Executive Order 86

HOUSE COMMITTEE REPORT

(9)

Date Referred: January 20, 1993 FURTHER REFERRALS: Finance

Date of Committee Action: 2/17/93

The RESOURCES Committee considered: EO 86

EXECUTIVE ORDER NO. 86 Re: DIV. OF FISHERIES REHABILITATION, ENHANCEMENT & DEV.

Transferring the functions and duties of the division of fisheries rehabilitation, enhancement and development to the Department of Fish and Game.

RECOMMENDATIONS: [ ] the same title

be replaced with _____ [ ] a new title

[ ] have attached amendments(s)

[ ] do pass

[ ] do not pass

[ ] no recommendations

[✓] individual recommendations

[ ] additional referral to the _____ Committee

ADOPTS: _____ letter of Intent

ATTACHES NEW FISCAL NOTE(s): (Dept)

[ ] fiscal impact _____

[ ] zero fiscal note _____

APPROVES PREVIOUS: (Dept/Date)

[ ] fiscal note(s) _____

[✓] zero fiscal note(s) ADF&G 1-11-93

SIGNING DO PASS	DP	OTHER RECOMMENDATIONS	DNP	NR	AM
	✓			✓	
	✓			✓	
	✓			✓	
	✓			✓	

W.K. Williams

CHAIRMAN'S SIGNATURE

FISCAL NOTE No. 1

STATE OF ALASKA
1993 LEGISLATIVE SESSION

Bill Version: EO 86
(S) Publish Date: 1-11-93

Revision Date:		Dept. Affected:	Fish and Game
Title:	Executive Order Transferring Duties of FRED Division	BRU:	Commercial Fisheries &
		Component:	Commercial Fisheries FRED
Sponsor:	Governor Walter J. Hickel		
Requestor:		COMPONENT SERIAL NO.	

Expenditures/Revenues: (Thousands of Dollars)

OPERATING	FY94	FY95	FY96	FY97	FY98	FY9[illegible]
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE FUND SOURCE:						

FUNDING: (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1005 GF/MHTIA						
Other						
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL TIME						
PART TIME						
TEMPORARY						

Estimate of current year (FY93) impact: $ 0

ANALYSIS: (Attach a separate page if necessary)

See attached transmittal letter from Governor Walter J. Hickel.

Prepared by: Lawrence W. Jones Phone: 465-4100
Division: for Commissioner's Office Date: 1/7/93

Approved by Commissioner: /s/ Carl L. Rosier Date: 1/7/93
Agency: Department of Fish and Game

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Eo 84

WALTER J. HICKEL
GOVERNOR

STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

January 11, 1993

The Honorable Ramona L. Barnes
Speaker of the House
Alaska State Legislature
State Capitol
Juneau, AK 99801-1182

Dear Speaker Barnes:

Under the authority of art. III, sec. 23, of the Alaska Constitution, I am transmitting an Executive Order relating to the division of fisheries rehabilitation, enhancement and development (FRED), a division of the Department of Fish and Game.

In recent years, the role of the FRED division has undergone significant change. The division's main responsibility, at its inception in the early 1970's, was to construct and operate fish hatcheries owned by the state. Today, the operation of most of these hatcheries either has been or is now being transferred to private contractors and to the sport fish division. Other primary duties of the FRED division, such as fisheries planning and technical services to the salmon ocean ranching and emerging mariculture (shellfish) industries, can be performed more efficiently by integrating these duties within other divisions of the department.

Recent budget cuts require the department to streamline its operations and eliminate any overlapping functions. This Executive Order, which transfers the duties of the division to the department, will give the department flexibility to accomplish these goals.

Sincerely,

Walter J. Hickel

Walter J. Hickel
Governor

January 29, 1993

To: House Resources Committee

From: John McMullen, Cordova, Alaska

Subject: Testimony regarding Executive Order No. 86; the dissolution of the Alaska Department of Fish & Game's FRED Division.,

Mr. Chairman and Resource Committee members,

My name is John McMullen, President of Prince William Sound Aquaculture Corporation (PWSAC).

PWSAC's constituents include the salmon permit holders of Prince William Sound who solidly support salmon enhancement and the Prince William Sound Salmon Allocation and Management Plan which we cooperatively developed in 1990, and which the Alaska Board of Fisheries adopted in February, 1991.

Thank you for the opportunity to share my opinions regarding Executive Order No. 86, which would dissolve the Alaska Department of Fish & Game's Division of Fisheries Rehabilitation, Enhancement, and Development (FRED).

When we at PWSAC heard the news of this action, we became even more determined to demonstrate the validity of the economic development objectives of our salmon fishery enhancement program which is intended to benefit all fisheries users in the Prince William Sound and Copper River Region.

The FRED Division was the state's response to the depressed salmon runs of the late 1960's and early 1970's when in two different years the total catch was about 20 million fish statewide. For comparison, a recent, single year's catch totaled nearly 190 million salmon.

Over half the fisheries biologists in the ADF&G probably don't remember the salmon runs of the 1960's and 70's. Prior to 1979 the average pink salmon catch in Prince William Sound was less than 4 million fish annually. In 1979, the catch of wild stock pinks rose to about 15 million fish, and remained high through the 1980's. Certainly, fisheries management procedures have improved over time. But I believe the large salmon runs of the 1980's are related to the dominance of environmental conditions which favored salmon survivals in fresh water and at sea.

Salmon stocks of the north Pacific seem to cycle in abundance over an 18 to 20 year period. The recent cycle of high abundance has satisfied the public need for salmon fisheries restoration. As a result, general public support for the FRED program has cycled downward, about 20 years following its inception.

Corporate Office • Post Office Box 1110 • Cordova, Alaska 99574-1110
phone: 907/424-7511 * fax: 907/424-7514

FRED was created by the 1981 state legislature, but was not fully organized until 1975 because of resistance within the ADF&G. In fact, resistance to the new FRED program was so great that Governor Hammond found it necessary to create a fisheries council to oversee the development of the FRED program and that of the private, non-profit hatchery programs which were trying to organize in various regions of the state.

Participants in the public and private salmon enhancement sectors in Alaska have generally believed that the program benefitted from the presence of both sectors. The FRED Division administered the private sector program and provided the technical expertise and direction in the fields of fish health, genetics, limnology, biology, and fish tag identification services. The FRED Director very importantly served as a spokesman for the salmon enhancement program, with direct access to the ADF&G Commissioner. The private hatchery groups sought political support for the program and served as advocates for ADF&G programs and budgets.

I am familiar with three hatchery bond issues which were passed in general state elections in the early years of the FRED Division. I believe each of those bond issues passed in every voting precinct of the state. Although those bonds have probably not matured, the hatcheries which they funded are even now being transferred to the private sector or closed.

My organization, PWSAC, presently operates two state owned hatcheries in Prince William Sound and funds the operations of a third state hatchery on the Gulkana River near Paxson. The FRED Division will lose the authority to receive and expend funds for that hatchery on July 1, 1993, but I fully expect that the PWSAC board will vote, in March, to assume responsibility for that hatchery.

A few months ago, the ADF&G obtained an Attorney General's opinion which stated that revenue gained from the sale of fish at a state owned, privately operated hatchery may only be used at that hatchery, and may not be used to fund other hatcheries. This session, we hope to find support for legislation which would allow hatchery revenues to be pooled by an individual aquaculture corporation. This statute change is needed by PWSAC to provide funding for the Gulkana Hatchery which has no opportunity for cost recovery because its fish arrive at the hatchery in spawning condition.

The state seems not to have the ability to adequately fund its fisheries management programs. Therefore, it is not my intent to argue for the preservation of the entire FRED Division. I do recommend, and strongly, that certain functions within the FRED Division be maintained as services to the private hatchery operators as well as to the biological programs of the ADF&G and other user agencies in Alaska.

First, I believe that when the FRED Division was organized it was the finest technological fisheries group within the ADF&G.. Those capabilities should be maintained in the form of the Fish Health, Genetics, Limnology, and Fish Tag Identification Laboratories. In addition, the ADF&G should maintain those field biologist positions which are regularly involved in the evaluation of hatchery fish in the fisheries. These studies are important to the understanding of wild stock--hatchery stock interactions and the maintenance and protection of wild stocks.

Other FRED functions which should be continued are the hatchery review program and the private hatchery coordination office.

The ADF&G has always had the authority to review the operations of private hatchery operators to determine if they are utilizing acceptable aquaculture procedures and are contributing acceptable numbers of fish to the common property fisheries. The hatchery review program has received limited funding over the years, and needs to be rejuvenated so that the state (and the common property fisheries) receive maximum benefit from its aquaculture loan fund investments in hatcheries and hatchery operations.

The hatchery coordination office handles the masses of hatchery permit and fish transportation requests, plans, and reports. This office routes and tracks all materials through the appropriate ADF&G, Regional Planning Team, and Government Clearing House offices for comment and recommendations to the Commissioner for his decisions.

These then, are the FRED functions which I hope can be maintained in the ADF&G Fiscal Year-1994 budget. In addition, the ADF&G must re-align these functions in a manner which will ensure its continued advocacy for the remaining salmon enhancement activities in the state.

Thank you.

Alaska Constitution

Section 19 - Military Authority.

The governor is commander-in-chief of the armed forces of the State. He may call out these forces to execute the laws, suppress or prevent insurrection or lawless violence, or repel invasion. The governor, as provided by law, shall appoint all general and flag officers of the armed forces of the State, subject to confirmation by a majority of the members of the legislature in joint session. He shall appoint and commission all other officers.

Section 20 - Martial Law.

The governor may proclaim martial law when the public safety requires it in case of rebellion or actual or imminent invasion. Martial law shall not continue for longer than twenty days without the approval of a majority of the members of the legislature in joint session.

Section 21 - Executive Clemency.

Subject to procedure prescribed by law, the governor may grant pardons, commutations, and reprieves, and may suspend and remit fines and forfeitures. This power shall not extend to impeachment. A parole system shall be provided by law.

Section 22 - Executive Branch.

All executive and administrative offices, departments, and agencies of the state government and their respective functions, powers, and duties shall be allocated by law among and within not more than twenty principal departments, so as to group them as far as practicable according to major purposes. Regulatory, quasi-judicial, and temporary agencies may be established by law and need not be allocated within a principal department.

Section 23 - Reorganization.

The governor may make changes in the organization of the executive branch or in the assignment of functions among its units which he considers necessary for efficient administration. Where these changes require the force of law, they shall be set forth in executive orders. The legislature shall have sixty days of a regular session, or a full session if of shorter duration, to disapprove these executive orders. Unless disapproved by resolution concurred in by a majority of the members in joint session, these orders become effective at a date thereafter to be designated by the governor.

Section 24 - Supervision.

Each principal department shall
nor.

Section 25 - Department E

The head of each principal depar
otherwise provided by law. He sha
to confirmation by a majority of
session, and shall serve at the ple
wise provided in this article with
heads of all principal department

Revisor's note - Senate Joint Resolution
state to lieutenant governor" in 16 sectio
voters August 25, 1970, inadvertently omi

Section 26 - Boards and Cor

When a board or commission is at
a regulatory or quasi-judicial agen
the governor, subject to confirmat
the legislature in joint session, and
They shall be citizens of the United
appoint a principal executive offic
appointment shall be subject to the

Section 27 - Recess Appointm

The governor may make appointme
a recess of the legislature, in offi
legislature. The duration of such app

Executive Orders

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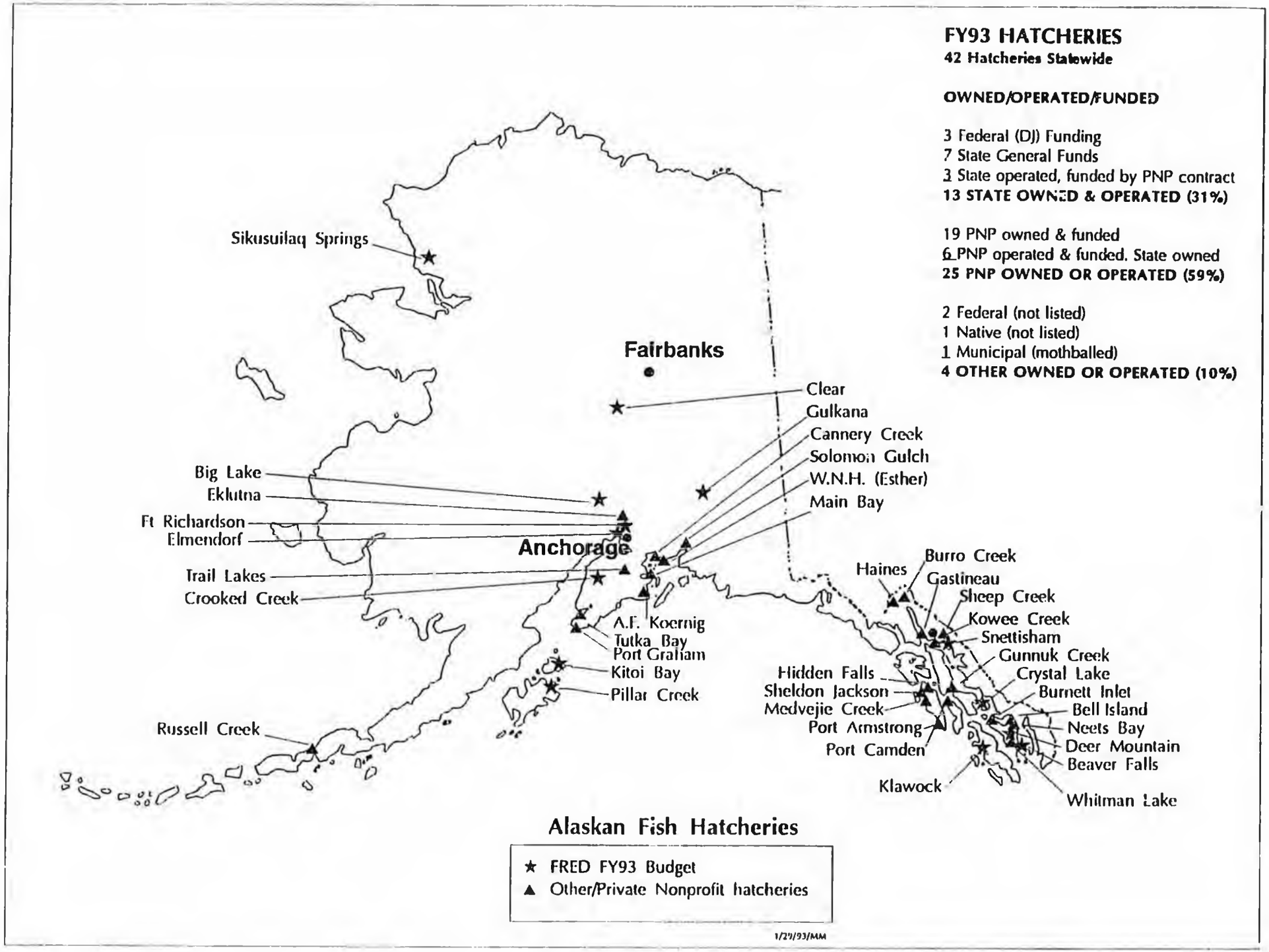

