman of the Northern Panel in to help develop positions on specific fishery arrangements to be negotiated during the 1993/1994 negotiation cycle. Most treaty fishing arrangements have currently expired and must be renegotiated. The expired annexes deal with a number of fisheries and stocks in Southeast Alaska and Northern British Columbia, Canada, and in Southern British Columbia, Canada, and the Pacific Northwest. The PSC is attempting to negotiate longer-term, multi-year arrangements to provide more stability and to focus more attention on developing improved, longer-term salmon management approaches.

In Southeast Alaska and Northern British Columbia, Canada, negotiations will focus primarily on (1) harvest sharing and enhancement of sockeye salmon stocks of the transboundary Taku and Stikine Rivers, and Canadian catch limits for coho salmon on these two rivers; and (2) sockeye salmon fishery limits for Southeast Alaska's District 4 (Noyes Island) purse seine fishery prior to statistical week 31 (latter part of July), pink salmon fishery limits for Canada's Area 1 troll fishery, and continuation of a rebuilding program for Portland Canal chum salmon stocks. Renegotiation of provisions of a coastwide chinook salmon rebuilding program will also affect Southeast Alaska fisheries through continuation of an all-gear chinook salmon catch ceiling.

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## MARICULTURE

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The Aquatic Farm Act of 1988 authorized ADF&G to issue permits for the construction and operation of aquatic farms or hatcheries for shellfish and aquatic plants.

In 1993, thirteen aquatic farm permit applications were received and processed (Table 1). Seven new permits were issued. A total of sixty-two farms and one hatchery held permits to operate (Figure 10), nineteen farm permits expired, and eight renewal applications were received by the end of the year.

Aquatic farm sales in 1993 were \$237,288 (Table 2), an increase of 20 percent over sales in 1992. The estimated value of the inwater inventory at the end of 1993 was \$5,073,000.

The one shellfish hatchery permitted in 1992 began operation in 1993. By years end, the operators had accomplished on-site production of food for the shellfish and were holding brood stock and juvenile oysters.

In 1993, \$3.25 million was appropriated from the *Exxon Valdez* criminal settlement for the design and construction of a Mariculture Technical Center and shellfish hatchery, and to accomplish shellfish nursery research projects in Kachemak Bay. A

Table 1. 1993 aquatic farm permit data.

	SOUTHEAST	SOUTHCENTRAL	TOTAL
<b>OPERATIONS</b>			
Aquatic farm permit applications	6	7	13 <sup>1)</sup>
Permits issued	1	6	7
Permits pending or still in process	5	13	18
Total permitted aquatic farms	21	41	62
Shellfish/aquatic plant hatcheries	0	1	1
Farms reporting activity	17	32	49
Farm permits expiring	19 <sup>2)</sup>	0	19
Farm permit renewals received	8	0	8
Acreage permitted for aquatic farming	91	171 <sup>3)</sup>	262
<b>RESEARCH</b>			
Permit applications	0	0	0
<b>SHELLFISH AND AQUATIC PLANT ACQUISITION/TRANSPORT</b>			
Permit applications	20	66	86
Permits issued	19	57	76
Permits pending or still in process	1	0	1
<sup>1)</sup> Includes one major amendment to an existing farm permit <sup>2)</sup> Eight farm permits expired on 12/31/93. Renewal applications not received as of end of reporting year No permit actions were taken on permit renewals or expirations in 1993 <sup>3)</sup> Includes 20 acres in Kachemak Bay State Park			

Table 2. 1993 aquatic farm operations data.

	Southeast	Southcentral	TOTAL
<b>MARKET SALES</b>			
Oysters (ind.)	328,290	286,580	614,870
Value	\$114,908	\$114,405	\$229,313
Mussels (lbs)	150	4,000	4,150
Value	_____ <sup>1)</sup>	_____ )	\$7,975
Total aquatic farm market sales			\$237,288
<b>HATCHERY/NURSERY PRODUCTION</b>			
Oysters (ind.)	0	180,000	180,000
Value	\$0	_____ <sup>1)</sup>	_____ )
<b>END OF YEAR INVENTORY <sup>2)</sup></b>			
Oysters (ind.)	7,125,000	6,484,000	13,609,000
Value	\$2,636,250	\$2,399,080	\$5,035,330
Mussels (lbs)	9,000 <sup>3)</sup>	11,000 )	20,000
	\$17,000	\$21,000	\$38,000
Total Aquatic Farm Inventory Value			\$5,073,330
<b>EMPLOYMENT SUMMARY</b>			
Number of employees	44	50	94
Days worked	3,511	2,439	5,950
<sup>1)</sup> Single producer, financial information confidential <sup>2)</sup> A small inventory of other species, primarily scallops (<5,000 organisms) exists <sup>3)</sup> Estimate. Mussel inventory, units not consistent between farms			

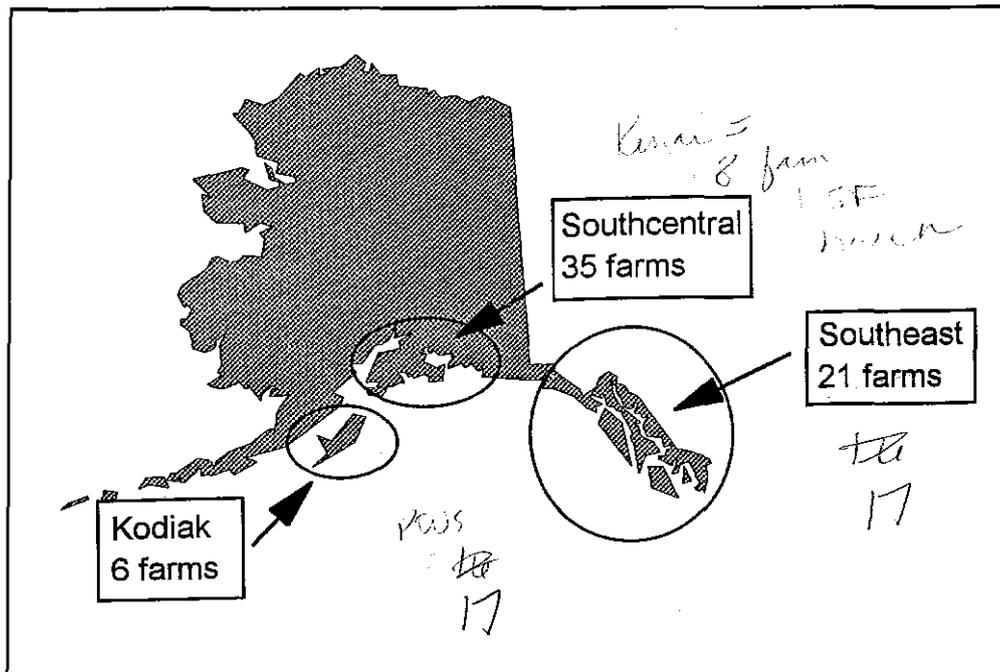


Figure 10. Aquatic farm sites.

feasibility study was required by the appropriation. That study is scheduled for completion on or prior to 15 June 1994. ADF&G was working with the local shellfish farmers' organization in Kachemak Bay to develop nursery research projects. The technical center/hatchery complex is scheduled for completion in 1995.

## HATCHERY ENHANCEMENT

1993 was a year of tremendous contrasts for hatchery production across the state (Table 3; Figure 11). This was a record-breaking year for the total harvest of salmon in Alaska, with over 190 million fish harvested in statewide fisheries. In some areas, such as Kodiak and Northern Southeast, harvest of hatchery-produced salmon hit all-time highs and literally made the season for fishermen in those areas. Kitoi Bay Hatchery documented a return of over 12 million pink salmon, which averaged a return of over \$64 thousand to the permit holders in that area, even at the lowered prices paid for pink salmon. Pink salmon returns to hatcheries in Prince William Sound were far below expectations which, combined with low prices, created real economic hardships for fishermen and hatchery operators.

PWSAC hatcheries saw around 20 percent of their expected survivals of pink salmon. Chum salmon returns to Medvejie and Hidden Falls Hatcheries, operated by NSRAA, were phenomenal in 1993, with 1.7 million and 1.8 million chum salmon produced, respectively. Chum salmon runs to the Yukon River and Western Alaska, in general, were extremely poor. Over 40 percent of the chum salmon harvested in Alaska in 1993 were enhancement-produced (Table 4). Most of the enhanced fish returns were pink salmon returning to Kodiak (Figure 12). There

were record poor runs of pink and chum salmon for hatcheries on the inside waters of Northern Southeast, including extremely poor returns to Douglas Island Pink and Chum (DIPAC) hatcheries

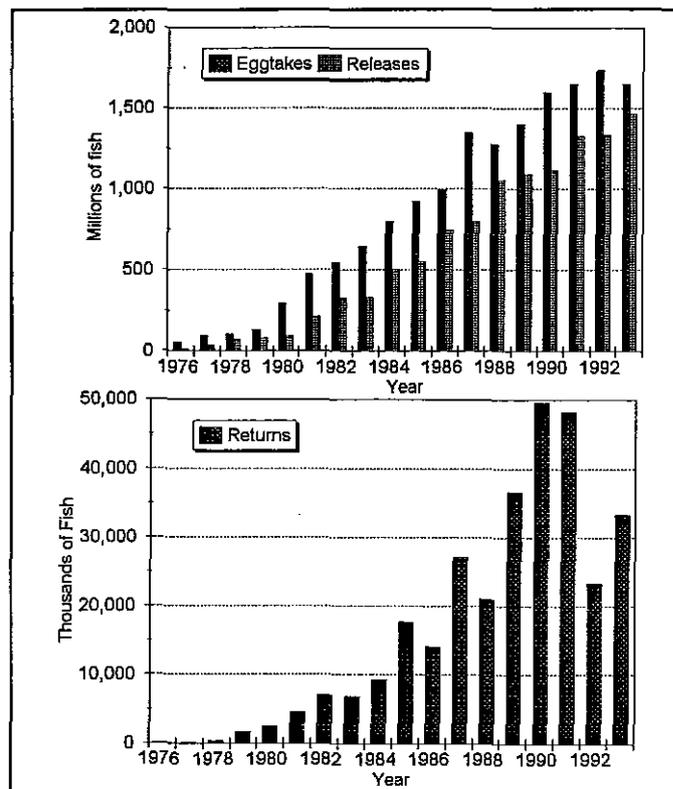


Figure 11. Graph showing total egg takes, releases, and returns to the CFMD enhancement program.

in Juneau and to Burro Creek Hatchery near Skagway.

The burgeoning sockeye salmon program, made possible by learning to farm around a disease called the infectious hematopoietic necrosis virus (IHNV), saw the greatest losses to IHNV in its hatcheries in over ten years. Seven hatcheries across the state experienced major losses from IHNV in 1993. A conference was held to address issues concerning this disease. Despite 1993 seeing the worst outbreak in recent years, the number of sockeye salmon produced remained at an all-time high.

Marketing of hatchery-produced fish, both by fishermen and regional aquaculture associations, has generally followed the patterns set by the industry. PWSAC has taken the lead on new marketing strategies. PWSAC has put into place a solid project for salmon product development and test marketing the new salmon products. Other private producers, including DIPAC, are also developing specialty salmon products with a goal of new market development.

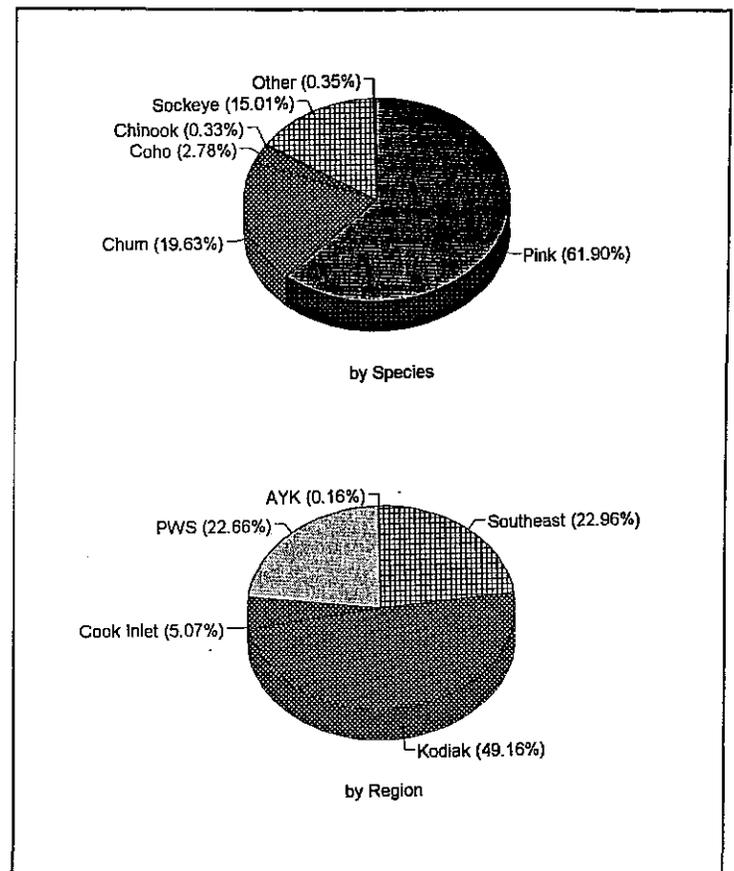


Figure 12. Pie chart showing total returns to enhancement projects, 1993.