FY93 HATCHERIES
42 Hatcheries Statewide
OWNED/OPERATED/FUNDED
3 Federal (DJ) Funding
7 State General Funds
3 State operated, funded by PNP contract
13 STATE OWNED & OPERATED (31%)
19 PNP owned & funded
6 PNP operated & funded. State owned
25 PNP OWNED OR OPERATED (59%)
2 Federal (not listed)
1 Native (not listed)
1 Municipal (mothballed)
4 OTHER OWNED OR OPERATED (10%)
Sikusuilaq Springs
Fairbanks
Clear
Gulkana
Cannery Creek
Solomon Gulch
W.N.H. (Esther)
Main Bay
Big Lake
Eklutna
Ft Richardson
Elmendorf
Anchorage
Trail Lakes
Crooked Creek
A.F. Koernig
Tutka Bay
Port Graham
Kitoi Bay
Pillar Creek
Russell Creek
Haines
Burro Creek
Gastineau
Sheep Creek
Kowee Creek
Snettisham
Gunnuk Creek
Crystal Lake
Burnett Inlet
Bell Island
Neets Bay
Deer Mountain
Beaver Falls
Whitman Lake
Hidden Falls
Sheldon Jackson
Medvejie Creek
Port Armstrong
Port Camden
Klawock
Alaskan Fish Hatcheries
★ FRED FY93 Budget
▲ Other/Private Nonprofit hatcheries
1/29/93/MM

FUNDING HISTORY

The following ten-year review reflects changes to the FRED Division's operating appropriation. Reductions to the division's General Fund budget reflect the directional change of the FRED Division from fish production to technological support and statutory oversight. As of FY93, the total general fund reduction in annual operating dollars is in excess of $5.5 million which is now user-generated. In FY94 an additional $2.2 million in general fund operating expenses could be replaced by user-generated support. Since FY86, the cumulative operational savings to general funds through FY93 from user-generated funds is in excess of $26.3 million. The projected cumulative general fund savings through 2008 to the state through the life of the existing long-term hatchery contracts is estimated to be in excess of $135.1 million.

	FY85 ACTUALS	FY86 ACTUALS	FY87 ACTUALS
General Funds	$14,434.3	$13,949.8*	$11,751.3*
Federal Funds	40.0	820.7	1,814.1
Program Receipt	0.0	0.0	47.7
Interagency	0.0	0.0	0.0
Fish & Game	0.0	500.0	249.0
Total	$14,474.3	$15,270.5	$13,862.1
*Annual GF change		- 484.5	-2,198.5
	Transfer of GF hatcheries to other funding		

	FY88 ACTUALS	FY89 ACTUALS	FY90 ACTUALS
General Funds	$11,425.8*	$11,023.9*	$11,327.1*
Federal Funds	2,395.4	2,364.8	1,937.1
Program Receipt	449.2	528.5	418.3
Interagency	60.4	21.4	123.3
Fish & Game	250.0	286.0	250.0
Total	$14,580.8	$14,224.6	$14,055.8
*Annual GF Change	-325.5 Transfer of GF hatchery to Program Receipts	-401.9 Expansion of several GF hatcheries	+303.2 GF expansion of projects

	FY91 ACTUALS	FY92 ACTUALS	FY93 AUTHORIZED
General Funds	$ 10.138.0*	$10,282.0*	$ 9,202.6*
Federal Funds	2,337.4	2,400.3	2,968.2
Program Receipt	1,042.9	1,795.2	1,574.9
Interagency	128.0	147.9	184.9
Fish & Game	385.6	386.9	386.6
Total	$14,031.9	$15,012.3	$14,317.2
*Annual GF Change	-1,189.1 Hatcheries to PNP funding	+144.0 Expand GF projects	-1,079.4 Transfer/ mothball hatcheries

	FY94 REQUEST	
General Funds	$ 7,181.6*	
Federal Funds	1,077.5	
Program Receipt	236.3	
Interagency	319.9	
Fish & Game	662.5	
Total	$ 9,477.8	
Annual GF Change	-2,021.0	Transfer\close hatcheries

Revised 2/3/93

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

P.O. BOX 25526
JUNEAU, ALASKA 99802-5526
PHONE: (907) 465-4100

February 4, 1993

The Honorable Bill Hudson
Vice-Chair, House Resources Committee
Alaska State Legislature
State Capitol, Room 124
Juneau, AK 99801-1182

Dear Representative Hudson:

At the first hearing by the House Resources Committee on Executive Order 86, there were a number of concerns expressed by the committee members. I want to address those concerns specifically, but before I do I believe some general background as to how I view the current situation would be helpful.

Over the period from FY85 to the FY94 request, the general fund component of the department's budget has decreased by 26 percent. Total funding for the department has actually increased, because of increases in funds from other sources. However, all of these other funding sources have strings attached limiting what they can be expended for. Both the FRED and Commercial Fisheries Divisions are primarily funded with general funds. As general funds have been withdrawn, these two large divisions have borne the brunt of the necessary reductions.

The salmon enhancement program began in the early 1970s in response to the extremely depressed state of Alaska's salmon resources. It followed the creation of the state's limited entry program for commercial fisheries, as the second step in a comprehensive effort by state government to revitalize and stabilize the state's commercial fishing industry. The third step was the creation of the private non-profit aquaculture program.

Salmon enhancement was in the early stages of development when Alaska began its program. The initial focus of the state's enhancement program was to develop production capability. By and large this phase of development has been successfully completed. Alaska now has 43 hatcheries statewide, which collectively produced a salmon return in 1992 of 23.5 million salmon.

Major production of enhanced salmon came on line only a few years before the price of oil dropped in the mid-1980s. As a response to the budget deficit created by this price drop, the Sheffield administration, and the legislature, agreed to shift the expense of some of the major state hatchery program to the private sector.

This budgetary philosophy has continued through subsequent administrations and legislatures.

The reason for this approach was that the private non-profit aquaculture corporations had alternative means for funding hatchery production through the salmon enhancement tax and cost recovery harvests. Since these transfers began in FY86, over $26.0 million in operational expenses have been shifted from the general fund to user pay funding sources. The projected cumulative savings through the life of the existing long-term contracts, the year 2008, is in excess of $135 million. These savings have been accomplished while still maintaining the salmon production at the facilities transferred to private operation.

Clearly, production of salmon for the commercial fisheries has become a less important function for the FRED Division. There are other functions for which the need is as great as ever, or actually increasing. One of these areas is technical support to the private aquaculture corporations. This includes assistance in salmon enhancement planning, pathology, genetics, limnology, stock identification, and research and development of new enhancement technology. Another area of continued importance is the production of fish for the recreational users of the state. A third area of major importance in the area of fisheries development is support for the new shellfish mariculture industry in Alaska. Finally, the success of the hatchery program in the state has created a new challenge which needs to be answered. This is the management of mixed stocks of enhanced and wild salmon in commercial, personal use, recreational and subsistence fisheries.

This brings me now to the question of why Executive Order 86 was introduced by the Governor this session. This executive order transfers the duties of the FRED Division to the department. This gives the commissioner the flexibility to organize the responsibility for fulfilling the statutory duties of fisheries rehabilitation, enhancement and development in a manner that achieves the maximum in program efficiency and effectiveness. It also provides the commissioner with the ability to alter this organization in a timely fashion as changes occur in the challenges facing fisheries management, enhancement, rehabilitation, and development in the state.

Perhaps I should also address what this executive order does not do. It does not remove from the statutes <u>any of the duties</u> with which the FRED Division is charged. It does not even dissolve the FRED Division. It does not diminish the importance of fisheries rehabilitation, enhancement and development. What this executive order does is give the commissioner the management flexibility to determine by whom and how these statutory duties are to be performed. I assure you that they will be performed.

I am on record before the legislature last session saying that there were advantages to combining the Division of Commercial Fisheries and the FRED Division. I still believe this is the case. So while the executive order itself does not accomplish any reorganization, I want to be up front with you in making clear that I do intend to pursue such a combination. The executive order provides me the flexibility to do this.

Some of the advantages that I see to this combination are the following.

1. Greater program integration where the production of enhanced fish and the management of mixed stocks of wild and enhanced salmon are concerned. The success of our enhancement programs has created new challenges. In a number of regions in the state, salmon managers are struggling with the increased complexity of management associated with mixed stocks of enhanced and wild fish. Hatchery operators are also frustrated with the inadequacies of our mixed stock management abilities. Increasing dissatisfaction is also occurring among the user groups over the management of enhanced stocks. A combined division of fisheries development, enhancement, and management would improve the capability of the department to deal with these complexities.

2. As general funds decline, the ability to continue providing essential services, whether management or enhancement related, becomes more difficult. The commissioner and the department need flexibility to make the best uses of personnel and the available dollars.

3. The department's research abilities have been strained in recent years, because of declining funding. This has resulted in a reduced ability to increase both the fundamental knowledge base concerning our fisheries resources, as well as our ability to conduct applied research to solve specific problems. By combining the research functions of these two divisions, I believe the overall fishery research capability of the department will be enhanced.

In closing, I would like to address some of the specific questions that were raised at the hearing last week. Several representatives were concerned about the future of enhancement activities designed to benefit the recreational user. Please be assured that the department is going to remain active in enhancing recreational fishing opportunities in the state. Three hatcheries that are almost exclusively dedicated to recreational users are being transferred to the Sport Fish Division and we have plans for expansion of at least one of these facilities to meet growing recreational demands. These hatcheries will continue in operation. Three of the four other hatcheries that will continue to be

operated by the department make significant contributions to the recreational fishery. My desire to combine the FRED Division and the Commercial Fisheries Division in no way represents a lessening of the department's commitment to enhancing the recreational fisheries of the state.

Another concern that was expressed by several representatives was whether the department would continue to oversee and assist the private aquaculture associations. Not only will we continue to do this, but I believe that a reorganization of the FRED and Commercial Fisheries Divisions will enable the department to improve services to the aquaculture corporations.

A third concern that has been expressed deals with why the department has not identified an increased cost savings associated with the combination. My primary purpose in proposing this reorganization is to improve program efficiency and effectiveness. As I said earlier, the department has taken significant reductions in our general funds over the last 8 years. We cannot take further cuts without eliminating services.

I am starting from the position that it is necessary that the functions of the Commercial Fisheries Division and the FRED Division continue. Therefore, my goal in this reorganization is to improve program integration so that the department can provide those functions on the reduced funding that we have available to us. This is not to say that there will not be any savings. But it would be my hope that where savings can be identified, that reprogramming would be considered as a first option. This way I believe that we can address some of the shortcomings that presently exist in our programs.

Finally, I believe that there is some concern about this executive order, because it changes statutes. Some representatives may see this as an intrusion by the executive branch into the legislative prerogatives. I want to reassure you that all that is proposed by this executive order is to give the department the administrative flexibility to determine how best to accomplish the goals that the legislature has put into statute. The executive order, as I have said earlier, does not remove any of the enhancement, rehabilitation, or development functions from law. This includes the requirement that once a year the department submit a report to the legislature on the enhancement and development activities of the department.

I have gone on far longer in this letter than I intended, but I believe that the flexibility that the department is requesting is very important, if the department is to deal effectively with the

challenges that it faces. I hope that I have answered your concerns. If you have further questions, I will be in attendance at the next meeting when the House Resources Committee takes up Executive Order 86.

Sincerely,

Carl L. Rosier
Commissioner

Enclosure

FISH PRODUCTION OF STATE HATCHERIES CONTRACTED TO THE PRIVATE SECTOR

Summary

The Fisheries Rehabilitation, Enhancement and Development (FRED) Division has been contracting the operation and funding of state-owned production facilities to regional aquaculture associations since FY88. To date, the division has entered into six long-term operational contracts with four regional aquaculture associations.

Table 1 reflects the number of eggs taken and fish released each year from five of the hatcheries between 1985 and 1992. The sixth facility, Beaver Falls Hatchery, was contracted at the end of FY92 and has not been in production mode since FY90; therefore, it is not included in this cost comparison.

Overall, as the hatcheries are contracted to the regional aquaculture associations, the numbers of eggs taken and fish released grow beyond those numbers produced by the state. It would be reasonable to say that the associations, guided by the respective regional planning teams (RPTs), have a greater amount of flexibility and potential for growth than the state in the operation and development of a production facility.

Specific Comments

Hidden Falls Hatchery produces chum and chinook salmon under the auspices of the Northern Southeast Regional Aquaculture Association (NSRAA) as it did when operated by the state. A small compliment of coho salmon are now produced at the facility as well. Egg takes and releases continue to have approximately the same ratios by species, although the numbers are increasing.

Cannery Creek Hatchery, now operated by the Prince William Sound Aquaculture Corporation (PWSAC), has dropped the facility's small chum salmon program to concentrate on production of pink salmon. Pink salmon releases have essentially quadrupled since the corporation assumed operational responsibility.

Trail Lakes Hatchery is now operated by the Cook Inlet Aquaculture Association (CIAA). The facility primarily produces sockeye salmon, although production of small numbers of coho salmon continues. Overall, releases of sockeye and coho salmon are increasing under CIAA management.

Main Bay Hatchery has been operated by PWSAC since 1991 and continues to focus primarily on the production of sockeye salmon. It is a primary producer of sockeye salmon smolt—a world leader in this capacity. It may be alarming to see that the numbers of fish released from this facility has dropped dramatically over the past several years. This decrease reflects the new technology of releasing sockeye salmon smolt and, although not presented in Table 1, the small

numbers released actually represent a much greater biomass of fish produced, since each fish released is larger.