Table 3. Total egg takes, releases, and returns to Alaska's salmon enhancement program in 1993.

1993 estimated eggtakes from Alaskan hatcheries, in millions.							
	Pink	Chum	Coho	Chinook	Sockeye	Other	Total
Southeast	91.41	330.95	12.79	5.82	26.71	0.02	467.70
Prince William Sound	643.43	118.47	4.91	1.25	45.66	0.00	813.72
Cook Inlet	79.04	0.00	3.71	2.46	33.03	3.45	121.69
Kodiak/AK Peninsula	214.90	8.26	0.89	0.00	15.48	0.00	239.53
AYK	0.00	11.21	0.36	0.00	0.00	2.81	14.38
<b>TOTALS</b>	<b>1,028.78</b>	<b>468.89</b>	<b>22.87</b>	<b>9.53</b>	<b>120.88</b>	<b>6.29</b>	<b>1,657.02</b>
detailed information available in Appendix							
1993 estimated releases from Alaskan hatcheries, in millions.							
	Pink	Chum	Coho	Chinook	Sockeye	Other	Total
Southeast	133.56	315.85	8.71	8.48	7.06	0.06	473.71
Prince William Sound	567.87	125.66	1.76	0.67	18.55	0.00	714.51
Cook Inlet	48.70	0.00	3.08	2.08	26.32	2.89	83.07
Kodiak/AK Peninsula	169.55	10.10	1.07	0.00	5.76	0.00	186.48
AYK	0.00	8.51	0.00	0.00	0.00	0.93	9.45
<b>TOTALS</b>	<b>919.68</b>	<b>460.12</b>	<b>14.62</b>	<b>11.22</b>	<b>57.68</b>	<b>3.88</b>	<b>1,467.21</b>
detailed information available in Appendix							
1993 total returns attributable to Alaskan hatcheries and enhancement projects.							
	Pink	Chum	Coho	Chinook	Sockeye	Other	Total
Southeast	1,273,936	5,159,574	656,611	70,743	513,630	260	7,674,754
Prince William Sound	5,786,758	1,270,895	46,774	3,071	467,183	0	7,574,681
Cook Inlet	774,410	42,053	92,700	37,352	644,192	102,672	1,693,379
Kodiak/AK Peninsula	12,858,246	53,525	131,937	0	3,392,629	0	16,436,337
AYK	0	37,000	0	0	0	14,929	51,929
<b>TOTALS</b>	<b>20,693,350</b>	<b>6,563,047</b>	<b>928,022</b>	<b>111,166</b>	<b>6,017,634</b>	<b>117,861</b>	<b>33,431,080</b>
detailed information available in Appendix							

Table 4. 1993 common-property commercial harvest of enhanced fish.

Year Area		Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Alaska Department of Fish and Game- FRED Division Alaskan Enhancement- Common property commercial harvest of enhanced fish (in thousands)								
31-Jan-94								
1993	Southeast	Total Commercial	275	3,176	3,433	57,249	7,229	71,362
		-Cost Recovery	22	3	116	300	1,231	1,671
		Adj Comm total	253	3,173	3,317	56,949	5,998	69,691
		Enhanced	27	358	480	662	3,440	4,967
		% Enhanced	10.8%	11.3%	14.5%	1.2%	57.4%	7.1%
	Prince William Sound	Total Commercial	32	1,851	446	5,761	1,186	9,276
		-Cost Recovery	1	116	4	2,027	539	2,687
		Adj Comm total	31	1,735	442	3,734	647	6,589
		Enhanced	1	326	36	2,386	611	3,359
		% Enhanced	2.0%	18.8%	8.1%	63.9%	94.4%	51.0%
	Cook Inlet	Total Commercial	21	4,960	311	970	126	6,388
		-Cost Recovery	1	38	9	409	12	469
		Adj Comm total	20	4,922	302	561	114	5,919
		Enhanced	2	460	14	228	26	730
		% Enhanced	8.6%	9.3%	4.6%	40.7%	22.7%	12.3%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	99	13,554	810	45,237	1,839	61,539
		-Cost Recovery						0
		Adj Comm total	99	13,554	810	45,237	1,839	61,539
		Enhanced		2,529	16	12,416	35	14,996
		% Enhanced	0.0%	18.7%	2.0%	27.4%	1.9%	24.4%
	Bristol Bay	Total Commercial	85	40,843	72	1	724	41,725
Enhanced		0	0	0	0	0	0	
% Enhanced		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	130	167	730	158	317	1,502	
	Enhanced	0	0	0	0	5	5	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	1.6%	0.3%	
1993 Total	Total Commercial	642	64,551	5,802	109,376	11,421	191,792	
	-Cost Recovery	25	156	128	2,736	1,782	4,827	
	Adj Comm total	617	64,395	5,674	106,640	9,639	186,965	
	Enhanced	30	3,672	546	15,693	4,117	24,057	
	% Enhanced	4.8%	5.7%	9.6%	14.7%	42.7%	12.9%	

## EDUCATION

Throughout the state, staff has worked to educate the public on different aspects of the fisheries enhancement program. During 1993, more than 108 fish resource (scientific/educational) permits were issued to the public. Many schools throughout Alaska have instream classroom incubators to help

teach children about salmon life cycles. Hatcheries throughout the state provide tours to thousands of visitors. Some hatcheries, such as Gastineau Hatchery in Juneau, have specially constructed tourist facilities (Figure 13). They also provide opportunities for student interns to obtain job experience in careers that might interest them. The division's biologists work with students on numerous stream rehabilitation and restoration projects.

## RESTORATION

The CFMD Division continues to develop and pursue fish habitat restoration and improvement projects in several areas of the state, with major emphases in the Anchorage area, Prince of Wales Island, and Northern Southeast Alaska. The goal of these projects is to restore, create, or improve fish habitat so that long-term natural productivity of the state's waters is improved. These projects are oriented to include public and community participation and involvement and to enhance public education and awareness. Public participants have included sportsmens' groups, Boy Scouts, Girl Scouts, students and teachers, construction firms, and other individual volunteers, organizations, and businesses.

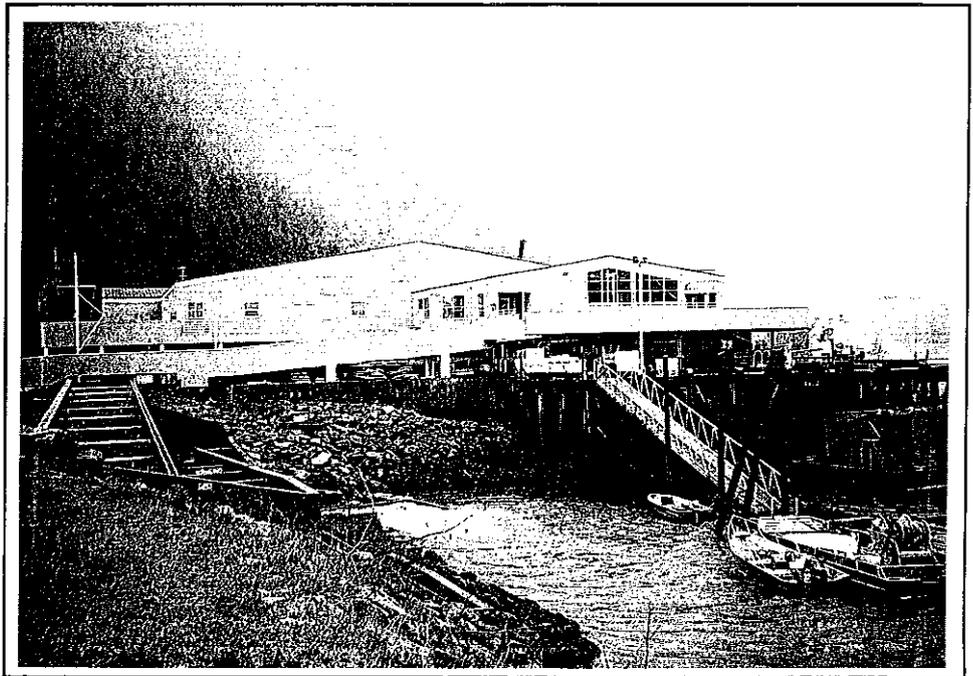


Figure 13. Douglas Island Pink and Chum, Inc.'s Gastineau Hatchery, Juneau.

### Stream Rehabilitation

The CFMD Division's Salmon Trout Restoration, Education and Aquatic Management (STREAM) Program continues to develop and pursue fish habitat restoration and improvement projects in several areas around Southcentral Alaska. The goal of these projects is to restore, create, or improve fish habitat so that long-term natural productivity of the area's waters is improved. These projects are oriented to include public and community participation and to enhance public education and awareness. In 1993, STREAM worked with a myriad of different agencies to further stream rehabilitation in the Anchorage Bowl.

Public involvement and public education continue to be key ingredients to the success of the STREAM Program. The program continues to supply information and assistance to any individual, group, school, or organization interested in the well-being of Southcentral Alaska watersheds. This includes those who assist directly with fish habitat projects to those who will one day decide on policies regarding watershed management and health.

### Stream Rehabilitation Projects

Dog Salmon Creek	Southeast
Klawock Lake Tributaries	Southeast
Marx Creek	Southeast
Big Boulder Creek	Southeast
Chilkat River	Southeast
Duck Creek	Southeast
Switzer Creek	Southeast
Ophir Creek	Southeast
Verstovia	Southeast
Cottonwood Creek	Cook Inlet
Little Susitna River	Cook Inlet
Campbell Creek	Cook Inlet
Chester Creek	Cook Inlet
Ship Creek	Cook Inlet

## ACKNOWLEDGMENTS

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The editors wish to acknowledge the efforts of many people within the CFMD Division for their contributions to this report. First, many area and hatchery personnel have assembled data reports that are the basis of this document. Thanks go to Bill Hauser for collecting and collating information on Cook Inlet and to Jim Cochran for his work on synthesizing information on mariculture. Finally, thanks also go to Katherine Aschaffenburg for her very able assistance with editing, layout, and manuscript preparation.

Appendix 1. 1993 egg takes for Alaskan hatcheries in millions.

REGION / LOCATION		Pink	Chum	Coho	Chinook	Sockeye	Other	TOTAL	Comments:
<b>SOUTHEAST</b>									
SSRAA	Whitman Lake			2.45	9.11	*		<del>2.45</del>	(note 1)
	Neets Bay		108.91	2.44				111.35	
	Beaver Falls					6.66		6.66	
NSRAA	Hidden Falls		102.12	2.28	1.69			106.09	
	Medveje Creek	0.05	19.36	2.42	1.30			23.12	
	Port Camden		5.26					5.26	
	Haines Projects		1.02			0.60		1.62	
AAI	Burnett Inlet	19.56	15.33	*	*			34.89	(note 1)
AKI	Port Armstrong	58.67		0.64				59.31	
BCF	Burro Creek	0.00	0.06	0.02				0.08	
DIPAC	Kowee Creek	*	*					0.00	(note 1)
	Sheep Creek	0.32	49.04	0.15				49.51	
	Gastineau	9.63	13.16	1.12	0.29			24.20	
KNFC	Gunnuk Creek	2.27	16.29					18.56	
KOC	Klawock			0.51		1.30		1.81	
SJC	Indian River	0.92	0.40	0.15	0.15			1.62	
ADFG	Crystal Lake			0.44	2.18		0.02	2.63	
	Deer Mountain			0.18	0.22		0.01	0.40	
	Snettisham					18.14		18.14	
<b>SOUTHEAST TOTALS</b>		91.41	330.96	12.79	5.82	26.71	0.02	<del>467.70</del>	474.43 (note 2)
<b>PRINCE WILLIAM SOUND</b>									
PWSAC	Armin F. Koernig	125.88	*					125.88	(note 1)
	Esther Lake	180.56	111.20	2.68	1.25	*		295.70	(note 1)
	Cannery Creek	105.30	*					105.30	(note 1)
	Main Bay					8.70		8.70	
	Gulkana					36.96		36.96	
VFDA	Solomon Gulch	231.69	7.27	2.23				241.19	(note 1)
<b>PWS TOTALS</b>		643.42	118.47	4.91	1.25	45.66	0.00	813.72	(note 2)
<b>COOK INLET</b>									
CIAA	Pt Graham	2.04				0.87		2.90	
	Eklutna			0.10		9.00		9.10	
	Trail Lakes			0.74	*	8.91		9.64	(note 1)
	Tutka Bay	77.00						77.00	
	Crooked Creek			0.34	0.23	14.25		14.82	
ADFG	Elmendorf			1.66	1.56			3.22	
	Ft Richardson			0.87	0.67		3.45	5.00	
<b>COOK INLET TOTALS</b>		79.04	0.00	3.71	2.46	33.02	3.45	121.68	(note 2)
<b>KODIAK</b>									
KRAA	Kitoi Bay	214.90	8.26	0.73		2.96		226.84	
	Pillar Creek			0.16		12.52		12.68	
<b>KODIAK TOTALS</b>		214.90	8.26	0.88	0.00	15.48	0.00	239.51	(note 2)
<b>ARCTIC/YUKON/KUSKOKWIM</b>									
ADFG	Clear		0.21	0.36			2.81	3.38	
	Sikusuiq		10.80					10.80	
	Nome Incubators		0.20					0.20	
<b>AYK TOTALS</b>		0.00	11.21	0.36	0.00	0.00	2.81	14.38	(note 2)
<b>STATEWIDE TOTALS</b>		1028.76	468.89	22.66	9.63	120.86	6.29	1656.99	

Note 1: \* indicates permitted species but no egg take this season.

Note 2: individual hatchery egg takes may not add up to the regional or statewide totals because of rounding.

Appendix 2. 1993 releases from Alaskan hatcheries, in millions of fish.

REGION/LOCATION	Pink	Chum	Coho	Chinook	Sockeye	Other	TOTAL
<b>SOUTHEAST</b>							
SSRAA - Whitman Lake				0.11	*		0.11
Herring Cove			0.30				0.30
Carroll Inlet				1.06			1.06
Kendrick Bay		8.17					8.17
Naket Inlet		16.16	0.09				16.25
Earl West Cove		7.07	0.20	0.44			7.71
- Neets Bay		58.11	2.68	0.38			61.17
- Beaver Falls							0.00
Shrimp Bay					0.85		0.85
Margaret Lake					0.20		0.20
Virginia Lake					1.10		1.10
Salmon Lake					1.02		1.02
Badger Lake					0.35		0.35
Hugh Smith Lake							0.00
NSRAA - Hidden Falls		36.53	0.40	2.15			39.09
Takatz		25.91					25.91
- Medvejie Creek	0.13	4.86	2.81	0.52			8.32
Deep Inlet		24.87					24.87
- Port Camden		4.44					4.44
- Haines Projects		0.69			0.20		0.89
AAC - Bell Island			0.01	0.01			0.02
AAI - Burnett Inlet	19.97	19.22	*	*			39.19
AKI - Port Armstrong	51.20		0.08	1.28			52.56
BCF - Burro Creek	1.56	0.07	*	0.01			1.64
DIPAC - Sheep Creek	*	27.00	*				27.00
- Gastineau	15.77	11.89	0.48	0.21			28.35
Sheep Creek	32.66		0.56				33.22
Amalga Harbor		36.15					36.15
Boat Harbor		9.55					9.55
Limestone Inlet		10.02					10.02
Chilkat River				0.02			0.02
KNFC - Gunnuk Creek	1.30	6.40					7.70
Southeast Cove	4.19	8.66					12.85
SJC - Indian River	6.79	0.09	0.03	0.09			7.00
ADFG Klawock			0.49		0.48	0.01	0.96
Crystal Lake			0.48	0.54		0.01	1.02
Deer Mountain			0.09	0.08		0.04	0.16
Snettisham				1.59	0.83		2.42
-Canada lakes					2.02		2.02
<b>SOUTHEAST TOTALS</b>	<b>133.56</b>	<b>315.85</b>	<b>8.71</b>	<b>8.48</b>	<b>7.06</b>	<b>0.06</b>	<b>473.71</b>
<b>PRINCE WILLIAM SOUND</b>							
PWSAC - Armin F. Koernig	113.53	*					113.53
- Esther Lake	172.44	107.99	1.10	0.27	*		281.80
Whittier			0.10	0.09			0.19
Cordova			0.10	0.11			0.21
Valdez							0.00
- Cannery Creek	140.03	*					140.03
- Main Bay					2.61		2.61
Marsha Lake							0.00
Coghill					0.81		0.81
Eshamy					0.97		0.97
Gulkana					14.16		14.16
VFDA - Solomon Gulch	141.87	17.67	0.46	0.20			160.20
<b>PWS TOTALS</b>	<b>567.87</b>	<b>125.66</b>	<b>1.76</b>	<b>0.67</b>	<b>18.55</b>	<b>0.00</b>	<b>714.51</b>

Appendix 2. Continued.

REGION/LOCATION	Pink	Chum	Coho	Chinook	Sockeye	Other	TOTAL
<b>COOK INLET</b>							
CIAA Pt Graham	*				0.20		0.20
- Ekiutna			0.11		0.87		0.98
- Trail lakes							0.00
Chelatna Lake					1.00		1.00
Packers Lake					3.27		3.27
Bear Lake/Creek			0.62		1.81		2.43
Hidden Lake					1.90		1.90
- Tutka Bay	42.90						42.90
Halibut Cove	5.80						5.80
ADFG Big Lake			0.89		5.21		6.10
Crooked Creek			0.26	0.28	12.06	0.08	12.68
Elmendorf			0.63	1.31			1.95
Ft Richardson			0.56	0.49		2.81	3.86
<b>COOK INLET TOTALS</b>	<b>48.70</b>	<b>0.00</b>	<b>3.08</b>	<b>2.08</b>	<b>26.32</b>	<b>2.89</b>	<b>83.07</b>
<b>KODIAK</b>							
Kitoi	169.55	10.10	1.06		0.23		180.94
Pillar Creek			0.01		5.53		5.54
<b>KODIAK TOTALS</b>	<b>169.55</b>	<b>10.10</b>	<b>1.07</b>	<b>0.00</b>	<b>5.76</b>	<b>0.00</b>	<b>186.48</b>
<b>ARCTIC/YUKON/KUSKOKWIM</b>							
ADFG Clear		0.09				0.93	1.03
Nome Incubators		0.12					0.12
Sikusuilag		8.30					8.30
<b>AYK TOTALS</b>	<b>0.00</b>	<b>8.51</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.93</b>	<b>9.45</b>
<b>STATEWIDE TOTALS</b>	<b>919.68</b>	<b>460.12</b>	<b>14.62</b>	<b>11.22</b>	<b>57.68</b>	<b>3.88</b>	<b>1467.21</b>

Note 1: \* indicates permitted species but no releases this season.

Note 2: individual hatchery releases may not add up to the regional or statewide totals because of rounding.

Appendix 3. 1993 estimated adult returns, by species, to Alaskan enhancement projects  
(including common property harvests) as reported by operators.

REGION / LOCATION	Pink	Chum	Coho	Chinook	Sockeye	Other	TOTAL	
<b>SOUTHEAST</b>								
SSRAA Whitman Lake		167,729	54,432	3,642			225,803	note 1
Neets Bay		1,099,379	263,728	11,098			1,374,205	note 1
Beaver Falls					482,521		482,521	note 1
NSRAA Hidden Falls		1,791,205	33,436	1,767			1,826,408	note 1&4
Medvejje Creek		1,634,554	98,519	19,197			1,752,270	note 1&4
Haines Projects		5,687					5,687	
AAI Burnett Inlet	335,743	28,983	106	545			365,377	note 1&2
AKI Port Armstrong	478,623		11,483	2,432			492,538	note 1&2
BCF Burro Creek	6	172	154				332	note 1&2
DIPAC Sheep Creek	1,469	63,278		49			64,796	note 1
Kowee Creek							0	note 1
Gastineau	27,523	193,316	112,895	785			334,519	note 1
KNFC Gunnuk Creek	40,768	74,086					114,854	note 1
AACI Bell Island							0	note 1
SJC Indian River	3,757	1,470	2,251	924			8,402	note 1&3
Klawock			66,014		7,855	250	74,119	
ADFG Crystal Lake			4,349	16,543		10	20,902	
Deer Mountain			4,998	1,163			6,161	
Snettisham		63,109	3,240	12,546	22,665		101,560	
Fishpass/other	386,047	36,606	1,006	52	589		424,300	
<b>SOUTHEAST TOTALS</b>	<b>1,273,936</b>	<b>5,159,574</b>	<b>656,611</b>	<b>70,743</b>	<b>513,630</b>	<b>260</b>	<b>7,674,754</b>	
<b>PRINCE WILLIAM SOUND</b>								
PWSAC Armin F. Koernig	1,714,615						1,714,615	note 1&4
Esther Lake	1,504,582	1,198,549	42,171	3,071			2,748,373	note 1&4
Cannery Creek	835,145						835,145	note 1&4
Main Bay					314,323		314,323	note 1&4
Gulkana					152,860		152,860	note 2&3
VFDA Solomon Gulch	1,732,416	72,346	4,603				1,809,365	note 1&4
<b>PWS TOTALS</b>	<b>5,786,758</b>	<b>1,270,895</b>	<b>46,774</b>	<b>3,071</b>	<b>467,183</b>	<b>0</b>	<b>7,574,681</b>	
<b>COOK INLET</b>								
CIAA Eklutna		42,053	1,550				43,603	note 2
Trail Lakes			10,573		270,422		280,995	note 2
Tutka	774,410						774,410	note 2
ADFG Crooked Creek			5,691	1,319	232,720		239,730	note 1&2
Big Lake			21,072		141,050		162,122	note 1&2
Elmendorf			20,864	17,169			38,033	note 5
Ft Richardson			32,950	18,864		102,672	154,486	note 5
<b>COOK INLET TOTALS</b>	<b>774,410</b>	<b>42,053</b>	<b>92,700</b>	<b>37,352</b>	<b>644,192</b>	<b>102,672</b>	<b>1,693,379</b>	
<b>KODIAK</b>								
KRAA Kitoi Bay	12,395,246	14,100	21,307		19,900		12,450,553	
Pillar Creek					3,500		3,500	
ADFG Russell Creek	211,500	39,425	4,416		8,342		263,683	note 3
Fishpass/other	251,500		106,214		3,360,887		3,718,601	note 3
<b>KODIAK TOTALS</b>	<b>12,858,246</b>	<b>53,525</b>	<b>131,937</b>	<b>0</b>	<b>3,392,629</b>	<b>0</b>	<b>16,436,337</b>	
<b>ARCTIC/YUKON/KUSKOKWIM</b>								
ADFG Clear						14,929	14,929	note 5
Sikusuilag		37,000					37,000	
<b>AYK TOTALS</b>	<b>0</b>	<b>37,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14,929</b>	<b>51,929</b>	
<b>STATEWIDE TOTALS</b>	<b>20,693,350</b>	<b>6,563,047</b>	<b>928,022</b>	<b>111,166</b>	<b>5,017,634</b>	<b>117,861</b>	<b>33,431,080</b>	

note 1: estimation based on expansion of coded wire tag recoveries.  
note 2: estimation based on assumed common property interception rates.  
note 3: estimation based on assumed marine survival rates.  
note 4: estimation based on information provided by Division of Commercial Fisheries.  
note 5: estimation based on information provided by Division of Sport Fish

Appendix 4. Projected total adult returns, by species, to Alaskan enhancement projects for 1994.