Tutka Bay Hatchery has been operated by CIAA since 1990. The facility has always produced primarily pink salmon, with a minor focus on chum and sockeye salmon production. The current focus remains with pink salmon. The production of pink salmon at this facility has always been somewhat erratic, with extensive variability from year to year.

Finally, returns of 5- to 7-year-old adult salmon (with the exception of pink salmon) are incomplete as facilities were contracted starting in 1988. Hence, a discussion of this segment will require an additional year of operation.

If the question of the success of transferring the operation of state-owned hatcheries can be defined as the continued release of targeted fish species without the associated costs of state funding, then the transfer of the five hatcheries shown in the accompanying table are proving successful.

Table 1. Fish production of state-contracted hatcheries now operated by the private sector.

Year	Operator	Millions of eggs taken	Millions of fish released	Program
Hidden Falls Hatchery				
1985	FRED	58,339.0	30,197.0	Chinook and chum
1986	FRED	65,818.0	45,573.1	Chinook and chum
1987	FRED	73,919.0	40,237.9	Chinook and chum
1988	transition	68,000.0	52,359.0	Chinook and chum
1989	NSRAA[1]	84,840.0	60,650.0	Chinook and chum
1990	NSRAA	81,520.0	62,950.0	Chinook, chum, and coho
1991	NSRAA	85,090.0	64,520.0	Chinook and chum
1992	NSRAA	94,920.0	57,880.0	Chinook, chum, and coho
Cannery Creek Hatchery				
1985	FRED	103,351.0	37,260.0	Pink and chum
1986	FRED	44,241.0	56,495.7	Pink and chum
1987	FRED	108,487.0	42,687.8	Pink and chum
1988	PWSAC[2]	135,310.0	95,840.0	Pink and chum
1989	PWSAC	161,150.0	63,610.0	Pink and chum
1990	PWSAC	151,850.0	143,660.0	Pink
1991	PWSAC	153,750.0	141,510.0	Pink
1992	PWSAC	156,460.0	132,170.0	Pink
Trail Lakes Hatchery				
1985	FRED	11,670.0	4,253.6	Chinook, chum, coho, and sockeye
1986	FRED	7,425.0	2,504.0	Chinook
1987	FRED	11,782.0	6,166.6	Chinook, chum, sockeye, and steelhead
1988	FRED	8,496.0	6,951.4	Chinook, coho, and sockeye
1989	CIAA[3]	11,750.0	6,750.0	Coho and sockeye
1990	CIAA	11,640.0	7,950.0	Coho and sockeye
1991	CIAA	13,630.0	8,340.0	Coho and sockeye
1992	CIAA	13,450.0	8,720.0	Coho and sockeye
Main Bay Hatchery				
1985	FRED	27,360.0	52,878.0	Chum and pink
1986	FRED	87,920.0	42,239.0	Chum, pink, and sockeye
1987	FRED	91,000.0	79,197.0	Chum, pink, and sockeye
1988	FRED	21,760.0	1,734.5	Pink and sockeye
1989	FRED	2,983.0	14,883.0	Pink and sockeye
1990	FRED	5,721.0	2,600.0	Sockeye
1991	PWSAC	8,800.0	4,133.6	Sockeye
1992	PWSAC	8,000.0	4,370.0	Sockeye
Tutka Bay Hatchery				
1985	FRED	32,320.0	23,547.0	Chum and pink
1986	FRED	32,377.0	26,253.0	Chum and pink
1987	FRED	19,750.0	24,955.0	Chum and pink
1988	FRED	42,519.0	15,468.0	Chum and pink
1989	FRED	45,892.0	32,560.0	Chum, pink, and sockeye
1990	CIAA	50,600.0	32,165.0	Chum, pink, and sockeye
1991	CIAA	44,900.0	30,333.0	Pink
1992	CIAA	60,000.0	31,950.0	Pink

[1] Northern Southeast Regional Aquaculture Association
[2] Prince William Sound Aquaculture Corporation
[3] Cook Inlet Aquaculture Association

COOK INLET
AQUACULTURE ASSOCIATION

June 3, 1991

Dr. Jeff Koenings
ADF&G, FRED Division
PO Box 3-2000
Juneau, Alaska 99802

Dear Dr. Koenings:

Last week I provided you with a comparison of the "Line 100" costs of FRED Division's and CIAA's FY92 Tutka Lagoon Hatchery Budget. That information proved to be inadequate for your purpose as the CIAA and FRED operational plans are different. CIAA plans to take 19% more eggs and rear 58% more fish than the FRED plan.

What follows, then, is quite hypothetical. I compare FRED and CIAA costs if CIAA was going to limit itself tc do only the smaller amount of work as laid out in the FRED FY92 operational plan.

FRED BUDGET CATEGORY	Man-mos	FRED cost	Man-mos	CIAA cost
Operations & Maintenance	44	$ 207,204	24	$ 108,414
Tutka Egg Takes	12.5	36,862	9.1	18,432
English Bay Egg Take	2	5,775	1	2,016
Incubation	3	9,297	1.5	3,024
Rearing & Release	8.5	25,753	8.5	17,136
TOTALS	70	$ 284,891	44.1	$ 149,022

I must stress again that the figures above are only hypothetical; our fishermen would be certain to revolt if CIAA accomplished only the amount of work as described above.

Please contact me if additional information is required.

Sincerely,

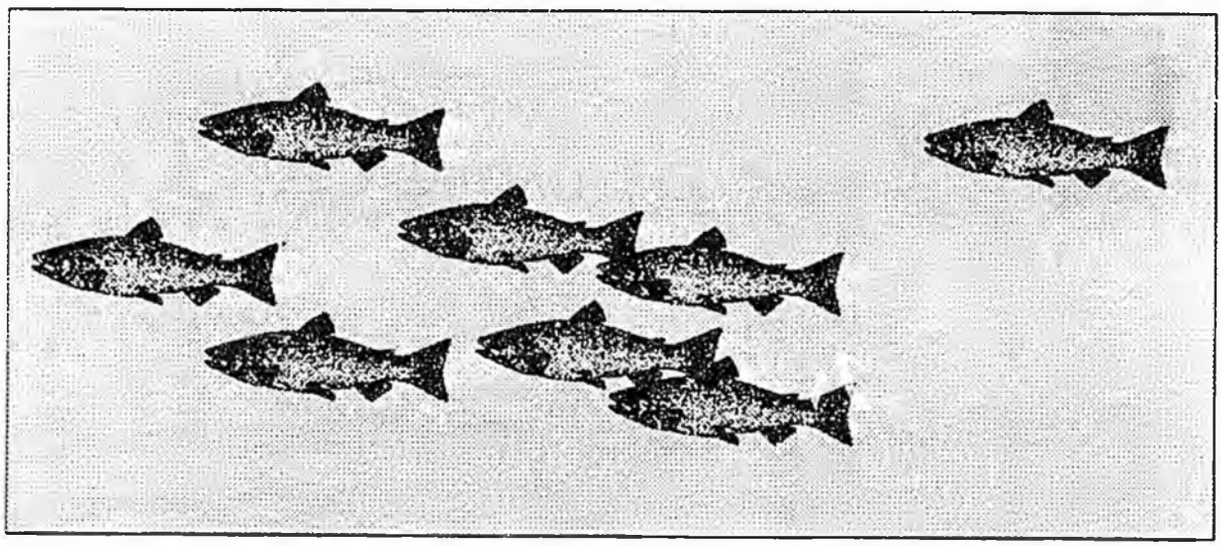
Thomas E Mears

Thomas E. Mears,
Executive Director

Alaska Department of Fish and Game
Fisheries Rehabilitation, Enhancement, and Development Division
(FRED Division)

The FRED Division and the Private Nonprofit Program

Report to the Board of Fisheries



Jeffrey P. Koenings
Director

1991

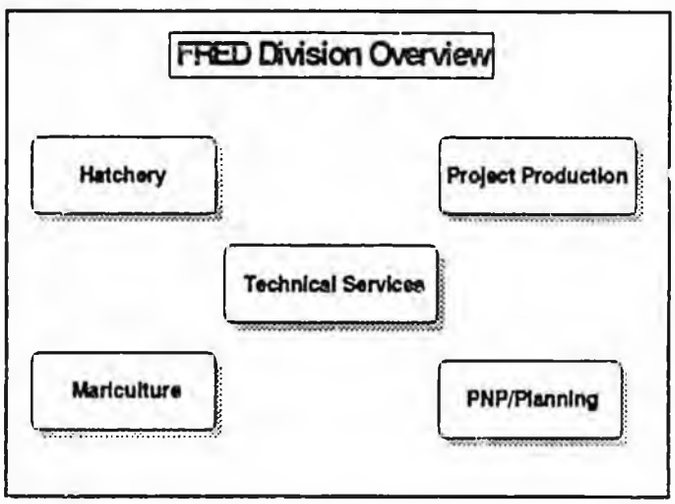
FRED Division and the Private Nonprofit Program

The Fisheries Rehabilitation, Enhancement and Development (FRED) Division of the Alaska Department of Fish and Game was created in 1971 by the Legislature and the Governor because the people of Alaska expressed support for an enhancement program to revitalize an ailing salmon fishing industry. Catches were at an all time low, and the development of an enhancement program which would serve the state in both years of lean and bountiful harvests was envisioned by Alaskans. Bond issues to build the public hatchery facilities were passed overwhelmingly in the 1970s. The FRED Division was given broad statutory authority by the Legislature to "through rehabilitation, enhancement and development programs do all things necessary to insure perpetual and increasing production and use of food resources of Alaska waters and continental shelf area (AS 16.05.092)."

The cornerstones of the FRED Division program are encompassed in the following program elements:

1. **Support and facilitate private sector aquaculture programs.**
2. **Provide essential technical services for departmental commercial, sport, and subsistence fisheries programs.**
3. **Provide technological support for economic development in aquaculture.**
4. **Restore depleted wild fish stocks.**
5. **Produce fish for departmental sport and subsistence fisheries programs.**
6. **Restore and enhance fish habitats.**

The FRED Division program is composed of five parts: the hatchery program, non-hatchery project production, technical services, mariculture, and private non-profit (PNP) / planning. The hatchery program involves the 20 publicly-owned hatcheries around the state. Non-hatchery production refers to enhancement projects such as fish passes and lake enrichment. Technical services includes the limnology, pathology and coded-wire tag laboratories as well as the ADF&G library. Mariculture involves regulating and assisting the burgeoning aquatic plant and shellfish



farm industry, and Private Nonprofit (PNP) /planning refers to the regulatory process behind the PNP (and FRED Division) hatchery program. Each of these elements has a key role in the statewide fisheries enhancement community and FRED Division.

HATCHERY PRODUCTION
(Ocean ranching)

Hatcheries have played a major role in the rehabilitation, enhancement, and development of fisheries in Alaska. The State owns twenty hatcheries and oversees the operation of twenty that are owned by the private sector. In recent years, the operation of nine state owned hatcheries has been contracted to the private sector.

Incubation capacities

Region	Chinook	Sockeye	Coho	Pink	Chum	Other
Southeast						
PNP	16.2	4.0	13.9	225.3	492.8	0.1
FRED	10.1	38.0	3.6	0.0	6.0	0.3
Prince William Sound						
PNP	4.3	31.0	6.0	738.0	147.0	0.0
FRED	0.3	46.7	0.0	0.0	0.0	0.0
Cook Inlet						
PNP	4.1	30.0	7.1	10.0	10.0	0.0
FRED	6.1	45.0	16.9	50.0	30.0	8.0
Kodiak/AK Peninsula						
FRED	0.0	30.0	1.3	220.0	60.0	0.0
Arctic/Yukon/Kuskokwim						
FRED	0.0	0.0	0.0	0.0	10.0	14.0

numbers are in millions of eggs, based on 1991 programs

Production of adult salmon from hatchery releases has grown from a few thousand in the mid-70s to almost 49 million in 1990. Hatcheries work well as a salmon enhancement and wild stock restoration tool; however, there are inherent concerns as well as benefits of the hatchery program. The salmon enhancement program, particularly the use of hatcheries, is being closely reviewed after its initial 20 years of success in the production of fish (Figure 1).

PROJECT PRODUCTION

The statewide enhancement program uses many different types of projects to produce fish for a variety of user groups. FRED Division uses fishpasses, lake enrichment, stream and lake rehabilitation projects, instream incubation, and spawning channels to enhance fish production around the state.

% enhanced fish of 1990 common-property harvest

Region	Chinook	Sockeye	Coho	Pink	Chum
Southeast	12.3%	5.2%	13.5%	1.7%	26.4%
Prince William Sound	1.1%	16.4%	39.7%	79.9%	65.3%
Cook Inlet	8.5%	10.6%	1.6%	17.0%	13.4%
Kodiak/AK Peninsula	0.0%	18.9%	0.8%	5.9%	0.2%
Arctic/Yukon/Kuskokwim	0.0%	0.0%	0.0%	0.0%	0.4%
Total	6.4%	5.6%	11.1%	38.2%	15.0%

Overall = 24.0%

Lake enrichment involves the addition of nutrients to lakes to increase their ability to produce fish food. This type of project has been successfully carried out for the past twelve years by FREL Division, often in conjunction with other agencies, including private sector salmon producers (Figure 2).

Stream and lake rehabilitation, instream incubation, and spawning channels are also used by FRED Division. Major emphasis on stream and lake rehabilitation projects is now centered in the Prince of Wales (POW) region of Southeast, in the northern Southeast region around Juneau, Haines and Yakutat, and in the Anchorage area. Projects include many small endeavors in the POW Island area, Jordan Creek in Juneau, Ophir

Creek near Yakutat, Fish and Marx Creeks near Hyder, and Campbell Creek in Anchorage. Major river/lake river projects have been completed in the Haines area. Spawning channel work is also ongoing at Marx Creek near Hyder, is planned for Fish Creek near Hyder, and has been worked on in the Eagle River near Juneau. Instream incubation (a major project at the Gulkana River in Prince William Sound) has been evaluated at many sites across the State, and is now a major emphasis in the initiation of wild stock restoration projects in the Nome area.

FRED Division is involved in work on many fish passes throughout the state. All of the fishpass work is done in conjunction with other agencies including the US Forest Service, Commercial Fisheries Division, and the private sector.