REGION/LOCATION	Pink	Chum	Coho	Chinook	Sockeye	TOTAL	
<b>SOUTHEAST</b>							
SSRAA - Whitman Lake			21,900	1,700		23,600	
Earl West Cove		99,000	22,400			121,400	
Nakat Inlet		208,600	9,200			217,800	
Carroll Inlet				14,400		14,400	
Kendrick Bay		203,500				203,500	
- Neets Bay	1,600,000		295,000	13,500		1,908,500	
- Beaver Falls					73,929	73,929	
Shrimp Bay					14,700	14,700	
Virginia Lake					10,000	10,000	
Hugh Smith Lake					37,900	37,900	
Bakewell/Badger La					11,600	11,600	
Salmon Lake					14,600	14,600	
McDonald Lake					150,000	150,000	
Margaret Lake					470	470	
NSRAA - Hidden Falls		928,000	90,500	2,500		1,021,000	
Takatz Bay		672,000				672,000	
- Medveje Creek		200,000		21,500		221,500	
Deep Inlet	1,150,000		16,700			1,166,700	
Mist Cove			130,000			130,000	
Shamrock Bay			33,600			33,600	
- Port Camden		15,953				15,953	
- Haines Projects		3,662			311	3,973	
AAI - Burnett Inlet	180,000	55,500				235,500	
Anita Bay	150,000					150,000	
AKI - Port Armstrong	1,023,773		8,167	8,899		1,040,839	
BCF - Burro Creek	13	560	3,000			3,573	
DIPAC - Sheep Creek		1,249,000				1,249,000	
- Gastineau	158,000	172,000	47,800	2,118		379,918	
Sheep Creek	327,000		57,300	2,488		386,788	
Amalga Harbor		470,800				470,800	
Boat Harbor		138,000				138,000	
Limestone Inlet		36,000				36,000	
KNFC - Gunnuk Creek	32,540	24,000				56,540	
Southeast Cove	74,825	15,860				90,685	
AAC - Bell Island			433	159		592	
SJC - Indian River	20,370	15,000	2,700	1,800		39,870	
ADFG - Deer Mountain			6,367	1,898	250	8,515	
Big Salt				125		125	
Thorne Bay				157		157	
Ward Creek			4,928			4,928	
Reflection Lake			787			787	
Klawock			32,046		500	32,546	
Tunga Inlet			7,500			7,500	
Cable Creek			1,011			1,011	
Rio Roberts			787			787	
Marx Creek		16,926				16,926	
Crystal Lake			5,100	5,000	20	10,120	
Earl West Cove				5,700		5,700	
Harding River				40		40	
Ohmer Creek				220		220	
Chilkat Ponds			1,200			1,200	
Jerry Myers				200		200	
Snettisham		500		900		1,400	
Indian Lake			1,000			1,000	
Crescent Lake					5,000	5,000	
Sweetheart Lake					65,000	65,000	
Juneau/DJ				2,300		2,300	
Lutak Inlet				150		150	
Taku River					7,000	7,000	
Stikine R					46,000	46,000	
Twin Lakes				5,000		5,000	
Tahini River				150		150	
	1,966,521	7,274,861	799,426	90,904	436,510	770	10,568,222

Appendix 4. Continued.

REGION/LOCATION	Pink	Chum	Coho	Chinook	Sockeye	TOTAL
<b>PRINCE WILLIAM SOUND</b>						
PWSAC - Armin F. Koernig	3,224,240					3,224,240
- Esther Lake	3,975,024	705,070	53,148	5,320		4,738,562
Cordova			4,813	1,509		6,322
Valdez				2,176		2,176
Whittier			4,818	2,127		6,945
- Cannery Creek	3,668,755					3,668,755
- Main Bay					334,961	334,961
Coghill					109,378	109,378
Eshamy					197,370	197,370
- Gulkana					243,000	243,000
VFDA - Solomon Gulch	5,532,854	28,315	36,907	4,510		5,602,586
Boulder Bay			1,600			1,600
<b>PWS TOTALS</b>	<b>16,400,873</b>	<b>733,385</b>	<b>101,286</b>	<b>15,642</b>	<b>884,709</b>	<b>18,135,895</b>
<b>COOK INLET</b>						
CIAA - Eklutna		50,707	5,404			56,111
- Trail Lakes						
Packers Lake					219,000	219,000
Hidden Lake					60,600	60,600
Bear Lake			4,175		20,000	24,175
Chelatna Lake					47,800	47,800
- Tutka Bay	800,000					800,000
Halibut Cove	100,000					100,000
- Port Graham						0
Crooked Creek			28,900			28,900
Chenik Lake					10,000	10,000
Tustumena Lake					340,000	340,000
Leisure/Hazel					100,000	100,000
Chenik Lake					6,000	6,000
Kirschner Lake					20,000	20,000
Bruin Lake					17,500	17,500
Elmendorf					50,000	50,000
Big Lake			2,000		25,000	27,000
Cottonwood Drainage			2,000			2,000
Wasilla Creek			2,000			2,000
Ft Richardson						0
Willow Creek				5,200		5,200
Little Susitna			15,000			15,000
Ninilchik River				5,000		5,000
Bird Creek			5,000			5,000
Campbell Creek			5,000			5,000
Elmendorf						
Halibut Cove				2,600		2,600
Homer Spit			8,000	5,700		13,700
Seldovia Bay			300	2,500		2,800
Ship Creek			1,000	1,000		2,000
Eagle River				500		500
Caribou Lake			6,300			6,300
<b>COOK INLET TOTAL</b>	<b>900,000</b>	<b>50,707</b>	<b>85,079</b>	<b>22,500</b>	<b>915,900</b>	<b>1,974,186</b>
<b>KODIAK</b>						
Karluk					1,601,500	1,601,500
Kitoi	1,510,000	15,000	74,435		15,000	1,614,435
Frazer					600,000	600,000
Elmendorf				300		300
Kodiak other	145,000		9,650		17,150	171,800
Pillar Creek					126,500	126,500
<b>KODIAK TOTALS</b>	<b>1,655,000</b>	<b>15,000</b>	<b>84,085</b>	<b>300</b>	<b>2,360,150</b>	<b>4,114,535</b>
<b>ARCTIC/YUKON/KUSKOKWIM</b>						
Sikusuilag		73,000				73,000
<b>AYK TOTALS</b>	<b>0</b>	<b>73,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>73,000</b>
<b>STATEWIDE TOTALS</b>	<b>20,922,394</b>	<b>8,146,953</b>	<b>1,068,876</b>	<b>128,346</b>	<b>4,597,269</b>	<b>34,865,838</b>

Appendix 5. Cumulative state loans and enhancement funds returned to associations (through December 31, 1993), and annual fish sales for 20 private nonprofit (PNP) hatcheries (through Dec. 31, 1993).

Region / Corporation (number of permits)	State Loans		Cumulative Enhancement Funds Generated through Assessments, Returned to Associations via Contract	Estimated Revenue From 1993 Sales of Fish Returning to Special Harvest Areas
	For Capital Construction	For Operations		
<b>SOUTHERN SOUTHEAST</b>				
Southern Southeast Regional Aquaculture Association-SSRAA (3)	\$9,093,000	\$2,848,942	\$18,536,831 (note 1)	\$1,964,762
Alaska Aquaculture, Inc.-AAI (1)	\$2,312,020	\$3,612,784	N/A	\$59,063
Meyers Chuck Aquaculture Association-MCAA (0)	\$10,000	\$0	N/A	N/A
<b>NORTHERN SOUTHEAST</b>				
Northern Southeast Regional Aquaculture Association-NSRAA (4)	\$2,724,265	\$1,816,496	\$11,420,109 (note 1)	\$1,895,165
Armstrong-Keta, Inc. - AKI (1)	\$3,131,645	\$2,461,900	N/A	\$129,949
Burro Creek Farms, Inc.-BCF (1)	\$51,500	\$332,875	N/A	
Douglas Island Pink and Chum Inc.-DIPAC (3)	\$9,336,000	\$9,572,000	N/A	\$162,787
Kake Nonprofit Fisheries Corp.-KNFC (1)	\$1,500,724	\$2,617,060	N/A	\$45,243
Sheldon Jackson College-SJC (1)	\$362,254	\$61,370	N/A	
Tlingit and Haida Fisheries Development Corp.-THFDC (0)	\$1,464,000	\$89,860	N/A	N/A
<b>PRINCE WILLIAM SOUND</b>				
Prince William Sound Aquaculture Corp.-PWSAC (3)	\$21,475,419	\$1,085,500	\$10,491,804 (note 2)	\$2,308,739
Valdez Fisheries Development Assoc.-VFDA (1)	\$3,193,830	\$4,586,543	N/A	\$1,117,105
<b>COOK INLET</b>				
Cook Inlet Regional Aquaculture Assoc.-CIAA (2)	\$2,338,881	\$683,369	\$12,944,279 (note 2)	\$234,874
<b>KODIAK</b>				
Kodiak Regional Aquaculture Assoc.-KRAA (1)	\$0	\$0	\$6,039,909 (note 2)	
<b>CHIGNIK</b>				
Chignik Regional Aquaculture Assoc. - CRAA (0)			\$473,325 (note 2)	N/A
<b>STATEWIDE TOTALS</b>	<b>\$56,983,538</b>	<b>\$29,768,699</b>	<b>\$59,906,255.83</b>	<b>\$7,917,687</b>

note 1: 3% mandatory assessment tax collected collected from commercial fishermen.

note 2: 2% mandatory assessment tax collected from commercial fishermen.

N/A: Not Applicable

Appendix 6a. Summary of salmon production from Alaskan hatcheries and enhancement projects.

Year	Egg take	Fry release	Total return	Year	Egg take	Fry release	Total return
1965	NA			1980	293,418,000	91,183,000	2,428,170
1966	NA	170,000	0	1981	471,521,000	213,610,000	4,535,820
1967	NA	538,000	0	1982	545,509,000	326,024,000	6,940,500
1968	NA	588,400	0	1983	647,905,000	333,651,000	6,784,050
1969	NA	1,025,900	0	1984	798,845,000	506,431,000	9,325,830
1970	NA	891,700	0	1985	920,352,000	551,175,000	17,749,210
1971	NA	1,045,000	0	1986	992,334,000	746,393,000	14,106,350
1972	NA	782,000	0	1987	1,349,423,000	801,298,000	27,160,900
1973	2,106,000	962,000	0	1988	1,275,603,000	1,056,531,000	20,992,303
1974	6,671,000	3,164,000	0	1989	1,400,625,000	1,091,804,000	36,638,280
1975	23,924,000	4,490,000	17,650	1990	1,601,780,000	1,116,526,000	49,515,380
1976	49,972,000	14,436,780	38,200	1991	1,651,865,000	1,328,257,000	48,146,000
1977	90,337,000	37,687,000	175,318	1992	1,738,632,000	1,335,537,000	23,372,246
1978	103,203,000	71,949,000	322,682	1993	1,650,710,000	1,463,320,000	33,313,166
1979	130,780,000	80,716,000	1,653,570	<b>TOTAL</b>	<b>15,745,515,000</b>	<b>11,180,185,780</b>	<b>303,215,625</b>

NA=not available

Table does not include non-anadromous species

Appendix 6b. Summary of chum salmon production from Alaskan hatcheries and enhancement projects.

Year	Egg take	Fry release	Total return	Year	Egg take	Fry release	Total return
1973	NA			1984	256,584,000	105,827,000	1,809,000
1974	1,424,000	7,780		1985	242,906,000	198,997,000	1,404,000
1975	4,966,000	967,000		1986	345,567,000	181,850,000	1,938,000
1976	7,163,000	2,370,000		1987	343,065,000	276,477,000	2,005,000
1977	7,036,000	2,590,000	800	1988	388,463,000	235,231,000	2,650,000
1978	9,554,000	3,917,000	2,810	1989	281,078,000	318,116,000	1,347,000
1979	18,466,000	6,095,000	5,730	1990	450,327,000	208,000,000	2,039,000
1980	75,789,000	8,658,000	16,100	1991	490,173,000	373,892,000	2,260,000
1981	81,684,000	47,315,000	33,100	1992	519,425,000	434,198,000	3,192,708
1982	123,386,000	58,924,000	153,000	1993	468,890,000	460,120,000	6,563,000
1983	155,995,000	93,457,000	301,000				

Appendix 6c. Summary of sockeye salmon production from Alaskan hatcheries and enhancement projects.

Year	Egg take	Fry release	Total return	Year	Egg take	Fry release	Total return
1972		17,000		1983	67,880,000	52,513,000	230,000
1973	1,548,000	192,000		1984	82,622,000	51,778,000	389,000
1974	1,567,000	506,000		1985	108,039,000	72,407,000	757,000
1975	7,934,000	997,000		1986	101,251,000	77,086,000	1,146,000
1976	23,889,000	2,172,000		1987	106,584,000	60,726,000	1,099,000
1977	18,299,000	13,801,000	318	1988	107,237,000	67,707,000	1,780,000
1978	34,977,000	15,997,000	1,640	1989	107,524,000	75,552,000	2,111,000
1979	31,892,000	17,104,000	9,990	1990	99,265,000	73,190,000	4,120,000
1980	37,342,000	15,236,000	74,290	1991	112,683,000	68,984,000	6,374,000
1981	50,812,000	27,560,000	71,640	1992	105,043,000	75,125,000	3,899,000
1982	58,792,000	45,292,000	57,540	1993	120,860,000	57,680,000	5,018,000

Appendix 6d. Summary of pink salmon production from Alaskan hatcheries and enhancement projects.

Year	Egg take	Fry release	Total return	Year	Egg take	Fry release	Total return
1973	558,000			1984	433,384,000	336,738,000	5,298,000
1974	4,949,000	448,000		1985	536,349,000	261,434,000	14,158,000
1975	15,460,000	1,429,000	17,550	1986	511,330,000	468,734,000	9,044,000
1976	23,441,000	10,200,000	16,200	1987	857,901,000	442,647,000	21,960,000
1977	64,281,000	18,433,000	175,000	1988	735,699,000	728,907,000	13,838,000
1978	60,085,000	49,658,000	321,000	1989	974,893,000	674,870,000	31,754,000
1979	90,060,000	54,885,000	1,591,000	1990	1,013,590,000	808,955,000	41,207,000
1980	173,940,000	64,285,000	2,310,000	1991	1,008,890,000	861,978,000	38,132,000
1981	327,599,000	134,652,000	4,371,000	1992	1,079,763,000	801,770,000	14,879,000
1982	343,955,000	217,604,000	6,610,000	1993	1,028,760,000	919,680,000	20,693,000
1983	406,393,000	178,220,000	5,939,000				

Appendix 6e. Summary of coho salmon production from Alaskan hatcheries and enhancement projects.

Year	Egg take	Fry release	Total return	Year	Egg take	Fry release	Total return
1967	NA			1980	3,839,000	2,211,000	21,210
1966	NA	506,000		1981	9,782,000	3,350,000	54,960
1967	NA	930,000		1982	16,100,000	3,266,000	108,000
1968	NA	846,000		1983	11,553,000	7,917,000	300,800
1969	NA	828,000		1984	17,688,000	8,811,000	1,809,000
1970	NA	614,000		1985	19,426,000	14,273,000	1,404,000
1971	NA	442,000		1986	23,715,000	12,665,000	1,938,000
1972	NA	1,657,000		1987	25,456,000	13,718,000	2,005,000
1973	NA	1,909,000		1988	26,951,000	15,579,000	2,650,000
1974	NA	1,824,000		1989	22,629,000	15,277,000	1,347,000
1975	NA	3,470,000	100	1990	21,051,000	16,446,000	2,039,000
1976	NA	3,120,000	22,000	1991	21,521,000	16,119,000	1,258,000
1977	NA	4,922,000		1992	21,364,000	14,625,000	1,280,000
1978	NA	3,191,000		1993	22,670,000	14,620,000	928,000
1979	2,347,000	2,483,000	48,560				

Appendix 6f. Summary of chinook salmon production from Alaskan hatcheries and enhancement projects.

Year	Egg take	Fry release	Total return	Year	Egg take	Fry release	Total return
1965	NA			1980	2,508,000	793,000	6,570
1966	NA	170,000		1981	1,644,000	733,000	5,120
1967	NA	538,000		1982	3,276,000	938,000	11,960
1968	NA	82,400		1983	6,084,000	1,544,000	13,250
1969	NA	95,900		1984	8,567,000	3,277,000	20,830
1970	NA	45,700		1985	13,632,000	4,064,000	26,210
1971	NA	217,000		1986	10,471,000	6,058,000	40,350
1972	NA	151,000		1987	16,417,000	7,730,000	91,900
1973	NA	328,000		1988	17,253,000	9,107,000	74,303
1974	155,000	553,000		1989	14,501,000	7,989,000	79,280
1975	530,000	155,000		1990	17,547,000	9,935,000	110,380
1976	1,218,000	233,000		1991	18,598,000	7,284,000	122,000
1977	2,791,000	1,016,000		1992	13,037,000	9,819,000	121,538
1978	978,000	804,000	42	1993	9,530,000	11,220,000	111,166
1979	1,792,000	1,215,000	3,220				

Appendix 7a. Summary of statewide salmon production (all species) from PNP hatcheries as reported by operators.

Year	Egg Take	Fry or smolt release	Total return	Special harvest	Hatchery revenue
1975	8,091,395				
1976	16,622,881	3,719,741			
1977	37,008,186	12,360,354	160,147	108,718	\$130,726.00
1978	37,346,167	26,796,238	160,967	114,188	\$141,799.00
1979	54,295,879	29,131,774	356,501	244,555	\$309,612.00
1980	125,740,500	35,587,200	1,506,466	346,168	\$436,171.00
1981	223,600,000	101,600,000	2,563,913	850,293	\$1,274,640.00
1982	234,390,000	126,990,000	5,340,720	1,370,110	\$1,165,608.00
1983	261,310,000	170,375,000	4,285,989	744,767	\$669,838.00
1984	372,880,000	217,730,000	4,764,144	1,048,701	\$1,668,788.00
1985	469,960,000	302,320,000	8,106,485	1,853,483	\$1,878,348.00
1986	522,200,000	380,890,000	7,903,526	1,211,620	\$1,867,054.45
1987	868,250,000	461,170,000	19,096,871	4,172,700	\$6,557,877.16
1988	1,045,620,000	819,800,000	14,343,654	2,499,557	\$9,266,780.00
1989	1,108,700,000	860,190,000	24,044,699	14,849,608	\$28,985,391.36
1990	1,249,160,000	925,210,000	42,405,072	10,387,754	\$13,644,040.77
1991	1,325,990,000	1,087,070,000	40,264,749	12,377,204	\$6,396,187.29
1992	1,427,710,000	1,075,180,000	18,174,631	7,277,620	\$10,424,578.96
1993	1,613,220,000	1,426,480,000	27,781,066	4,827,710	\$7,917,685.00
Cumulative hatchery revenue from special harvest:					\$92,735,124.99

Appendix 7b. Summary of chum salmon production from PNP hatcheries.

Year	Egg Take	Fry release	Total return	Special harvest	Hatchery revenue
1975	77,000				
1976	347,275	66,075			
1977	1,614,574	264,068			
1978	1,684,930	1,064,000	543		
1979	6,782,864	924,400	3		
1980	26,850,000	3,340,000	1,588		
1981	32,400,000	21,900,000	20,518	6,115	\$24,640.00
1982	46,130,000	23,590,000	22,133	378	\$302.00
1983	68,790,000	41,770,000	126,783	35,099	\$37,120.00
1984	122,170,000	54,780,000	1,001,449	436,617	\$690,393.00
1985	119,450,000	97,880,000	525,088	123,215	\$209,208.00
1986	181,450,000	100,490,000	779,637	188,754	\$303,080.00
1987	234,500,000	149,790,000	955,294	487,605	\$1,162,578.50
1988	369,610,000	186,050,000	1,835,164	469,754	\$2,180,685.40
1989	267,030,000	286,770,000	1,102,191	183,340	\$754,806.00
1990	425,410,000	216,860,000	1,632,539	369,985	\$1,411,640.43
1991	441,530,000	359,270,000	1,958,538	403,603	\$1,269,086.65
1992	495,360,000	394,260,000	3,078,557	741,276	\$2,449,107.29
1993	457,690,000	451,720,000	6,386,907	1,781,764	\$4,864,415.00

Appendix 7c. Summary of sockeye salmon production from PNP hatcheries

Year	Egg Take	Fry or smolt release	Total return	Special harvest	Hatchery revenue
1985	310,000	0	0	0	\$0.00
1986	1,295,700	102,000	0	0	\$0.00
1987	1,570,000	750,000	0	0	\$0.00
1988	10,590,000	1,000,000	66,499	0	\$0.00
1989	14,740,000	8,030,000	39,832	39,831	\$254,214.80
1990	11,780,000	8,140,000	101,216	8,513	\$35,506.20
1991	27,480,000	8,070,000	153,606	5,023	\$21,167.36
1992	25,530,000	15,960,000	783,508	170,629	\$1,653,004.27
1993	102,720,000	37,060,000	838,805	156,159	\$433,147.00

Appendix 7d. Summary of pink salmon production from PNP hatcheries.

Year	Egg Take	Fry release	Total return	Special harvest	Hatchery revenue
1975	8,002,395				
1976	16,251,456	3,653,666			
1977	35,383,112	12,093,184	160,147	108,718	\$130,726.00
1978	34,851,807	25,732,238	160,397	114,188	\$141,799.00
1979	46,582,015	28,204,674	356,498	244,555	\$309,612.00
1980	98,030,000	31,690,000	1,504,878	346,168	\$436,171.00
1981	188,000,000	78,800,000	2,491,345	838,037	\$1,200,000.00
1982	185,170,000	102,550,000	5,253,378	1,354,732	\$1,084,806.00
1983	185,520,000	126,890,000	4,086,552	701,399	\$613,618.00
1984	241,760,000	159,340,000	3,637,927	583,185	\$741,673.00
1985	339,910,000	199,490,000	7,404,789	1,698,732	\$1,320,320.00
1986	324,570,000	271,960,000	6,767,984	948,624	\$1,012,420.00
1987	618,350,000	299,260,000	17,963,785	3,624,586	\$4,711,068.00
1988	645,100,000	625,820,000	12,257,959	2,007,720	\$6,715,887.09
1989	805,870,000	553,090,000	22,561,056	14,519,987	\$27,380,702.66
1990	788,710,000	684,790,000	39,919,911	9,846,364	\$10,846,114.44
1991	830,860,000	704,330,000	37,081,341	11,574,828	\$2,890,652.41
1992	882,920,000	648,470,000	13,200,079	6,009,343	\$3,917,462.76
1993	1,028,760,000	919,680,000	19,844,303	2,736,262	\$1,733,572.00

Appendix 7e. Summary of coho salmon production from PNP hatcheries.

Year	Egg Take	Fry or smolt release	Total return	Special harvest	Hatchery revenue
1975	12,000				
1976	24,150				
1977	10,500	3,102			
1978	809,430	0	27		
1979	931,000	2,700	0		
1980	666,500	557,200	0		
1981	2,800,000	900,000	52,050	6,141	\$50,000.00
1982	2,870,000	700,000	61,709	11,500	\$80,500.00
1983	6,200,000	1,570,000	71,781	7,396	\$19,100.00
1984	6,300,000	3,230,000	121,112	27,310	\$233,466.00
1985	4,100,000	4,220,000	168,427	29,530	\$293,820.00
1986	8,300,000	4,280,000	344,749	72,960	\$535,203.00
1987	9,280,000	5,440,000	169,149	58,333	\$625,546.65
1988	13,310,000	4,720,000	122,186	13,383	\$178,771.15
1989	13,740,000	9,040,000	305,048	88,702	\$271,181.23
1990	14,470,000	10,730,000	691,680	140,728	\$939,670.50
1991	16,120,000	11,500,000	1,001,338	372,612	\$1,873,708.61
1992	16,510,000	10,280,000	1,070,086	338,725	\$2,051,465.68
1993	19,150,000	11,100,000	657,208	128,771	\$503,420.00

Appendix 7f. Summary of chinook salmon production from PNP hatcheries.

Year	Egg Take	Fry or smolt release	Total return	Special harvest	Hatchery revenue
1980	194,000				
1981	400,000				
1982	220,000	150,000	3,500	3,500	N/A
1983	800,000	140,000	872	872	N/A
1984	2,730,000	380,000	3,656	1,589	\$3,256.00
1985	6,180,000	720,000	8,181	2,006	\$55,000.00
1986	6,580,000	4,050,000	11,156	1,282	\$16,351.00
1987	4,550,000	5,940,000	8,643	2,176	\$58,684.00
1988	7,010,000	2,210,000	23,246	8,700	\$191,436.36
1989	7,330,000	3,270,000	36,572	17,748	\$324,486.67
1990	8,790,000	4,700,000	59,726	22,164	\$411,109.20
1991	10,000,000	3,900,000	69,926	21,138	\$333,572.26
1992	7,400,000	6,210,000	42,401	17,647	\$353,538.96
1993	4,900,000	6,920,000	53,843	24,754	\$383,131.00

N/A = information not available

Appendix 8. 1993 average commercial salmon fishery harvest weight and prices.

		Avg Harvest				Avg Harvest	
Area	Species	weight (lb)	price(per lb)	Area	Species	weight(lb)	price(per lb)
<b>Arctic/Yukon/Kuskokwim</b>				<b>AK Peninsula</b>			
	Chum (Kotz)	8.48	0.38		Chinook	17.17	0.6
<b>Cook Inlet</b>					Sockeye	5.73	0.75
	Chinook	23.48	1.1		Coho	8.5	0.5
	Sockeye	6.57	1		Pink	3.44	0.12
	Coho	6.22	0.5		Chum	6.42	0.25
	Pink	3.07	0.14	<b>Prince William Sound</b>			
	Chum	6.76	0.45		Chinook	22.95	1.81
<b>Kodiak</b>					Sockeye	5.85	1.27
	Chinook	11.92	0.75		Coho	7.06	0.8
	Sockeye	5.13	0.8		Pink	3.1	0.16
	Coho	6.71	0.5		Chum	6.7	0.4
	Pink	3.13	0.12	<b>Southeast</b>			
	Chum	5.99	0.25		Chinook	16.21	1.45
					Sockeye	5.86	0.83
					Coho	5.64	1.07
					Pink	2.99	0.13
					Chum	7.2	0.41

data from Commercial Fisheries Management and Development Division, ADF&G; based on total commercial fishery.  
 data as of 10/28/93

Appendix 9. Detailed return information, by species, to 1993 Alaskan enhancement program projects.

Appendix 9a. 1993 estimated chinook salmon returns to Alaskan hatcheries (including common-property harvests) as reported by operators.