Fish Passes in Alaska with FRED Division involvement

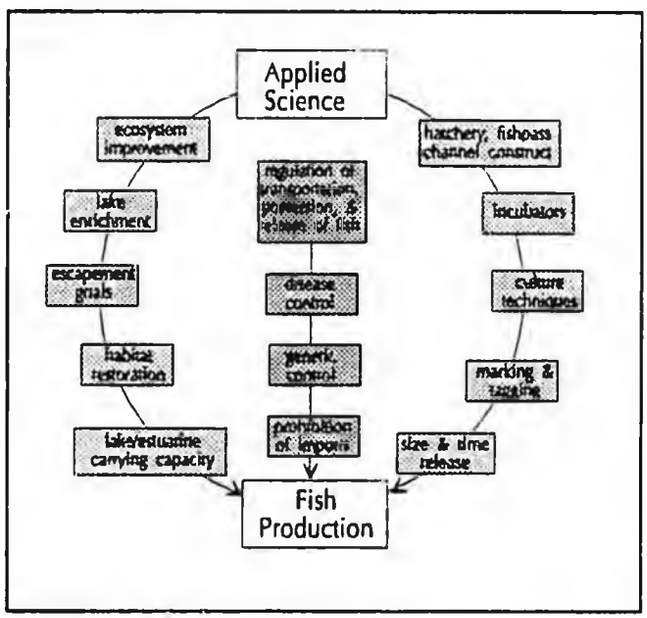
Bakewell Lake
Big Lake
Cable Creek
Dean Creek
Dog Salmon Creek
Frazer River
Irish/Upper Keku Creeks
Ketchikan Creek
Margaret Creek
Marten River
Mills Creek/Virginia Lake
Old Franks Lake
Rio Roberts Creek
Slippery Creek
St John's Creek
Sunny Creek
Suntaheen Creek
Waterfall

TECHNICAL SERVICES

Limnology

The Limnology laboratory supports FRED Division's lake enrichment and lake stocking programs as well as those programs of cooperating state, federal, and private agencies. In 1990 the Limnology Laboratory conducted nearly 30,000 individual water-quality and zooplankton analyses on samples collected from over 60 lakes statewide. The Limnology Section has laboratory facilities in Soldotna, where both water-quality and zooplankton samples are sent from projects located throughout the state.

It is through applied limnological and fisheries research that many programs, most spectacularly the Alaskan sockeye program, have achieved outstanding success. Lake enrichment, in concert with fish plantings, has created some of the most successful fisheries enhancement projects in the world (Figure 2).



Coded-Wire Tag Laboratory

The Coded-Wire Tag (CWT) Laboratory decodes microscopic metal tags placed in the heads of juvenile salmon and recovered from the heads of returning adults. The data obtained are used to evaluate the contributions of hatchery and other fisheries projects to area fisheries (Figure 3). This information is used for inseason fishery management, coast-wide reporting, oil spill investigations, and hatchery evaluations. In 1990, the CWT laboratory processed 60,000 salmon heads.

Pathology

The Pathology Laboratories provide fish and shellfish health diagnostic services to hatcheries and fishery enhancement projects throughout the state. Pathologists review all Fish Transport Permits to help ensure there is no transmission of disease between hatchery and wild stocks. They also inspect every fish hatchery in the state to ensure that safe health practices are maintained. In 1990 17,000 different diagnostic tests were performed which resulted in documenting and correcting 183 cases of fish disease.

Genetics

The Genetics Laboratory conducts research on genetic identification of salmon stocks around Alaska. This research helps to 1) examine genetic interactions of hatchery fish and wild fish; 2) assemble a more complete genetic baseline of wild populations in order to aid staff in making knowledgeable recommendations on Fish Transport Permit applications, and 3) develop techniques to measure the contributions of unmarked but genetically identifiable hatchery fish to commercial fisheries. Work is also being conducted on sterility and sex control in rainbow trout intended for put-and-take fisheries. The Principal Geneticist reviews all Fish Transport Permits to ensure that no genetic conflicts occur between wild and hatchery salmon stocks.

Economics

The FRED Division economics program provides economic information to fishery interest groups, PNP hatchery operators, regional aquaculture associations, regional planning teams, and managers and policy makers in ADF&G and other state agencies. Such information includes analyses of the value of enhancement projects, estimating present and future revenues, cost/benefit analyses, and annual projections of regional personal income and employment resulting from the fishery enhancement program.

At the end of the 1991 legislative session, the Alaska State Legislature and the Alaska Board of Fisheries initiated a review of the statewide salmon hatchery program. As part of the review, the policy makers developed a series of socio-economic questions about the performance of the statewide hatchery program. These questions include:

- ❒ What effect have catches of salmon from the enhancement program had on market prices received by fishermen and processors?
- ❒ What effect would planned increases from this program have on future prices, particularly pink salmon prices?
- ❒ What effect have large harvests of pink salmon had on processing capacity?
- ❒ If the processing industry fails to supply sufficient processing capacity over the long run, what effects would this have on market prices and revenue generated from Alaska's fisheries?

These questions can be addressed through the application of econometric models designed to explain how salmon markets work. The Alaska Department of Fish and Game, FRED Division has been very interested in these questions over the last decade. Three separate salmon demand models (and a cost/benefit analysis) have been developed in the last 8 years to begin to address these issues.

MARICULTURE

Permitted Aquatic Farms

	Oyster	Oyster + Other	Mussel	Other	Total
Southeast Alaska	16	6	1	2	25
Southcentral	1	17	1	1	20
Total	17	23	2	3	45

"Other" includes scallops, clams, kelp, abalone and sea urchins.

The Aquatic Farm Act of 1988 (HCS CSSB 514) was signed into law on June 8, 1988, authorizing the Commissioner of ADF&G to issue permits for the construction and operation of aquatic farms, and hatcheries to supply aquatic plants or shellfish to aquatic farms. The intent of the program was to create an industry in the state that would contribute to the state's economy and strengthen the competitiveness of Alaska seafood in the world marketplace by broadening the diversity of products and providing year-round supplies of premium seafood. The law limited aquatic farming to shellfish and aquatic plants. In 1990, CSHB432 became law, prohibiting farming of finfish in the state.

Regulations to administer the aquatic farm program were developed by the resource agencies during 1988 and 1989. The Department of Natural Resources (DNR) divided coastal Alaska into eleven districts. The law required that each district be opened each year for 60 days for farm site applications. Permits for farm or hatchery sites not located on state land may be applied for at any time.

The FRED Division Mariculture Program, in cooperation with department's fisheries management and habitat divisions, carries out the statutory and regulatory responsibilities of the department pertaining to aquatic farming in Alaska. Responsibilities include:

- Coordination of the permitting process for aquatic farms and hatcheries (in cooperation with ADF&G Habitat Division). Review of aquatic farm and hatchery permit applications for site suitability and technical and operational feasibility.
- Issuing and administering the department aquatic farm and hatchery permits.
- Interdivisional coordination of the aquatic farm program.
- FRED Division representative on and acting chair of the Governor's Interagency Workgroup
- Administration and coordination of aquatic stock acquisition, shellfish and aquatic plant transport, and research permits for aquatic farming and hatchery activities.

- Provide technical assistance to other divisions, agencies, and the public sector, and coordinate aquatic farming and hatchery research activities statewide.

PNP/PLANNING

The private nonprofit hatchery program "shall be operated without adversely affecting natural stocks of fish in the state and under a policy of management which allows reasonable segregation of returning hatchery-reared salmon from naturally occurring stocks".

Regional comprehensive salmon planning

Legislation (AS 16.10.375) in 1976 authorized the Commissioner of ADF&G to designate regions of the state for the purpose of enhancing salmon production (Figure 4). The statutes placed this responsibility with the commissioner through Regional Planning Teams (RPTs). In most regions of the state, department personnel from the fisheries divisions and representatives from the regional aquaculture associations participate in this process. The RPTs also have ex-officio members from other agencies (e.g. U.S. Forest Service, U.S. Fish & Wildlife Service).

Regional Planning teams		Plan completed
Bristol Bay RPT	(1983)	Phase I
Chignik RPT	(1990)	--------
Cook Inlet RPT	(1977)	Phase I
Kodiak RPT	(1982)	Phase II
Northern Southeast RPT	(1977)	Phase II
Prince William Sound RPT	(1977)	Phase II
Southern Southeast RPT	(1977)	Phase II
Area M RPT	(1990)	-------

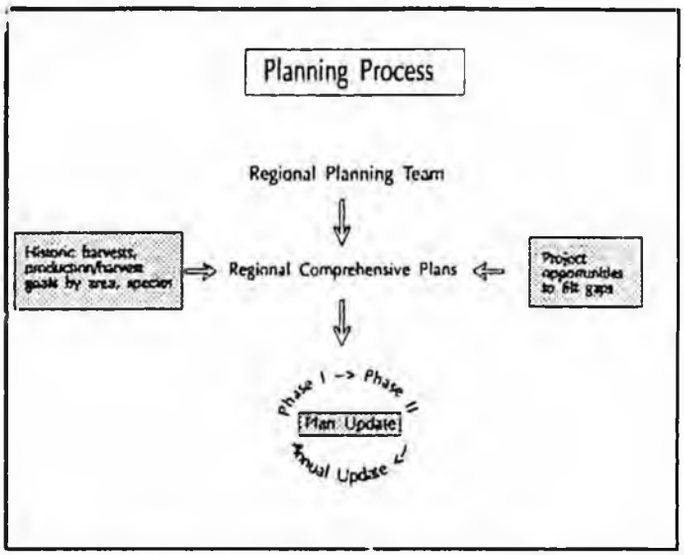
In regions where no association has been formed, planning core groups representing ADF&G fisheries divisions, fishermen, and other agencies are established for the purpose of developing comprehensive salmon plans.

The mission of the RPTs is to plan for the long-term future of the salmon resource within regions by initiating and continuing an orderly process that examines the full potential of the region's salmon production capacity. Regional comprehensive salmon planning progresses in stages. Phase I sets the goals, objectives, and strategies for the region (20 year long-range plan). Phase II (5 year action plans) identifies potential projects and establishes criteria for evaluating the enhancement and rehabilitation potentials of the salmon resource in that region. Upon completion of these phases, the RPTs annually review the status of the program and prepare updates to the Phase II plans. In Prince William Sound, the RPT has initiated development of a Phase III plan that incorporates Board of Fisheries approved allocation and fisheries management plans with hatchery production pl

In addition to the development of comprehensive salmon plans, the RPTs have several basic operational duties. They include review and comment to the commissioner on:

- ❒ private nonprofit (PNP) hatchery permit applications;
- ❒ proposed alterations to PNP hatchery permits;
- ❒ PNP and ADF&G annual hatchery management plans; and
- ❒ annual reports by PNP hatchery operators.

Each RPT in its comprehensive salmon plan develops criteria for review, comment, performance evaluation, and analysis of enhancement projects. These review criteria are relatively consistent statewide. As an example, the criteria used by the Northern Southeast RPT in its review of PNP hatchery permit applications are:



1. Will the hatchery make a significant contribution to the common property fishery?
2. Does the proposed project allow for continued protection of natural stocks?
3. Is the proposed project compatible with the comprehensive plan?
4. Does the proposed project make the most appropriate use of the site's potential?

Within each of these criteria, there are specific issues and concerns that are addressed during the RPT review process.

Comprehensive salmon plans have been developed and approved for northern Southeast Alaska, southern Southeast Alaska, Yakutat, Prince William Sound/Copper River, Cook Inlet, Kodiak, and Bristol Bay. The comprehensive salmon planning process has recently been initiated for the Alaska Peninsula/Aleutian Island/Area M region, the Chignik region, and for the Kotzebue Sound area in relation to the Sikusuilaq Springs Hatchery.

Regional Aquaculture Associations

Concurrent with the plan development, under AS 16.10.380, the commissioner is to assist in and encourage the formation of qualified regional associations. The purpose - Planning and implementation of fisheries enhancement and rehabilitation activities. An association is qualified if the commissioner determines that: (1) it is comprised of associations representative of commercial fishermen in the region; (2) it includes representatives of other user

Regional Aquaculture Associations

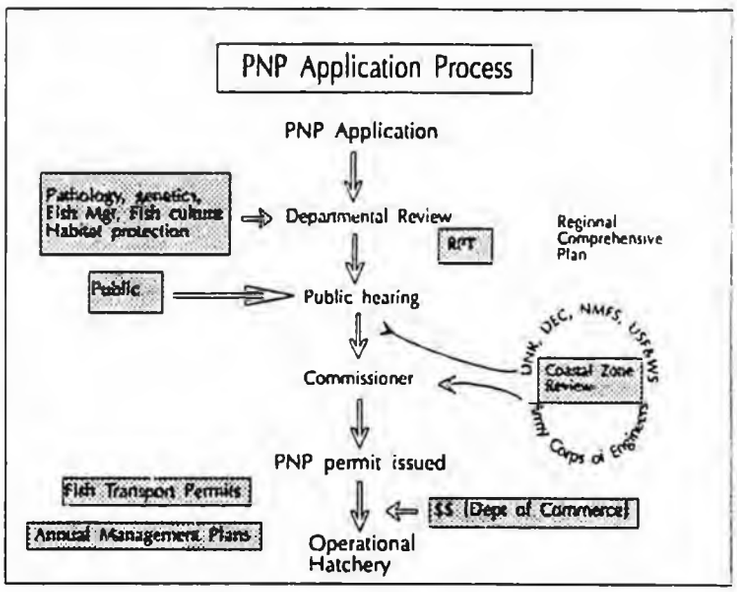
Bristol Bay Salmon Enhancement Association
Chignik Regional Aquaculture Association
Cook Inlet Aquaculture Association
Kodiak Regional Aquaculture Association
Lower Yukon/Kuskokwim Regional Aquaculture Association
Northern Southeast Regional Aquaculture Association
Prince William Sound Aquaculture Association
Southern Southeast Regional Aquaculture Association

groups interested in fisheries within the region who wish to belong; and (3) it possesses a board of directors which includes no less than one representative of each user group that belongs to the association. 'User group" includes, but is not limited to sport fishermen, processors, commercial fishermen, subsistence fishermen, and representatives of local communities.

Department of Commerce regulations and statutes

Upon formation of an association, Commerce may make grants for organizational and planning purposes. To date, all associations formed have received these planning grants. Associations can secure loans of up to $10,000,000 for a hatchery or other enhancement or rehabilitation activity. In addition, the members of an association may choose to assess themselves a salmon enhancement tax of either 1,2 or 3%. To approve such a tax, a majority of limited entry permit holders must vote in favor of the tax. Funds generated are used to operate all association programs and to assist in paying back loans for hatcheries and other projects.