REGION/LOCATION	Common Property Harvest				Pers Use		Brood	Terminal Harvest	Other Escapement	Total	SHA Revenue	Comment	
	Seine	Gillnet	Troll	Sport	Subsis	Other							
<b>SOUTHEAST</b>													
SSRAA	Whitman Lake	1	15	68	76		251			411			
	-Carroll inlet	2	54	834	616			1,725		3,231	\$40,211		
COOP	-Earl West Cove	1,146	6,728	864	276					9,014			
	Neets Bay		136	1,473	1,414			8,075		11,098	\$177,507		
	Burnett Inlet		75	228	86				156	545			
NSRAA	Medvejje Creek		59	5,336	1,164		554	10,776	1,308	19,197	\$117,132		
	Hidden Falls	116	75	191	27		654	125	579	1,767	\$2,493		
AKI	Port Armstrong	74	56	482	67			1,253	500	2,432	\$15,402		
DIPAC	Gastineau	50	109		107		519			785	\$2,462		
	-Sheep Creek							49		49	\$1,188		
SJC	Indian River	31		377	12		495		9	924			
ADFG	Deer Mountain Hatchery		32	181	131	160	569			1,073			
	-Big Salt L		3	6						9			
	-Margaret L									0			
	-Thorne Bay		23	54	2					79			
	-Bell Island			2						2			
	Crystal Lake Hatchery	22	151	3,508	1,000		1,827			6,508			
	-Ohmer Creek		399	457	19				146	1,021			
	Jerry Myers		5		7		40			52			
	Snettisham Hatchery		1,154	857	168				307	2,486			
	-Indian River				1					1			
	-Juneau/DJ	21	1,366	252	2,000				1,092	4,731			
	-Tahini River		13	18			2		38	71			
	-Lutak Inlet		112	12	68				65	257			
	-Twin Lakes				5,000					5,000			
<b>SOUTHEAST TOTALS</b>		<b>1,463</b>	<b>10,565</b>	<b>15,200</b>	<b>12,241</b>	<b>160</b>	<b>0</b>	<b>4,911</b>	<b>22,003</b>	<b>4,200</b>	<b>70,743</b>	<b>\$356,395</b>	
<b>PRINCE WILLIAM SOUND</b>													
PWSAC	Esther Lake		613		100		926	1,432		3,071	\$26,736		
VFDA	Solomon Gulch									0			
<b>PWS TOTALS</b>		<b>0</b>	<b>613</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>926</b>	<b>1,432</b>	<b>0</b>	<b>3,071</b>	<b>\$26,736</b>	

Appendix 9a. 1993 estimated chinook salmon returns to Alaskan hatcheries (including common-property harvests) as reported by operators.

REGION/LOCATION	Common Property Harvest			Pers Use		Brood	Terminal Harvest	Other Escapement	Total	SHA	
	Seine	Gillnet	Troll	Sport	Subsis					Other	Revenue
<b>COOK INLET</b>											
CIAA	Crooked Creek						1,319		1,319		
ADFG	Elmendorf								0		
	-Crooked Creek			5,000		481		848	6,329		1
	-Eagle River			75					75		1
	710	490		890					2,090		1,4
	-Homer Spit			1,685					1,685		1
	500			2,500					3,000		1
	-Ship Creek			2,200					2,200		1
	-Resurrection Bay			1,500					1,500		1
	Ft Richardson								0		
	-Willow Cr			2,590					2,590		2
	-Ninilchik R			2,289					2,289		2
	-Cook Inlet Lakes			13,985					13,985		1
<b>COOK INLET TOTALS</b>											
	1,210	490	0	32,714	0	0	481	1,319	848	37,062	\$0
<b>KODIAK</b>											
	Elmendorf										
	-Kodiak Lakes			250	30				10	290	
<b>KODIAK TOTALS</b>											
	0	0	0	250	30	0	0	0	10	290	\$0
<b>STATEWIDE TOTALS</b>											
	2,673	11,668	15,200	45,305	190	0	6,318	24,754	5,058	111,166	\$383,131

Appendix 9b. 1993 estimated chum salmon returns to Alaskan hatcheries (including common-property harvests) as reported by operators.

REGION/LOCATION	Common Property Harvest			Pers Use			Brood	Terminal Harvest	Other Escapement	Total	SHA	
	Seine	Gillnet	Troll	Sport	Subsis	Other					Revenue	Comment
<b>SOUTHEAST</b>												
SSRAA	Whitman Lake-Nakat/fall	33,445	40,169							73,614		
	-Nakat Inlet-summer	17,831	37,318							55,149		
	-Earl West Cove-summer	2,950	11,059							14,009		
	-Kendrick Bay-summer	22,609	2,348							24,957		
	Neets Bay -summer	153,873	36,083	7,783			71,598	210,603		479,940	\$696,462	
	Neets Bay-Fall	57,812	22,439	6,868			45,264	487,056		619,439	\$833,016	
NSRAA	Medvejie Creek	457,148	373,306	449,660	3,462		16,705	310,843	23,430	1,634,554	\$556,648	
	Hidden Falls	1,437,282					112,153	192,011	49,759	1,791,205	\$1,102,192	
	Haines Projects		2,024				663		3,000	5,687		
AAI	Burnett Inlet	6,161	5,841				10,848	2,133	4,000	28,983	\$13,813	
BCF	Burro Creek						86	69	17	172		
DIPAC	Sheep Creek				1,100		49,280	1,180	11,718	63,278	\$4,094	
	Gastineau		76,378		1,894		16,618			94,890	\$5,681	
	-Limestone Inlet		2,306						120	2,426		
	-Boat Harbor		96,000							96,000		
KNFC	Gunnuk Creek	6,017		4,224	700		20,882	8,892	5,240	45,955	\$12,008	
	- Southeast Cove	4,834		3,394				18,403	1,500	28,131	\$30,326	
SJC	Indian River				11		1,069		390	1,470		
ADFG	Marx Cr Spwn Ch		303						36,303	36,606		
	Snettisham Hatchery	338	970	1,413					323	3,044		
	-Limestone Inlet		60,000							60,000		
	-Mist Island		65							65		
<b>SOUTHEAST TOTALS</b>		<b>2,200,300</b>	<b>766,609</b>	<b>473,342</b>	<b>7,167</b>	<b>0</b>	<b>86</b>	<b>345,149</b>	<b>1,231,121</b>	<b>135,800</b>	<b>5,159,574</b>	<b>3,254,240</b>
<b>PRINCE WILLIAM SOUND</b>												
PWSAC	Esther Lake		610,954				110,929	476,666		1,198,549	\$1,573,569	
VFDA	Solomon Gulch				200		9,033	61,964	1,149	72,346	\$22,927	
<b>PWS TOTALS</b>		<b>0</b>	<b>610,954</b>	<b>0</b>	<b>200</b>	<b>0</b>	<b>0</b>	<b>119,962</b>	<b>538,630</b>	<b>1,149</b>	<b>1,270,895</b>	<b>\$1,596,496</b>
<b>COOK INLET</b>												
CIAA	Eklutna		25,832		3,244		807	12,013	157	42,053	\$13,680	
<b>COOK INLET TOTALS</b>		<b>0</b>	<b>25,832</b>	<b>0</b>	<b>3,244</b>	<b>0</b>	<b>0</b>	<b>807</b>	<b>12,013</b>	<b>157</b>	<b>42,053</b>	<b>\$13,680</b>
<b>KODIAK</b>												
KRAA	Kitoi	4,600					9,500			14,100		
ADFG	Russell Creek	29,925							9,500	39,425		
<b>KODIAK TOTALS</b>		<b>34,525</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,500</b>	<b>0</b>	<b>9,500</b>	<b>53,525</b>	<b>\$0</b>
<b>ARCTIC/YUKON/KUSK</b>												
ADFG	Sikusuilag		5,000		200	5,000		26,800		37,000		
<b>AYK TOTALS</b>		<b>0</b>	<b>5,000</b>	<b>0</b>	<b>200</b>	<b>5,000</b>	<b>0</b>	<b>26,800</b>	<b>0</b>	<b>0</b>	<b>37,000</b>	<b>\$0</b>
<b>STATEWIDE TOTALS</b>		<b>2,234,825</b>	<b>1,408,395</b>	<b>473,342</b>	<b>10,811</b>	<b>5,000</b>	<b>86</b>	<b>502,218</b>	<b>1,781,764</b>	<b>146,606</b>	<b>6,563,047</b>	<b>\$4,864,415</b>

## Appendix 9c. 1993 estimated coho salmon returns to Alaskan hatcheries (including common-property harvests) as reported by operators.

REGION/LOCATION	Common Property Harvest				Pers Use		Brood	Terminal Harvest	Other Escapement	Total	SHA Revenue	Comment
	Seine	Gillnet	Troll	Sport	Subsis	Other						
<b>SOUTHEAST</b>												
SSRAA	Whitman Lake	565	3,165	7,249	235		3,189			14,403		
	-Earl West Cove	645	11,215	15,348	11					27,219		
	-Nakat Inlet	1,448	2,350	8,973	39					12,810		
	Neets Bay	6,961	62,453	140,045	3,169		2,000	49,100		263,728	\$211,648	
NSRAA	Medvejje Creek	3,196	5,399	11,631	811		101	916		22,054		
	-Deer Lake	10,000	130	45,340	880		1,922	16,900	1,293	76,465	\$76,200	
	Hidden Falls	3,411	256	18,774	337		1,580	8,137	941	33,436	\$40,500	
AAI	Burnett Inlet		30	76						106		
AKI	Port Armstrong	581	11	6,783			327	1,474	2,307	11,483	\$6,293	
BCF	Burro Creek								40	154		
	Gastineau	569	11,458	40,057	8,929	9,208	3,536	39,138		112,895	\$140,620	
SJC	Indian River			1,380	89		723		59	2,251		
	Klawock Hatchery	6,451	66	33,453	424		4,000	7,909		52,303	\$34,800	
	-Cable Cr	100	100	334			210			744		
	-Tunga L	1,500		7,500					3,500	12,500		
	-Rio Roberts	11	109	332	15					467		
ADFG	Dog Salmon R	330							259	589		
	Old Franks L								308	308		
	Margaret Lake	3							106	109		
	Deer Mountain Hatchery	361	420	123	158	124	3	581		1,770		
	-Bold Island L	328	276	76			2			682		
	-Reflection L	171	224	44	27					466		
	-Ward Cr	317	1,067	366	326		4			2,080		
	Crystal Lake Hatchery	130	2,230	1,090	80			773		4,303		
	-St. John's Creek			46						46		
	Snettisham Hatchery									0		
	-Indian Lake		280	1,360					1,600	3,240		
<b>SOUTHEAST TOTALS</b>		<b>37,078</b>	<b>101,239</b>	<b>340,380</b>	<b>15,530</b>	<b>124</b>	<b>9,319</b>	<b>18,954</b>	<b>123,574</b>	<b>10,413</b>	<b>656,611</b>	<b>\$510,061</b>
<b>PRINCE WILLIAM SOUND</b>												
PWSAC	Esther Lake	3,246	32,436		100		4,857	1,532		42,171	\$5,805	
VFDA	Solomon Gulch	33	66		400		1,518	2,343	97	4,457	\$5,908	
	-Boulder Bay			3	100				43	146		
<b>PWS TOTALS</b>		<b>3,279</b>	<b>32,502</b>	<b>3</b>	<b>600</b>	<b>0</b>	<b>0</b>	<b>6,375</b>	<b>3,875</b>	<b>140</b>	<b>46,774</b>	<b>\$11,713</b>

Appendix 9c. 1993 estimated coho salmon returns to Alaskan hatcheries (including common-property harvests) as reported by operators.

REGION/LOCATION	Common Property Harvest				Pers Use		Brood	Terminal Harvest	Other Escapement	Total	SHA Revenue	Comment
	Seine	Gillnet	Troll	Sport	Subsis	Other						
<b>COOK INLET</b>												
CIAA	Eklutna	930		124			50	446		1,550		
	Trail Lakes			1,902			678	7,199	794	10,573	\$16,446	
	Crooked Creek	115	5	3,150			185	986	1,250	5,691		
ADFG	Big Lake	1,500							1,500	3,000		
	Elmendorf									0		
	-Homer Spit			1,627	500					2,127		1
	-Ship Creek	500		1,500			435			2,435		1
	-Resurrection Bay			7,000						7,000		1
	-Landlocked lakes			9,302						9,302		1
	Ft Richardson									0		
	-Bird Cr	3,000		3,000			600			6,600		3, 5
	-Campbell Cr	3,000		3,000			3,300			9,300		3, 5
	-Little Susitna R	5,000		2,861			9,189			17,050		3, 5
<b>COOK INLET TOTALS</b>		<b>0</b>	<b>14,045</b>	<b>5</b>	<b>33,466</b>	<b>500</b>	<b>0</b>	<b>14,437</b>	<b>8,631</b>	<b>3,544</b>	<b>74,628</b>	<b>\$16,446</b>
<b>KODIAK</b>												
KRAA	Kitoi	16,000					800			16,800		
	-Landlocked lakes			2,000	35				72	2,107		
	-Crescent Lake			1,000	1,400					2,400		
ADFG	Afognak Fishpasses			500	50		105,664			106,214		
	Russell Creek	16							4,400	4,416		
<b>KODIAK TOTALS</b>		<b>16,016</b>	<b>0</b>	<b>0</b>	<b>3,500</b>	<b>1,485</b>	<b>0</b>	<b>106,464</b>	<b>0</b>	<b>4,472</b>	<b>131,937</b>	<b>\$0</b>
<b>ARCTIC/YUKON/KUSK</b>												
ADFG	Big Lake- LL lakes			18,072						18,072		
<b>AYK TOTALS</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>18,072</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18,072</b>	<b>\$0</b>
<b>STATEWIDE TOTALS</b>		<b>56,373</b>	<b>147,786</b>	<b>340,388</b>	<b>71,168</b>	<b>2,109</b>	<b>9,319</b>	<b>146,230</b>	<b>136,080</b>	<b>18,569</b>	<b>928,022</b>	<b>\$538,220</b>

Appendix 9d. 1993 estimated pink salmon returns to Alaskan hatcheries (including common-property harvests) as reported by operators.

REGION/LOCATION	Common Property Harvest			Sport	Pers Use		Brood	Terminal Harvest	Other Escapement	Total	SHA	
	Seine	Gillnet	Troll		Subsis	Other					Revenue	Comment
<b>SOUTHEAST</b>												
AAI	Burnett Inlet	200,000	20,000				41,743	35,000	39,000	335,743	\$45,250	
AKI	Port Armstrong	119,656					64,645	259,935	34,387	478,623	\$108,254	
BCF	Burro Creek					3	3			6		
DIPAC	Sheep Creek			100			593	39	737	1,469	\$39	
	Gastineau			817			26,706			27,523	\$8,703	
KNFC	Gunnuk Creek	7,500		500	500		6,028	919	13,368	28,815	\$549	
	-Southeast Cove	6,000						3,953	2,000	11,953	\$2,360	
SJC	Indian River			28			2,552		1,177	3,757		
ADFG	Ketchikan Cr	107,200	40,000	12,800					40,000	200,000		
	Dog Salmon Cr	9,568							2,392	11,960		
	Margaret L	23,520	7,840						7,840	39,200		
	Sunny Cr	107,910							26,977	134,887		
<b>SOUTHEAST TOTALS</b>		<b>581,354</b>	<b>67,840</b>	<b>13,300</b>	<b>1,445</b>	<b>0</b>	<b>3</b>	<b>142,270</b>	<b>299,846</b>	<b>1,273,936</b>	<b>\$165,155</b>	
<b>PRINCE WILLIAM SOUND</b>												
PWSAC	Armin F Koernig	1,073,514	19,681				263,757	357,663		1,714,615	\$175,480	
	Esther Lake	722,243	135,118				381,858	265,363		1,504,582	\$115,138	
	Cannery Creek	400,102	35,114				307,478	92,451		835,145	\$62,556	
VFDA	Solomon Gulch	572		29,000			361,790	1,311,508	29,546	1,732,416	\$1,088,270	
<b>PWS TOTALS</b>		<b>2,196,431</b>	<b>189,913</b>	<b>0</b>	<b>29,000</b>	<b>0</b>	<b>0</b>	<b>1,314,883</b>	<b>2,026,985</b>	<b>5,786,758</b>	<b>\$1,441,444</b>	
<b>COOK INLET</b>												
CIAA	Tutka	121,012	7,150		5,200		102,000	409,431	27,403	672,196	\$126,973	
	-Halibut Cove	99,531	683							100,214		
	-Homer Spit				2,000					2,000		
<b>COOK INLET TOTALS</b>		<b>220,543</b>	<b>7,833</b>	<b>0</b>	<b>7,200</b>	<b>0</b>	<b>0</b>	<b>102,000</b>	<b>409,431</b>	<b>27,403</b>	<b>774,410</b>	<b>\$126,973</b>
<b>KODIAK</b>												
KRAA	Kitoi	12,076,700					263,546		55,000	12,395,246		
ADFG	Afognak Fishpass								4,000	4,000		
	Waterfall Fishpass	137,500							110,000	247,500		
	Russell Creek	202,000							9,500	211,500		
<b>KODIAK TOTALS</b>		<b>12,416,200</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>263,546</b>	<b>0</b>	<b>178,500</b>	<b>12,858,246</b>	<b>\$0</b>
<b>STATEWIDE TOTALS</b>		<b>15,414,528</b>	<b>265,586</b>	<b>13,300</b>	<b>37,645</b>	<b>0</b>	<b>3</b>	<b>1,822,699</b>	<b>2,736,262</b>	<b>403,327</b>	<b>20,693,350</b>	<b>\$1,733,572</b>

Appendix 9e. 1993 estimated sockeye salmon returns to Alaskan hatcheries (including common-property harvests) as reported by operators.

REGION/LOCATION	Common Property Harvest			Pers Use			Brood	Terminal Harvest	Other Escapement	Total	SHA Revenue	Comment
	Seine	Gillnet	Troll	Sport	Subsis	Other						
<b>SOUTHEAST</b>												
SSRAA	Beaver Falls	1,311	674					2,685	200	4,870	\$5,918	
	-Salmon Bay/Karta	4,500	4,500		500	1,000	837		9,000	20,337		
	-Bakewell R	2,393	2,393						532	5,318		
	-Margaret L	54	124	4			143			325		
	-Hugh Smith L	15,450	16,740				1,460		11,800	45,450		
	-Virginia L	1,500	1,500						2,000	5,000		
	Klawock Hatchery	129				2,676	5,050			7,855		
ADFG	Dog Salmon R	330							259	589		
	McDonald L	226,724	78,861		200	10,000	1,922		83,514	401,221		
	Snettisham -Sweetheart		565		100	2,000			20,000	22,665		
<b>SOUTHEAST TOTALS</b>		<b>252,391</b>	<b>105,357</b>	<b>4</b>	<b>800</b>	<b>15,676</b>	<b>0</b>	<b>9,412</b>	<b>2,685</b>	<b>127,305</b>	<b>513,630</b>	<b>\$5,918</b>
<b>PRINCE WILLIAM SOUND</b>												
PWSAC	Main Bay	19,344	189,365				8,020	97,594		314,323	\$349,455	
ADFG	Gulkana		117,000				17,600	18,260		152,860		
<b>PWS TOTALS</b>		<b>19,344</b>	<b>306,365</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25,620</b>	<b>115,854</b>	<b>0</b>	<b>467,183</b>	<b>\$349,455</b>
<b>COOK INLET</b>												
CIAA	Trail Lakes-Kalgin Island		87,010				3,274	17,092	37,644	145,020		
	-Chelatna Lake		33,309		2,204		1,160		19,075	55,748		
	-Hidden Lake		48,200		2,896		1,856		9,996	62,948		
	-Bear Lake						191	1,663	4,852	6,706	\$9,250	
	Crooked Creek							252		252		
	-Tustumena L		12,020				9,098			21,118		
	-Leisure/Hazel L	131,042			4,400			10,808		146,250	\$40,774	
	-Chenik L	19,091			100		4,000	4,579		27,770	\$15,841	
	-Port Dick L	1,010								1,010		
	-Kirschner L	33,094						3,226		36,320	\$11,910	
ADFG	Big Lake		107,050			6,250	27,750			141,050		
<b>COOK INLET TOTALS</b>		<b>184,237</b>	<b>287,589</b>	<b>0</b>	<b>9,600</b>	<b>6,250</b>	<b>0</b>	<b>47,329</b>	<b>37,620</b>	<b>71,567</b>	<b>644,192</b>	<b>77,775</b>
<b>KODIAK</b>												
KRAA	Kitoi	15,000					4,900			19,900		
ADFG	Karluk Fishpass	930,000	900,000		500	1,000			649,955	2,481,455		
	Frazer Fishpass	273,000	410,000						178,400	861,400		
	Afognak Fishpass	82				150			17,800	18,032		
	Pillar Creek						3,500			3,500		
	Russell Creek	1,042							7,300	8,342		
<b>KODIAK TOTALS</b>		<b>1,219,124</b>	<b>1,310,000</b>	<b>0</b>	<b>500</b>	<b>1,150</b>	<b>0</b>	<b>8,400</b>	<b>0</b>	<b>853,455</b>	<b>3,392,629</b>	<b>\$0</b>
<b>STATEWIDE TOTALS</b>		<b>1,675,096</b>	<b>2,009,311</b>	<b>0</b>	<b>10,900</b>	<b>23,076</b>	<b>0</b>	<b>90,761</b>	<b>156,159</b>	<b>1,052,327</b>	<b>5,017,634</b>	<b>\$433,147</b>

## Appendix 9f. 1993 estimated "other" enhanced fish returns to Alaskan hatcheries.

REGION/LOCATION	Common Property Harvest			Pers Use Other	Brood	Terminal Harvest	Other Escapement	Total	Comment
	Species	Commercial	Sport						
<b>SOUTHEAST</b>									
ADFG	Klawock		steelhead				250	250	
	Crystal Lake		steelhead				10	10	
<b>SOUTHEAST TOTALS</b>		0	0	0	0	0	260	260	
<b>PRINCE WILLIAM SOUND</b>									
	Ft Richardson								
	Glennallen lakes		rainbow	8,058				8,058	
<b>PWS TOTALS</b>		0	0	8,058	0	0	0	8,058	
<b>COOK INLET</b>									
	Ft Richardson								
	-Cook Inlet lakes		rainbow	56,197				56,197	
	Clear								
	-Cook Inlet lakes		grayling	8,510				8,510	6
			a char	1,755				1,755	6
<b>COOK INLET TOTALS</b>		0	0	66,462	0	0	0	66,462	
<b>KODIAK</b>									
ADFG	Ft Richardson								
	-Kodiak lakes		rainbow	901				901	
<b>KODIAK TOTALS</b>		0	0	901	0	0	0	901	
<b>ARCTIC/YUKON/KUSK</b>									
ADFG	Clear		grayling	2,258				2,258	
			a char	1,938				1,938	
			l trout	468				468	
	Ft Richardson								
	-interior lakes		rainbow	37,516				37,516	
<b>AYK TOTALS</b>		0	0	42,180	0	0	0	42,180	
<b>STATEWIDE TOTALS</b>		0	0	109,543	0	0	0	117,601	

## Comments:

1. based on 1992 Sport Fish Statewide Harvest Surveys
2. based on 1993 creel census
3. new fisheries estimate
4. commercial numbers based on fish ticket returns
5. commercial numbers based on CWT data
6. based on 1991 Sport Fish Harvest Surveys

*7 mile Spawo Kallang*

Appendix 10. Summary of Sci/Ed permitted salmon production in Alaska for 1993.