Private nonprofit permit application process

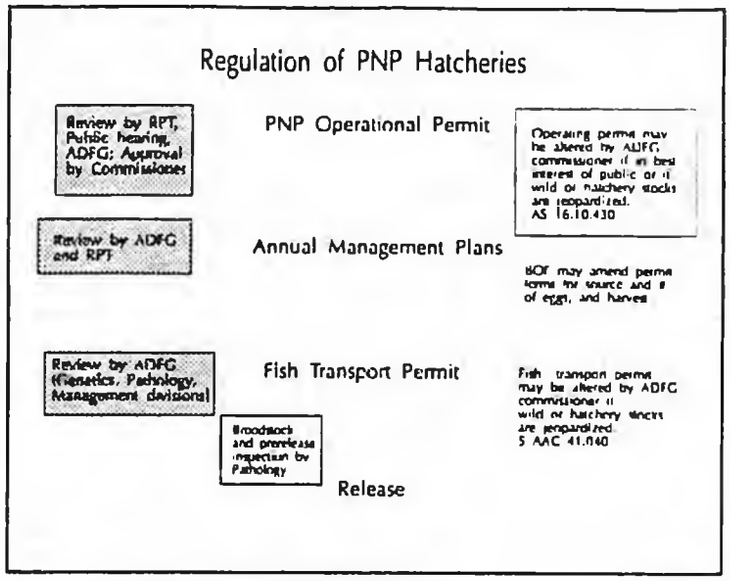


Alaska Statutes (AS) 16.10.400-16.10.475 address this process. The PNP hatchery permit application process is also described in detail in regulations 5 AAC 40.100-40.990. The following description explains their content in a paraphrased format.

AS 16.10.400 instructs that the commissioner of ADF&G may issue a permit, subject to restrictions imposed by statute or regulation, to a nonprofit corporation for the construction and operation of a salmon hatchery after the permit application has been reviewed by the regional planning team. A hatchery permit is nontransferable. A public hearing is required at least 30 days before the issuance of a permit. The hearing shall be held in a central location in the vicinity of the proposed hatchery facility.

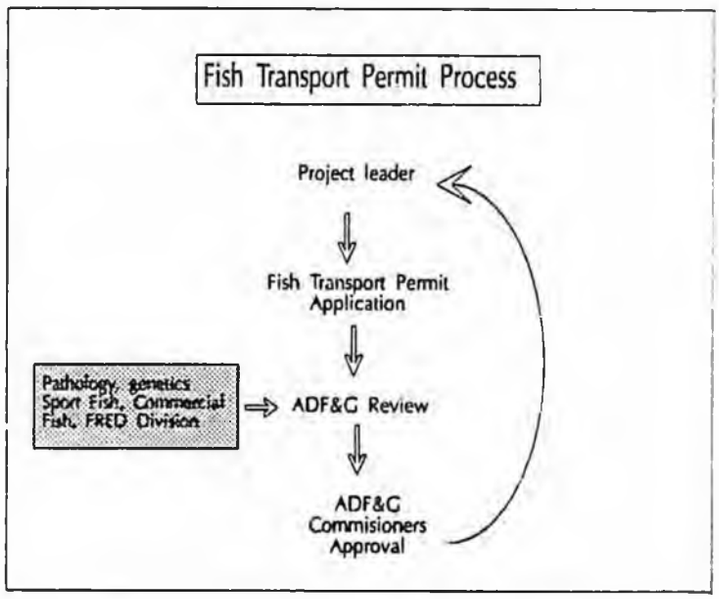
The commissioner may place conditions on a PNP permit. This includes a provision that donor stock eggs must be from the department or a source approved by the department. This action is supported by Board of Fisheries regulations 5 AAC 41.001-41.100 for the fish transport permit process. 5 AAC 41.005 states that no person may transport, possess, export from the state, or release into the waters of the state, any live fish unless the person holds a fish transport permit issued by the commissioner and the person is in compliance with all conditions of the permit and the provisions of the chapter. 5 AAC 41.030 states that the commissioner will only issue a fish transport permit if it is the department's determination that the proposed transport, possession or

release of fish will not adversely affect the continued health and perpetuation of native, wild, or hatchery stocks of fish. All fish transport permit applications are reviewed and signed (recommending either approval or denial) by the ADF&G Principal Pathologist and the ADF&G Principal Geneticist, as well regional supervisors for the fisheries divisions, the Chief of Technology and Development, the FRED division director, and the commissioner. The potential for disease and genetic impacts are primary considerations in this review process.



Additional permit conditions include: no placement of salmon eggs or resulting fry into the waters of the state except as designated in the permit; restrictions on sale of eggs or resulting fry; no release of salmon before departmental approval; destruction of diseased salmon; departmental control over where salmon are harvested by hatchery operators; and the hatchery must be located in an area where reasonable segregation from natural stocks occurs but, when feasible, in an area where returning hatchery fish pass through traditional salmon fisheries.

The commissioner may alter, suspend, or revoke a PNP permit if the operator fails to comply with the terms and conditions of the permit within a reasonable period after notification of noncompliance. The commissioner may also alter the permit or initiate a termination of the operation, if it is found that the hatchery is not in the best interest of the public.



Fish released by hatchery operators are available to the people for common use in the same way as natural stocks until they return to the location established by the department for hatchery harvest. The Board of Fisheries may, after a permit has been issued, amend by regulation the terms of the permit relating to the source and number of eggs, the harvest by hatchery operators, and the locations designated by the department for harvest by the operator (i.e. hatchery special harvest areas) (AS 16.10.440B).

The department is required by statute to provide assistance before and after permit issuance, within the limits of time and resources. AS 16.10.445 reinforces that the department shall approve the source and number of salmon eggs for hatchery operators. Salmon eggs shall first be taken from stocks native to the area in which the hatchery is

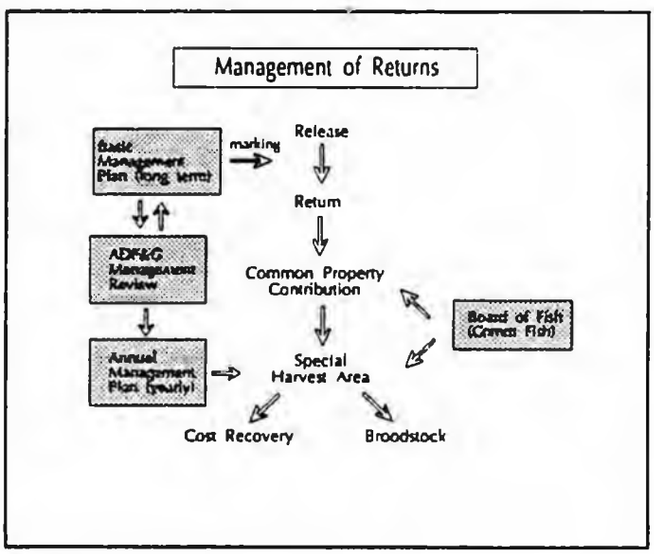
located. The sale of salmon and salmon eggs by operators is addressed in AS 16.10.450. After the operator uses funds from such sales for debt service and reasonable operating costs, any remaining funds shall be expended on other fisheries activities of the qualified regional association. Also, fish returning to hatcheries and sold for human consumption must be of comparable quality to fish harvested by commercial fisheries in the area, and must be sold at prices commensurate with the current market.

The department may inspect the hatchery facility at any time the facility is operating. Each facility is inspected at least every other year, and each brood stock is examined for disease prior to its use in a hatchery.

An annual report must be filed with the department by December 15 of each year that contains information on hatchery returns, numbers of eggs taken and numbers of fry or smolt released.

The permit application procedures for a PNP hatchery, the regional comprehensive salmon planning process, and general provisions on the permitting and operation of PNP hatcheries are described in regulations 5 AAC 40.100-40.990. Permit application procedures include: pre-application assistance, a management feasibility analysis, the permit application and fees, determination of acceptance by the department for formal review, regional planning team review, a provision for requesting additional information, completeness determination by the department, the public hearing process, review and determination by the commissioner (this includes six major criteria), and a provision for reconsideration. The departmental review of all PNP hatchery permit applications includes review and comment by all fisheries divisions, the Habitat Division, the Principal Geneticist, and the Principal Pathologist. A public hearing and full review by State and Federal agencies through the coastal zone review process is also required.

5 AAC 40.800-40.990 address the following information: nontransferability of permits, preference rights to potential hatchery locations for the regional aquaculture associations, basic management plans for each hatchery, hatchery inspection requirements, annual management plan requirements, notice and review of permit alteration requests, provisions for performance review by the department and the regional planning team, requirements for reporting of mortalities, details on the concept of surplus salmon eggs, notice on report coordination with the Department of Commerce and Economic Development, and definitions.



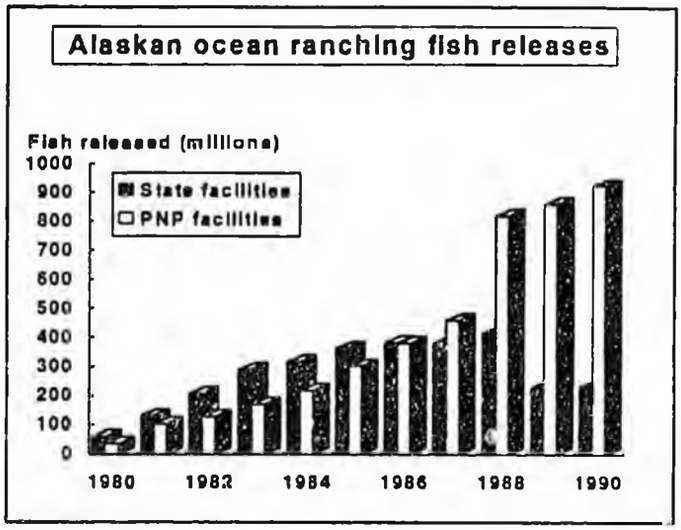
A Basic Management Plan (BMP) is developed as part of the actual permit. The BMP includes a complete description of the facility, including the special harvest area, brood stock development schedules and descriptions of brood stock and hatchery stock manage-

ment. Where deemed necessary by the management divisions, marking programs for hatchery-produced fish are required in the hatchery permit and BMP. Such programs are usually optional unless the fisheries management divisions specify the need for special in-season management capability during the permit or permit alteration process. Representative numbers of most species are routinely coded-wire tagged at most facilities and other (e.g. otolith) mass marking techniques are being developed. When a permit becomes operational, an Annual Management Plan (AMP) is developed for each year of operation. Specific plans for egg-takes, cost recovery harvests, fry and smolt releases, marking and recovery, etc. are included. AMPs are developed by the department in conjunction with the operator and are reviewed by all the fisheries divisions and the RPT before approval by the Commissioner. The PNP permitting process is very rigorous, and even in a best-case scenario, the review and approval process takes approximately six months.

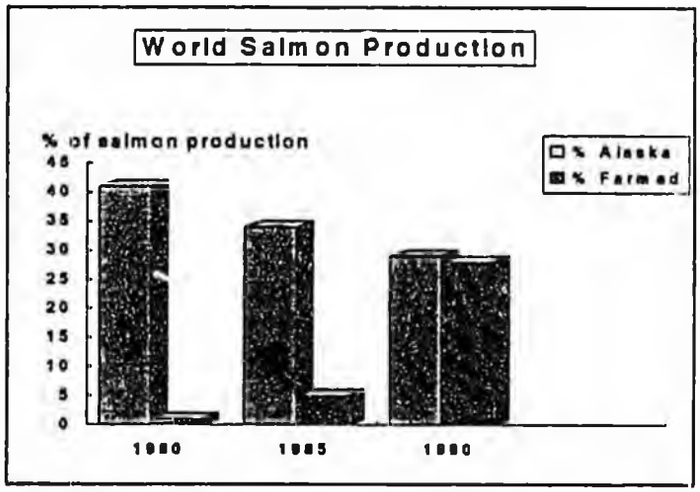
1980-1990: a decade of changes

	World	Alaska Farmed		AK%	Farmed %
1980	1,242	511	15	41%	1%
1990	2,056	639	621	29%	28%

data in million pounds from *Salmor 2000*



During the last decade, the Alaskan salmon ranching program has changed not only in terms of numbers of adults produced and its increasingly statewide scope, but also in terms of production trends. In 1990, ranched fish represented 24% of the common property harvest compared to 2% in 1980. Recent PNP salmon production has grown as the FRED Division has contracted operations of 9 facilities and the PNP operators have increased the capacities of existing facilities.



Concurrent with the development of the Alaskan ocean ranching program, other countries have developed the concept of salmon farming. Alaskan salmon production has grown by 25% during the last decade; however, farmed salmon production has increased 41 fold. The growth of the farmed salmon production has been exponential: hardly felt in 1985, but five years later reaching a production equivalent rivaling Alaska's entire salmon harvest.