Region/Permittee	Project Type	Species	Max Release #
<b>SOUTHEAST</b>			
Craig Elementary	Classroom Incubation	Coho	500
Haines Borough School District	Classroom Incubation	Chum	2,500
Petersburg High School	School Incubation Proj	Pink	4,000
Sitka High School	Classroom Incubation	Coho	500
Skagway City Schools	School Incubation Proj	Pink, Coho & Chinook	100,000
White Cliff Elementary (Ketchikan)	Classroom Incubation	Coho	200
Wrangell School District	School Incubation Proj	Pink	100,000
NMFS, Auke Bay Lab	Research	pink	1,000,000
USDA, Forest Service (Craig)	Bioenhancement	Coho	100
USDA, Forest Service (Hoonah)	Bioenhancement	Coho	5,500
USDA, Forest Service (Hoonah)	Bioenhancement	Coho	54,000
USDA, Forest Service (Juneau)	Bioenhancement	Coho	150,000
USDA, Forest Service (Juneau)	Bioenhancement	Coho	2,000
USDA, Forest Service (Sitka)	Bioenhancement	Coho	25,000
USDA, Forest Service (sitka)	Bioenhancement	Chinook	110,000
UAF, Juneau Center	Research	Pink	80,000
<b>SOUTHCENTRAL</b>			
Bear Valley Elementary (Anchorage)	Classroom Incubation	Coho	250
Central Jr. High (Anchorage)	Classroom Incubation	Coho	250
Chugiak High School (Eagle River)	Classroom Incubation	Coho	250
Colony High School (Palmer)	Classroom Incubation	Coho	250
Colony Middle School (Palmer)	Classroom Incubation	Coho	250
Denali Elementary (Anchorage)	Classroom Incubation	Coho	250
Dimond High School (Anchorage)	Court yard Incubation	Coho	250
Eagle River Elementary	Classroom Incubation	Coho	250
Fairview Elementary (Anchorage)	Classroom Incubation	Coho	250
Girdwood Jr. High	Classroom Incubation	Coho	500
Goose Bay Elementary (Palmer)	Classroom Incubation	Coho	250
Gruening Middle School (Eagle River)	Classroom Incubation	Coho	250
Homer Intermediate School	Classroom Incubation	Pink	250
Northwood Elementary (Anchorage)	Classroom Incubation	Coho	250
Palmer High School	Classroom Incubation	Coho	250
Palmer Middle School	Classroom Incubation	Coho	250
Rogers Park Elementary (Anchorage)	Classroom Incubation	Coho	250
St. Elizabeth Ann Seton School (Anch)	Classroom Incubation	Coho	250
Service High School	Classroom Incubation	Coho	250
Steller Alt Secondary School (Anch)	Classroom Incubation	Coho	250
Steller Alt and Susitna Elementary	Research	Coho	350
Susitna Elementary (Anchorage)	Classroom Incubation	Coho	250
<b>INTERIOR</b>			
Delta/Greely School	Classrom Incubation	Coho	250
North Pole Middle School	Classroom Incubation	Chum	7,000
Tri Valley School (Healy)	Classroom Incubation	Arctic Char	1,000
<b>WESTERN</b>			
East Elementary (Kodiak)	Classroom Incubation	Coho	250
Main Elementary (Kodiak)	Classroom Incubation	Coho	250
Old Harbor School	School Incubation Proj	Coho	30,000
Peterson Elementary (Kodiak)	Classroom Incubation	Coho	250
Port Lions Jr. High	Classroom Incubation	Coho	250
St. George Island	Hatchery Feasibility Study	Pink	300,000
<b>AYK</b>			
Allakaket Community School	Classroom Incubation	Coho	250
Bettles Public School	Classroom Incubation	Coho	250

Appendix 10. Continued.

Region/Permittee	Project	Species Type	Max Release #
Circle City Schools	Classroom Incubation	Coho	250
Cruikshank School (Beaver)	Classroom Incubation	Coho	250
A.K. Demoski School (Nulato)	Classroom Incubation	Coho	250
Galena City School	Classroom Incubation	Coho	250
Holy Cross School	Classroom Incubation	Coho	250
Hughes Community School	Classroom Incubation	Coho	250
Jimmy Huntington School	Classroom Incubation	Coho	250
Kaitag City Schools	Classroom Incubation	Coho	250
M.A. Kangas School (Ruby)	Classroom Incubation	Coho	250
Koyukuk City Schools	Classroom Incubation	Coho	250
David Louis Mem. School (Grayling)	Classroom Incubation	Coho	250
Marshall Community School	Classroom Incubation	Coho	250
McGrath School	Classroom Incubation	Coho	250
Mountain Village High School	Classroom Incubation	Coho	250
Nome-Beltz School	School Incubation Proj	Coho & Pink	100,000
Pilot Station Community School	Classroom Incubation	Coho	250
Tanana City School	Classroom Incubation	Coho	250
UAF Cooperative Ext Service (Kaitag)	Instream Incubation	Chum	20,000
<b>AK PENINSULA</b>			
Akutan School	School Incubation Proj.	Pink & Chum	45,600
Cold Bay School	Classroom Incubation	Pink or Chum	6,600
False Pass School	Classroom Incubation	Pink or Chum	6,600
King Cove School	Classroom Incubation	Pink or Chum	6,600
Nelson Lagoon School	Classroom Incubation	Pink or Chum	6,600
Sand Point School	School Incubation Proj.	Pink & Coho	48,000
Unalaska City School District	School Incubation Proj.	Pink & Coho	52,000

Appendix 11. Updated contribution of fish by FRED hatcheries in 1992.

Hatchery or Project	Species	Commercial			Sport Catch	Pers Use	Subsis- tence	Brood/ Escpmnt	Total	
		Seine	Gillnet	Troll						
<b>ARCTIC-YUKON-KUSKOKWIM</b>										
Clear Hatchery	Grayling				975				975	d
	A char				1,507				1,507	d
	L trout				394				394	d
Ft Rich- Interior lakes	Rainbow				37,547				37,547	d
Big Lake- LL lakes	Coho				14,019				14,019	d
Sikusuilag Hatchery	Chum		40,000		200		3,300	12,000	55,500	
<b>AYK TOTALS:</b>		<b>0</b>	<b>40,000</b>	<b>0</b>	<b>54,642</b>	<b>0</b>	<b>3,300</b>	<b>12,000</b>	<b>109,942</b>	
<b>COOK INLET</b>										
Big Lake Hatchery										
Big Lake	Sockeye	26,791	26,791		4,750			18,027	76,359	b
	Coho	556	556		263			850	2,225	
Crooked Creek Hatchery										
Crooked Creek	Coho				2,794			1,100	3,894	
	Steelhead				1,746			805	2,551	
Tustumena Lake	Sockeye	108,550			900	1,775		20,944	132,169	e
Leisure/Hazel L	Sockeye	89,790			300	3,500			93,590	
Chenik Lake	Sockeye	14,380			100				14,480	
Port Dick Lake	Sockeye	420							420	
Kirschner Lake	Sockeye	40,040							40,040	
Landlocked Lakes	Coho				4,215				4,215	b
Elmendorf Hatchery										
Crooked Creek	Chinook				9,759				9,759	d
Halibut Cove	Chinook	340	690		1,040				2,070	d
Homer Spit	Chinook				2,725				2,725	d
	Coho				1,810				1,810	d
Seldovia	Chinook		310		1,100				1,410	d
Ship Creek	Chinook	325	650		2,053			800	3,828	d
	Coho		2,110		1,911			200	4,221	d
Landlocked lakes	Coho				2,100				2,100	d
Resurrection Bay	Chinook				3,631				3,631	d
	Coho				6,242				6,242	d
Fort Richardson Hatchery										
Willow Creek	Chinook				3,891			763	4,654	
Ninitchik R	Chinook				2,500				2,500	
Little Susitna	Coho		5,874		3,406			2,468	11,748	
Cook Inlet lakes	Rainbow				170,000				170,000	d
	Chinook				28,800				28,800	d
Clear Hatchery										
Landlocked lakes	Grayling				13,400				13,400	d
	A Char				2,700				2,700	d
<b>COOK INLET TOTALS:</b>		<b>281,192</b>	<b>36,981</b>	<b>0</b>	<b>272,136</b>	<b>5,275</b>	<b>0</b>	<b>45,957</b>	<b>641,541</b>	
<b>KODIAK/ALASKA PENINSULA</b>										
Kitoi Bay Hatchery										
Kitoi Bay Hatchery	Pink	705,900						275,000	980,900	
	Chum	3,500						15,530	19,030	
Landlocked lakes	Coho				1,200	35			1,235	
L Kitoi Lake	Sockeye	5000						5720	10,720	
	Coho	5000						1048	6,048	
Crescent Lake	Coho				1,000	1,391			2,391	
Hidden Lake	Coho	240						1019	1,259	
Ft Richardson	Rainbow				1,300				1,300	d
Clear	Grayling				165				165	d
Elmendorf-Island L	Chinook				117	25			142	
Karluk- egg plant	Sockeye							34,680	34,680	
Karluk-fertilization	Sockeye	607,900	600,000		500	1,369		831,414	2,041,183	
Frazer fishpass	Sockeye	109,920	164,880					186,000	460,800	a
Afognak Fishpasses (combined)	Coho							3,500	3,500	a
	Pink							36,500	36,500	a

Appendix 11. Continued.

Hatchery or Project	Species	Commercial Seine	Gillnet	Troll	Sport Catch	Pers Use	Subsis- tence	Brood/ Escpmnt	Total	
Afognak Fishpasses	Sockeye	82				159		14,078	14,319	a
Waterfall Fishpass	Pink	137,500						43,000	180,500	a
Russell Creek Hatchery	Coho				500			1,500	2,000	
	Chum							15,000	15,000	
	Pink	6,900			200			30,200	37,300	
<b>KODIAK/AK PEN TOTALS:</b>		<b>1,581,942</b>	<b>764,880</b>	<b>0</b>	<b>4,982</b>	<b>2,979</b>	<b>0</b>	<b>1,494,189</b>	<b>3,848,972</b>	
<b>PRINCE WILLIAM SOUND</b>										
Fi Richardson										
Landlocked Lakes	Rainbow				6500				6,500	d
Clear LL lakes	Grayling				1100				1,100	d
Gulkana Hatchery	Sockeye		116,700		500	11,000		84,000	212,200	
<b>PWS TOTALS:</b>		<b>0</b>	<b>116,700</b>	<b>0</b>	<b>8,100</b>	<b>11,000</b>	<b>0</b>	<b>84,000</b>	<b>219,800</b>	
<b>SOUTHEAST SOUTHERN</b>										
Bakewell R	Sockeye	3,979	4,672					2,163	10,814	a
Dog Salmon R	Coho	30		30				100	160	a
Dog Salmon R	Pink	21,900						5,475	27,375	a
Ketchikan Cr	Pink	167,500	62,500	20,000	5,000			50,000	305,000	a
Marx Cr Spwn Ch	Chum	123	293					16,135	16,551	
Margaret L	Sockeye	121	280	9				322	732	a
	Pink	31,964	10,000					10,491	52,455	
Sunny Cr	Pink	68,400						17,100	85,500	a
Beaver Falls Hatchery										
Hugh Smith L	Sockeye	12,037	13,040					65,732	90,809	
McDonald L	Sockeye	66,167	59,214				9,937	113,000	248,318	
Heckman L	Sockeye	4,319	10,008	312				11,520	26,159	
Deer Mountain Hatchery										
Big Salt L	Chinook	101		4					105	
Bold Island L	Coho	284	46	26	75				431	
Margaret Lake	Coho	1	2,014	774	185			1,932	4,906	
Deer Mountain	Chinook	1	4	111	164			742	1,022	
	Coho	509	1,365	568	300			1,468	4,210	
Reflection L	Coho	117	811	194	53			575	1,750	
Thorne Bay	Chinook			32	12				44	
Ward Cr	Coho	100	1,043	387	236			944	2,710	
Bell Island	Coho	159	500	184	18			527	1,388	
Klawock Hatchery										
Cable Cr	Coho	223	13	460				600	1,296	
Klawock	Coho	7,818	226	36,930	4,000	1,000		11,950	61,924	
Klawock	Sockeye	19,808		100			4,263	4,649	28,820	
Tunga L	Coho			94					94	
Rio Roberts	Coho	312	357	689				45	1,403	
<b>CENTRAL</b>										
Irish Creek	Coho	2,800		10,500					13,300	a
Crystal Lake H	Chinook	40	70	5,300	2,500			2,680	10,590	
	Coho	600	1,270	1,320	140	433		1,475	5,238	
	Steelhead							21	21	
Earl West Cove	Chinook	1,575	5,300	1,350	270				8,495	
Ohmer Creek	Chinook		110	375	230				715	
Farragut	Chinook			4				1	5	
Harding River	Chinook	15		3					18	
Slippery Creek	Coho	1,060	10	2,230					3,300	
St. John's Creek	Coho	13	22	60					95	

Appendix 11. Continued.

Hatchery or Project	Species	Seine	Commercial Gillnet	Troll	Sport Catch	Pers Use	Subsis- tence	Brood/ Escpmnt	Total
<b>NORTHERN</b>									
Chilkat Ponds	Coho		500	500				200	1,200
Eliza Lake	Chinook	1	5	2					8
Jerry Myers	Chinook	2	4	2	9			4	21
	Coho		11	28				15	54
<b>Snettisham Hatchery</b>									
Doty Cove	Chum		1,521						1,521
Indian Lake	Coho	37	122	248				400	807
Indian River	Chinook	1						20	21
Limestone Inlet	Chum		12,153					100	12,253
Juneau/DJ	Chinook	5	501	413	1,320			534	2,773
	Coho		4					7	11
Snettisham	Chinook	35	462	344	307			120	1,268
	Chum		9,456					300	9,756
Sweetheart Lake	Sockeye				22			300	322
Tahini River	Chinook		1	6					7
Lutak Inlet	Chinook	3	120	37	36			5	201
Twin Lakes	Chinook				5,000				5,000
<b>Southeast Totals:</b>		412,160	198,028	83,626	19,877	1,433	14,200	321,652	1,050,976
<b>STATE TOTALS:</b>		2,275,294	1,156,639	83,626	359,737	20,687	17,500	1,957,798	5,871,231

- a. fishpass
- b. Sportfish estimate taken from 1991 Sport fish harvest surveys
- c. Juneau/DJ = Fish Cr, Auke L, Montana Cr, Dredge L
- d. Sportfish estimate taken from 1992 Sport Fish harvest surveys
- e. Commercial catch is combination of all commercial gear groups

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