Appendix

A. Common property harvest of ocean ranched and wild stocks of fish, (1986-1990), by region, and the state-wide total harvest

B. Full page flowcharts

Alaskan Fisheries Enhancment-Common property harvest of enhanced fish (in thousands)
Alaska Department of Fish and Game- FRED Division

Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	Southeast	Total Commercial	259	1,432	3,353	45,575	3,297	53,921
		-Cost Recovery	2		70	45	155	273
		Adj Comm total	257	1,432	3,283	45,530	3,142	53,648
		Enhanced	17	19	325	407	997	1,765
		% Enhanced	6.8%	1.3%	9.9%	0.9%	31.7%	3.3%
	Prince William Sound	Total Commercial	41	1,287	425	11,390	1,699	14,847
		-Cost Recovery			2	903	24	930
		Adj Comm total	41	1,287	423	10,487	1,675	13,917
		Enhanced	0	40	5	5,889	175	6,109
		% Enhanced	0.0%	3.1%	1.2%	56.2%	10.4%	43.9%
	Cook Inlet	Total Commercial	40	4,974	762	2,710	1,199	9,687
		-Cost Recovery			0	0	9	10
		Adj Comm total	40	4,974	762	2,710	1,190	9,677
		Enhanced	0	707	6	380	15	1,108
		% Enhanced	0.9%	14.2%	0.8%	14.0%	1.3%	11.5%
	Kodiak/ Chignik Aleut/Ak Peninsula	Total Commercial	24	8,465	711	16,403	3,330	28,934
		Enhanced	0	30	2	398	70	500
		% Enhanced	0.3%	0.4%	0.2%	2.4%	2.1%	1.7%
	Bristol Bay	Total Commercial	93	15,869	177	394	1,131	17,684
		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	150	142	818	56	1,615	2,786
		Enhanced	0	0	0	0	4	4
		% Enhanced	0.1%	0.0%	0.0%	0.0%	0.2%	0.1%
		Total Commercial	607	32,189	6,248	76,528	12,271	127,859
		-Cost Recovery	2	0	73	949	189	1,212
1986	Total	Adj Comm total	605	32,189	6,173	75,579	12,082	126,647
		Enhanced	18	795	338	7,074	1,261	9,487
		% Enhanced	3.0%	2.5%	5.5%	9.4%	10.4%	7.5%

Individual spp catches might not add to all-species total because of rounding; total numbers from Savikko/Comm Fish

Alaskan Fisheries Enhancment-Common property harvest of enhanced fish (in thousands)
Alaska Department of Fish and Game- FRED Division

Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1987	Southeast	Total Commercial	261	1,362	1,589	10,035	2,556	15,804
		-Cost Recovery	2		49	978	483	1,513
		Adj Comm total	259	1,362	1,540	9,057	2,073	14,291
		Enhanced	28	36	132	467	811	1,474
		% Enhanced	11.0%	2.6%	8.6%	5.2%	39.1%	10.3%
	Prince William Sound	Total Commercial	42	1,738	176	29,231	1,920	33,105
		-Cost Recovery			7	2,647	2	2,656
		Adj Comm total	42	1,738	169	26,584	1,918	30,449
		Enhanced	0	61	23	14,783	126	14,993
		% Enhanced	0.2%	3.5%	13.8%	55.6%	6.6%	49.2%
	Cook Inlet	Total Commercial	41	9,749	466	311	506	11,072
		-Cost Recovery			1		3	5
		Adj Comm total	41	9,749	465	311	503	11,067
		Enhanced	1	758	18	85	8	869
		% Enhanced	1.6%	7.8%	3.9%	27.2%	1.7%	7.9%
	Kodiak/ Chignik Aleut/Ak Peninsula	Total Commercial	31	6,287	741	6,550	2,091	15,699
		Enhanced	0	18	5	1,082	4	1,109
		% Enhanced	0.0%	0.3%	0.6%	16.5%	0.2%	7.1%
	Bristol Bay	Total Commercial	76	16,048	70	0	1,510	17,704
		Enhanced	0	0	0	0	0	0
		% Enhanced	0.0%	0.0%	0.0%	ERR	0.0%	0.0%
	Arctic/Yukon Kuskokwim	Total Commercial	207	170	503	2	1,255	2,137
		Enhanced	0	0	0	0	6	6
		% Enhanced	0.0%	0.0%	0.1%	0.0%	0.4%	0.3%
1987	Total	Total Commercial	658	35,354	3,545	46,129	9,838	95,521
		-Cost Recovery	2	0	58	3,625	488	4,173
		Adj Comm total	656	35,354	3,487	42,504	9,350	91,348
		Enhanced	29	872	179	16,417	955	18,451
		% Enhanced	4.5%	2.5%	5.1%	38.6%	10.2%	20.2%

Individual spp catches might not add to all-species total because of rounding; total numbers from Savikko/Comm Fish

Alaskan Fisheries Enhancement-Common property harvest of enhanced fish (in thousands)
Alaska Department of Fish and Game- FRED Division

Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1988	Southeast	Total Commercial	264	1,460	1,042	11,202	3,535	17,504
		-Cost Recovery	9		4	74	425	511
		Adj Comm total	255	1,460	1,038	11,128	3,110	16,993
		Enhanced	33	20	49	119	973	1,194
		% Enhanced	12.8%	1.4%	4.7%	1.1%	31.3%	7.0%
	Prince William Sound	Total Commercial	32	768	479	11,737	1,841	14,855
		-Cost Recovery			7	1,635	43	1,686
		Adj Comm total	32	768	472	10,102	1,798	13,169
		Enhanced	0	70	59	8,949	482	9,560
		% Enhanced	0.7%	9.1%	12.5%	88.6%	26.8%	72.6%
	Cook Inlet	Total Commercial	31	7,124	567	1,391	1,028	10,141
		-Cost Recovery			2		2	3
		Adj Comm total	31	7,124	565	1,391	1,026	10,138
		Enhanced	1	888	21	836	7	1,753
		% Enhanced	4.7%	12.5%	3.7%	60.1%	0.7%	17.3%
	Kodiak/ Chignik Aleut/Ak Peninsula	Total Commercial	57	6,409	1,413	24,892	3,940	36,713
		-Cost Recovery				298		298
		Adj Comm total	57	6,409	1,413	24,594	3,940	36,415
		Enhanced	0	247	25	675	151	1,099
		% Enhanced	0.1%	3.9%	1.8%	2.7%	3.8%	3.0%
	Bristol Bay	Total Commercial	45	14,010	187	922	1,475	16,639
		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	179	151	728	114	3,117	4,288
		Enhanced	0	0	1	0	27	28
		% Enhanced	0.2%	0.0%	0.1%	0.0%	0.9%	0.7%
1988	Total	Total Commercial	608	29,922	4,416	50,258	14,936	100,140
		-Cost Recovery	9	0	13	2,008	470	2,499
		Adj Comm total	599	29,922	4,403	48,250	14,466	97,641
		Enhanced	35	1,226	158	10,579	1,640	13,635
		% Enhanced	5.8%	4.1%	3.5%	21.9%	11.3%	14.0%

Individual spp catches might not add to all-species total because of rounding; total numbers from Savikko/Comm Fish

Alaskan Fisheries Enhancment-Common property harvest of enhanced fish (in thousands)
Alaska Department of Fish and Game- FRED Division

Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1989	Southeast	Total Commercial	288	2,115	2,133	59,317	1,935	65,788
		-Cost Recovery	18		13	223	155	409
		Adj Comm total	270	2,115	2,120	59,094	1,780	65,379
		Enhanced	21	37	78	881	487	1,503
		% Enhanced	7.9%	1.7%	3.7%	1.5%	27.3%	2.3%
	Prince William Sound	Total Commercial	32	1,175	425	21,886	1,002	24,520
		-Cost Recovery			72	7,806	27	7,905
		Adj Comm total	32	1,175	353	14,080	975	16,615
		Enhanced	0	127	131	12,368	200	12,826
		% Enhanced	1.1%	10.8%	37.0%	87.8%	20.5%	77.2%
	Cook Inlet	Total Commercial	27	5,070	279	1,359	135	6,870
		-Cost Recovery		40	4		2	46
		Adj Comm total	27	5,030	275	1,359	133	6,824
		Enhanced	2	389	26	877	3	1,297
		% Enhanced	6.0%	7.7%	9.6%	64.5%	2.1%	19.0%
	Kodiak/ Chignik Aleut/Ak Peninsula	Total Commercial	21	6,840	741	13,952	1,173	22,726
		-Cost Recovery				6,492		6,492
		Adj Comm total	21	6,640	741	7,460	1,173	16,234
		Enhanced		800				800
		% Enhanced	0.0%	11.7%	0.0%	0.0%	0.0%	4.9%
	Bristol Bay	Total Commercial	40	29,292	240	0	577	30,149
		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	175	83	684	1	2,330	3,272
		Enhanced	0	0	0	0	16	16
		% Enhanced	0.0%	0.0%	0.0%	0.0%	0.7%	0.5%
1989	Total	Total Commercial	583	44,575	4,500	96,516	7,152	153,325
		-Cost Recovery	18	40	89	14,521	184	14,852
		Adj Comm total	566	44,535	4,411	81,995	6,968	138,473
		Enhanced	23	1,352	235	14,126	705	16,442
		% Enhanced	4.1%	3.0%	5.3%	17.2%	10.1%	11.9%

1989 numbers must be interpreted carefully because of the increased cost recovery harvest and decreased commercial harvest due to the Exxon Valdez oil spill.

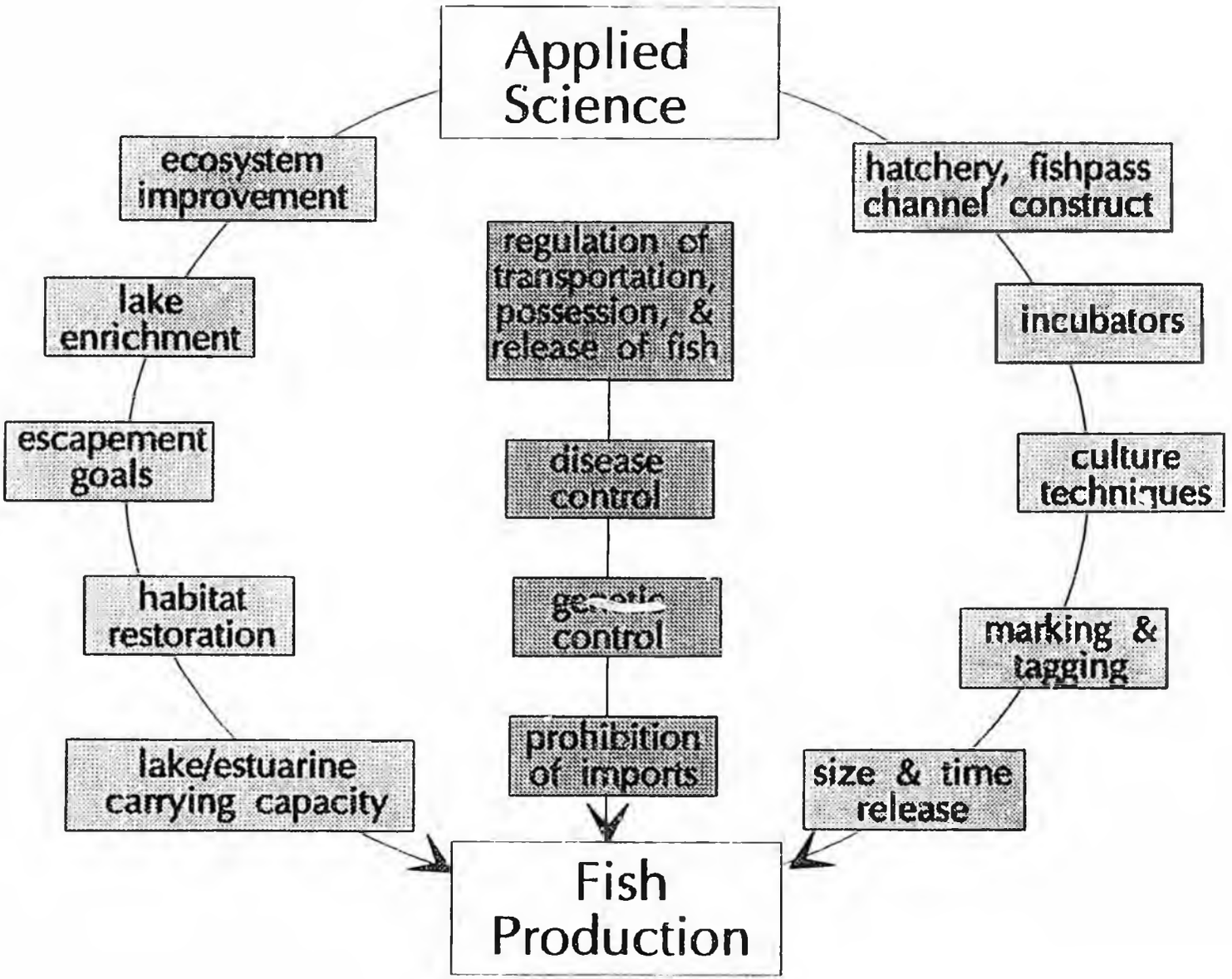
Individual spp catches might not add to all-species total because of rounding; total numbers from Savikko/Comm Fish

Alaskan Fisheries Enhancment-Common property harvest of enhanced fish (in thousands)
Alaska Department of Fish and Game- FRED Division

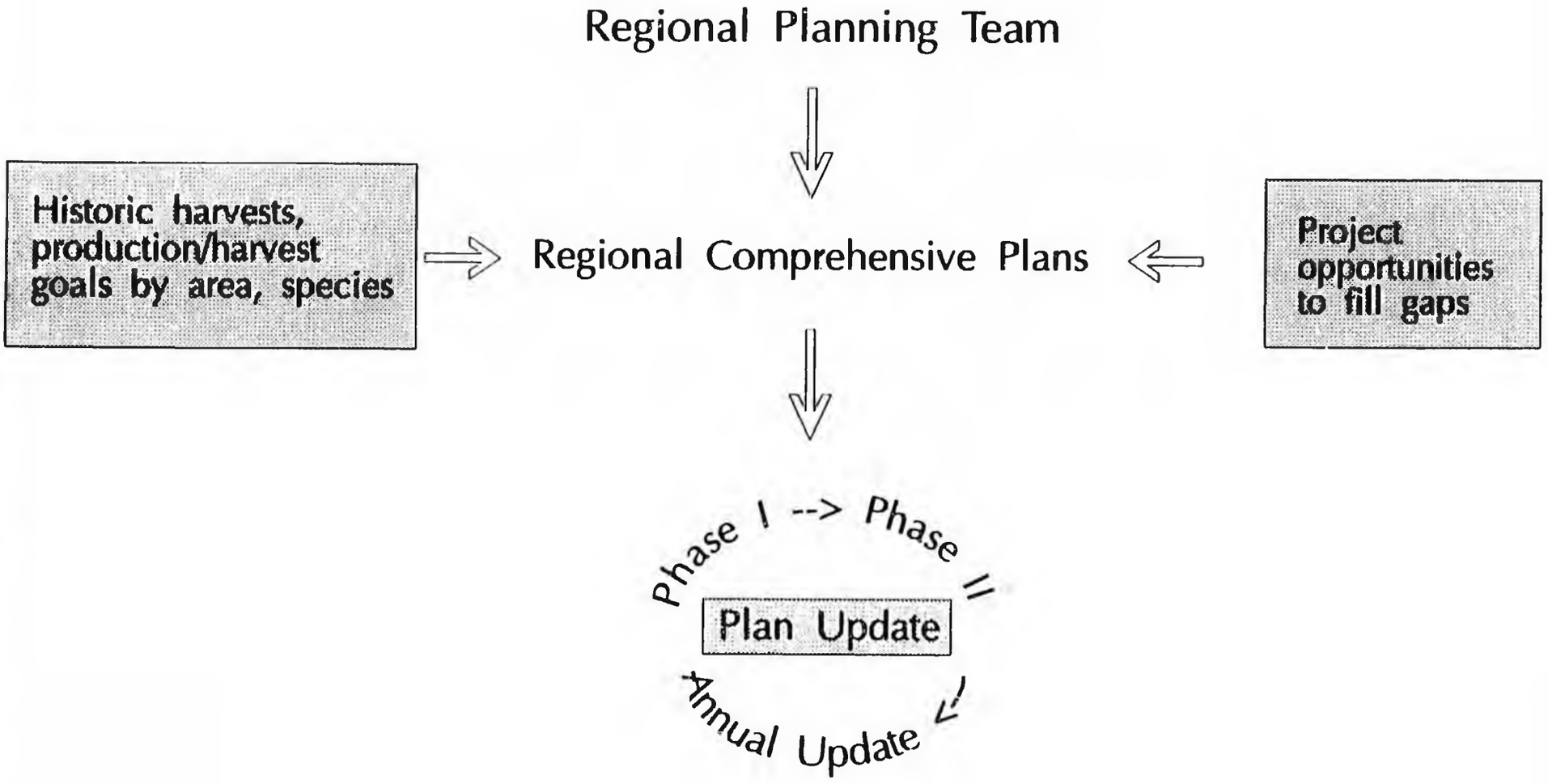
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	Southeast	Total Commercial	332	2,136	2,664	31,185	1,884	38,201
		-Cost Recovery	22	0	117	988	337	1,465
		Adj Comm total	310	2,136	2,546	30,196	1,547	36,736
		Enhanced	38	110	344	499	408	1,399
		% Enhanced	12.3%	5.2%	13.5%	1.7%	26.4%	3.8%
	Prince William Sound	Total Commercial	22	912	524	44,165	967	46,591
		-Cost Recovery			17	8,858	32	8,907
		Adj Comm total	22	912	507	35,307	936	37,684
		Enhanced	0	150	201	28,195	612	29,158
		% Enhanced	1.1%	16.4%	39.7%	79.9%	65.3%	77.4%
	Cook Inlet	Total Commercial	18	3,807	503	986	358	6,870
		-Cost Recovery		9	8		1	16
		Adj Comm total	18	3,799	497	986	357	6,853
		Enhanced	2	404	9	167	48	630
		% Enhanced	8.5%	10.6%	1.8%	17.0%	13.4%	9.2%
	Kodiak/ Chignik Aleut/Ak Peninsula	Total Commercial	54	12,093	875	10,124	2,177	25,323
		-Cost Recovery						0
		Adj Comm total	54	12,093	875	10,124	2,177	25,323
		Enhanced		2,291	7	592	4	2,895
		% Enhanced	0.0%	18.9%	0.8%	5.9%	0.2%	11.4%
	Bristol Bay	Total Commercial	33	33,165	100	517	1,008	34,822
		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	189	205	532	17	1,136	2,078
		Enhanced	0	0	0	0	5	5
		% Enhanced	0.0%	0.0%	0.0%	0.0%	0.4%	0.2%
1990	Total	Total Commercial	647	52,317	5,199	86,994	7,531	152,687
		-Cost Recovery	22	9	141	9,846	370	10,388
		Adj Comm total	625	52,308	5,058	77,148	7,161	142,299
		Enhanced	40	2,955	582	29,454	1,077	34,087
		% Enhanced	6.4%	5.6%	11.1%	38.2%	15.0%	24.0%

Note: Cost recovery numbers have been subtracted out to provide a common-property harvest figure.

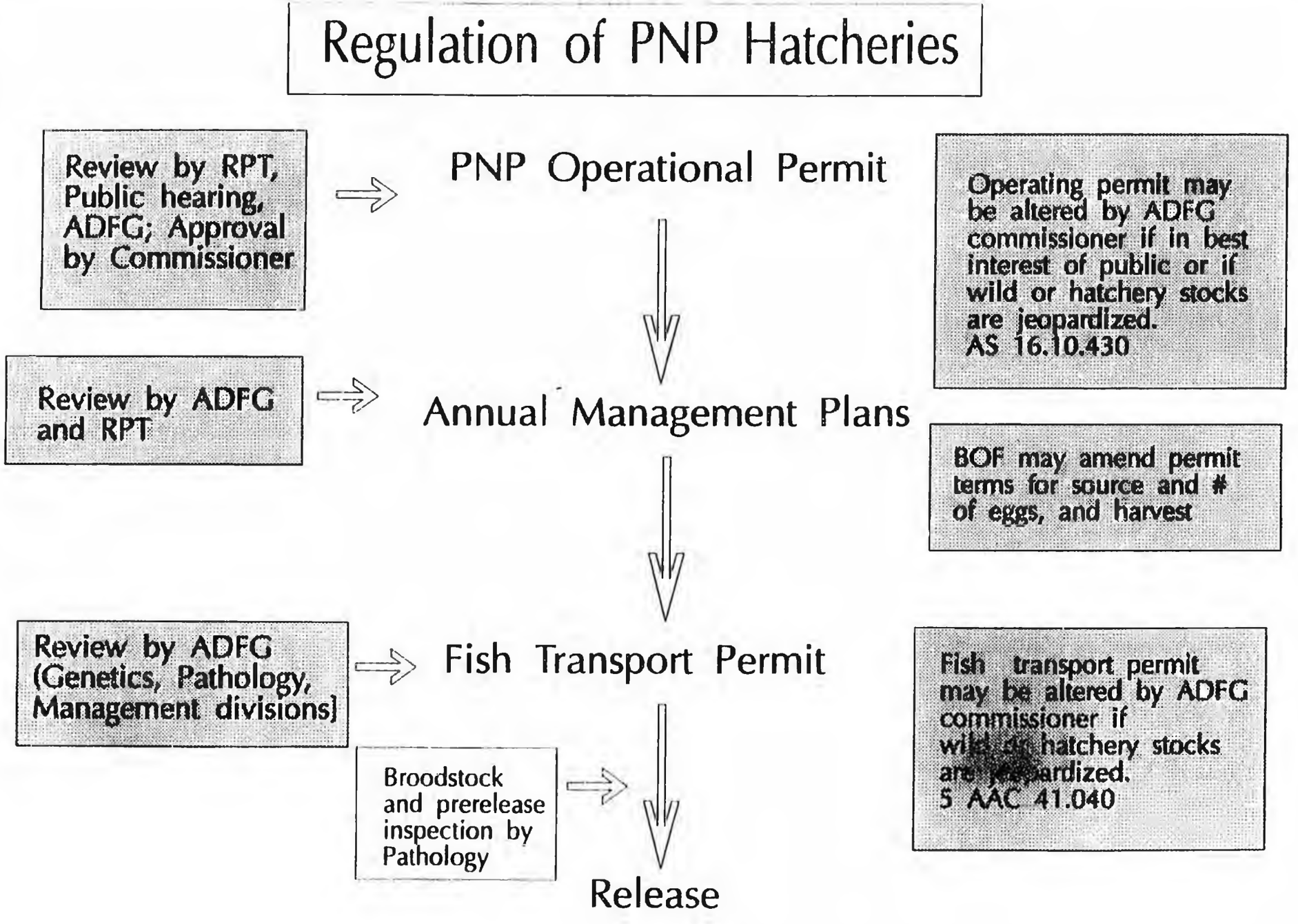
Individual spp catches might not add to all-species total because of rounding; total numbers from Savikko/Comm Fish


Applied Science
ecosystem improvement
lake enrichment
escapement goals
habitat restoration
lake/estuarine carrying capacity
regulation of transportation, possession, & release of fish
disease control
genetic control
prohibition of imports
hatchery, fishpass channel construct
incubators
culture techniques
marking & tagging
size & time release
Fish Production

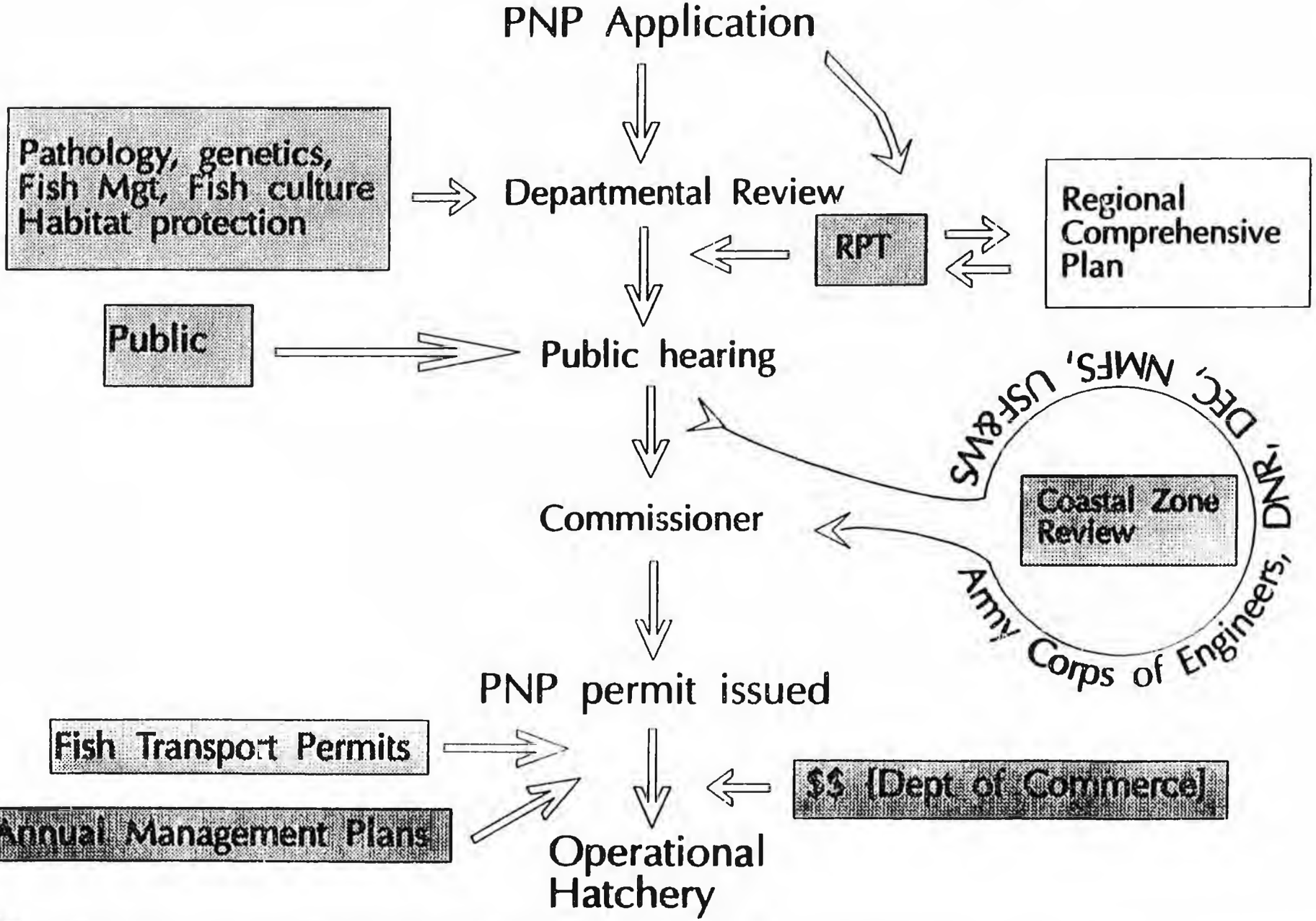
Planning Process



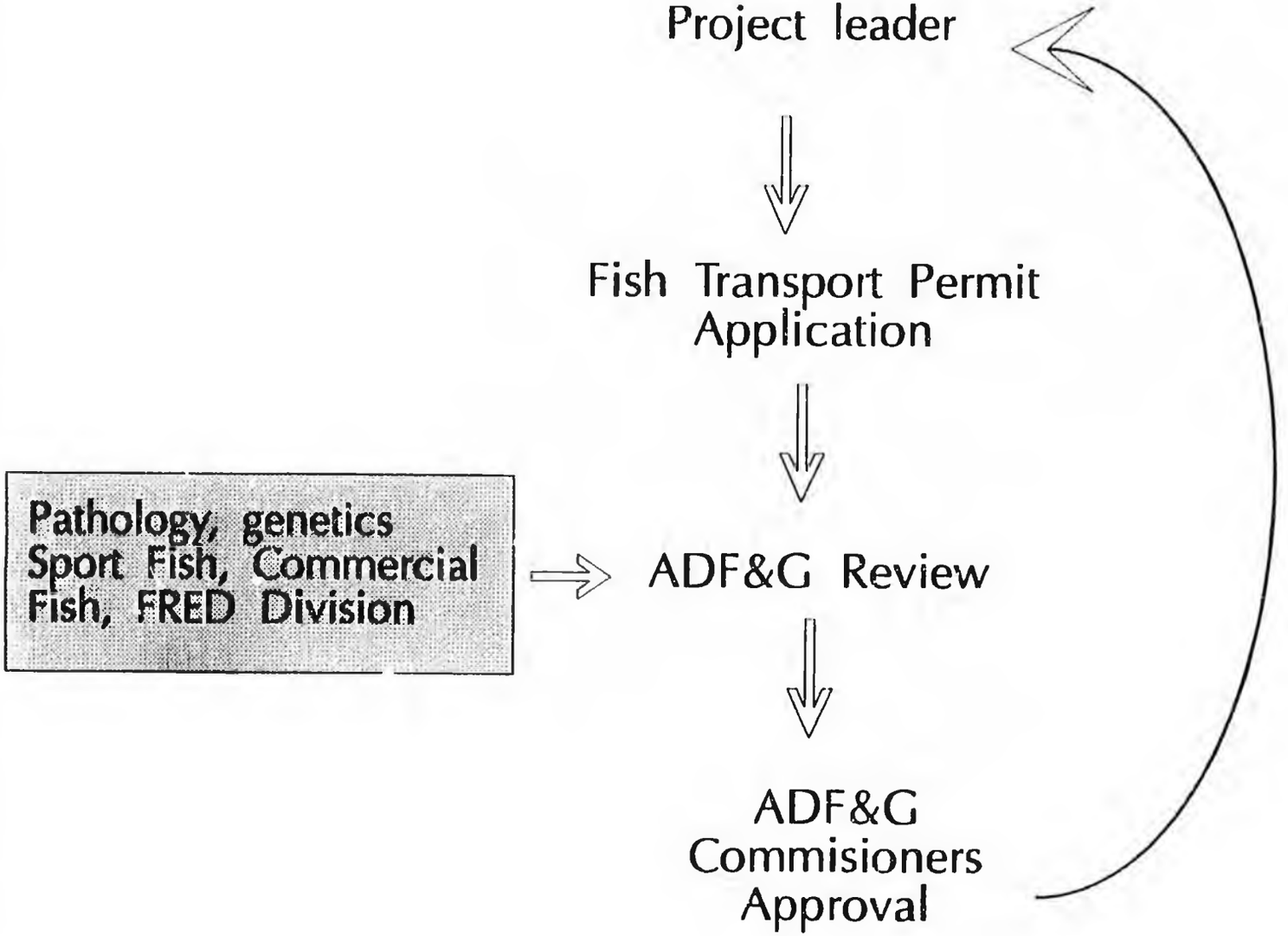
Regulation of PNP Hatcheries



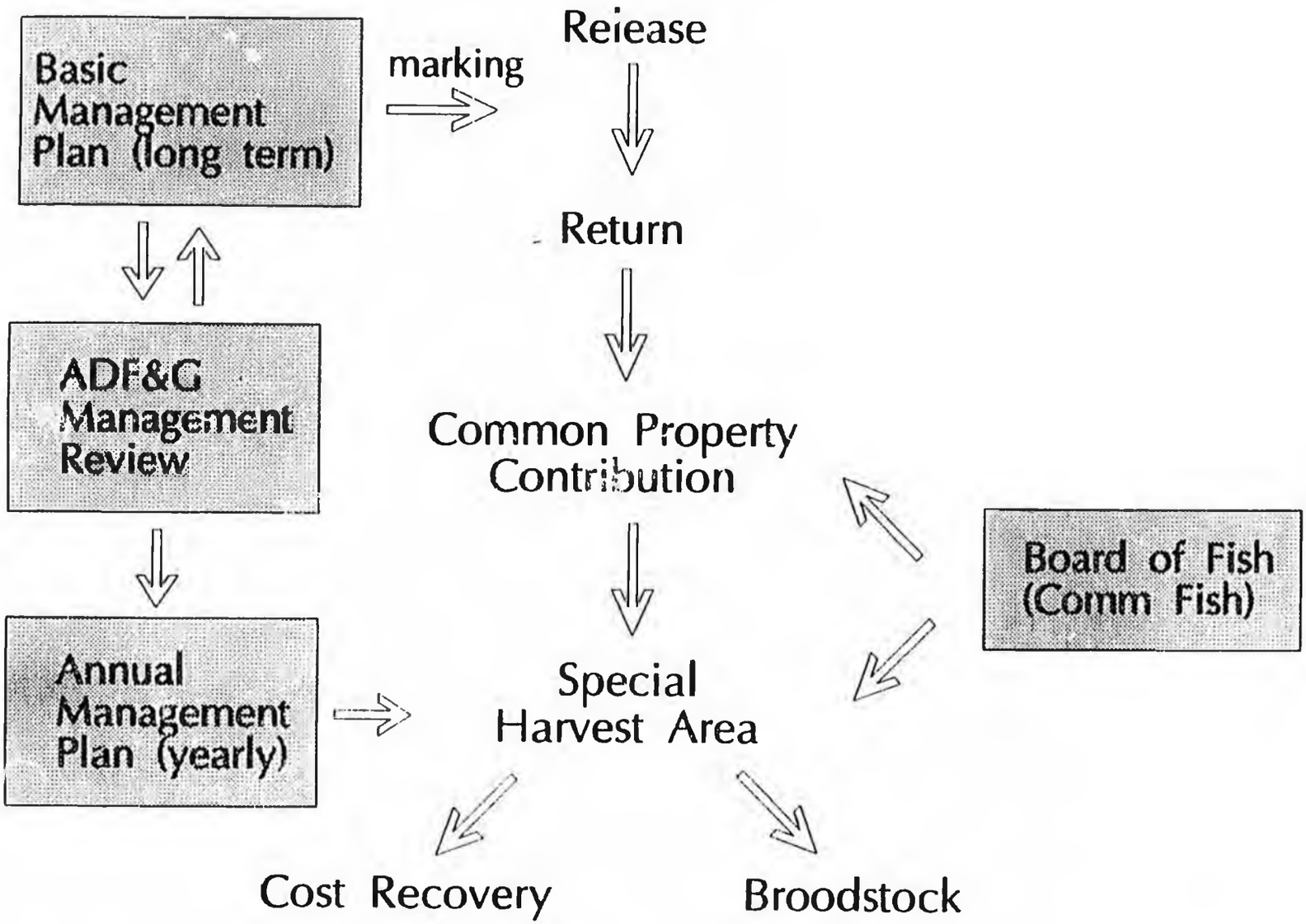
PNP Application Process



Fish Transport Permit Process



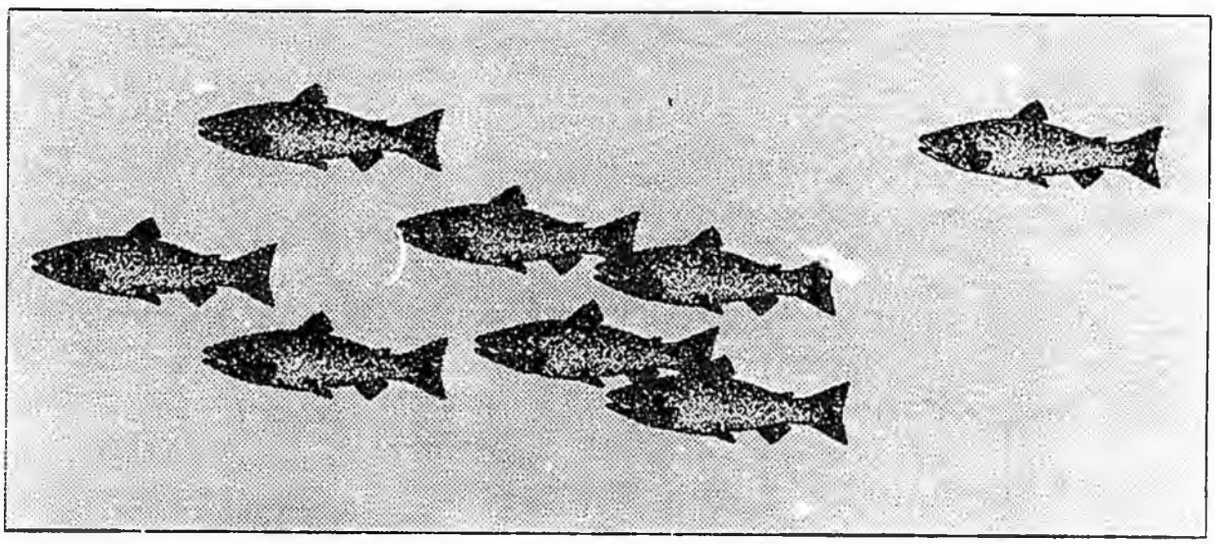
Management of Returns



Alaska Department of Fish and Game
Fisheries Rehabilitation, Enhancement and Development (FRED) Division
J. P. Koenings, Director

Overview of Kodiak Area Salmon Stock Rehabilitation, Development, and Enhancement

Report to the Board of Fisheries
(Kodiak, January 1993)



by

Lorne E. White

Kodiak Area Biologist

Fisheries Rehabilitation, Enhancement and Development (FRED) Division
Staff Report to the Alaska Board of Fisheries
Kodiak
January 1993

OVERVIEW OF KODIAK AREA SALMON STOCK REHABILITATION, DEVELOPMENT, AND ENHANCEMENT

Lorne E. White

Sockeye Salmon Production

Sockeye salmon (*Oncorhynchus nerka*) have been cultured in the Kodiak area since 1891 (Table 1). The first hatcheries operated until the 1930s. In the early 1950s, a new Territorial fish culture program began with the stocking of sockeye salmon eggs into the Frazer and Paul's Lake systems. In the period from 1953 to 1956, the Kitoi Bay Research Station was constructed to evaluate stocking densities appropriate for Alaskan lakes. The territorial transition into the State of Alaska, Department of Fish and Game (ADF&G), resulted in continued stocking of Frazer Lake from the Kitoi Bay facility until 1971. The Frazer fish ladder was constructed in 1962. Karluk Lake restoration began with an egg-eying station. An 80 million egg-plant operation continued from 1979 to 1986, and lake fertilization began in 1986 and continued annually for five consecutive years with 96 tons of fertilizer applied per year with funds provided by the Kodiak Regional Aquaculture Association (KRAA). With construction of the Pillar Creek Hatchery in 1990, ADF&G and KRAA stocked Spiridon Lake with 3.3 million sockeye fry in 1991 and, in 1992, expanded lake stocking into Hidden, Crescent, Waterfall, Malina, and Afognak Lakes (Figure 1).

Current Sockeye Program

The recent Phase II Revision of the Kodiak Regional Comprehensive Salmon Plan calls for an increase in catch to 1,700,000 sockeye salmon (GAP) by 2002 (Table 2). To meet this GAP, ADF&G and KRAA are cooperating by utilizing existing facilities (Kitoi) and upgrading newer facilities (Pillar). Lake fertilization programs are also quite extensive and are being employed to rehabilitate or enhance lakes for sockeye salmon productivity.

Table 1. History of Kodiak sockeye salmon enhancement.

History of Sockeye Enhancement in Kodiak, Alaska	
Karluk Hatchery	1891
Afognak Hatchery	1908
Lake Stocking at Pauls and Frazer	1951
Kitoi Bay Research Station	1953
Frazer Lake Fish Ladder	1962
Karluk Egg Plants	1979
Kodiak Regional Aquaculture Assn.	1983
Karluk Lake Fertilization	1986
Frazer Lake Fertilization	1988
Spiridon Lake Stocking	1989
Afognak Lake Fertilization	1990
Pillar Creek Hatchery	1990
Malina Lake Rehabilitation	1991
Hidden, Crescent, Waterfall Lake Stocking	1992

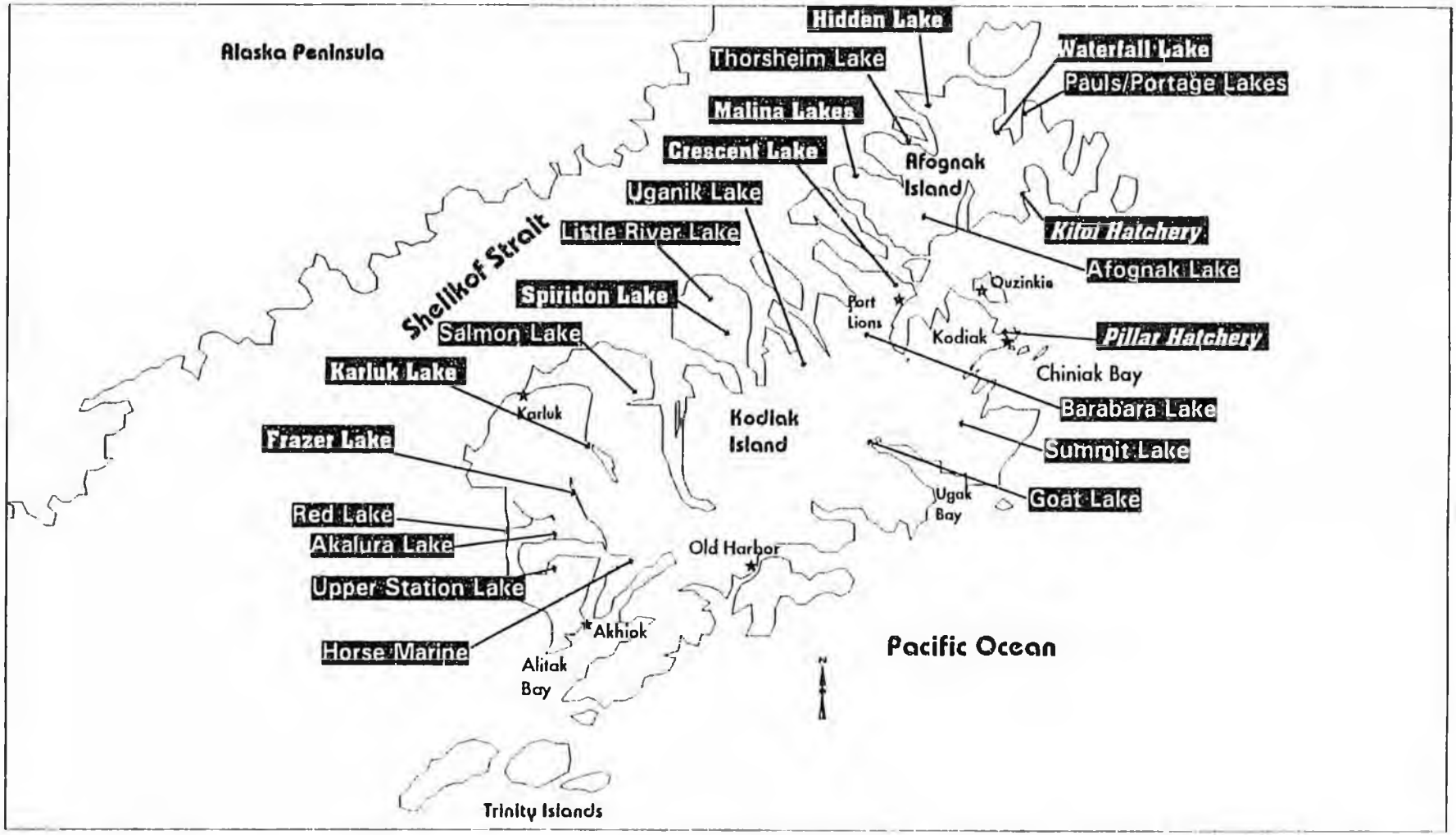


Figure 1. Kodiak Island area facilities and lakes investigated for salmon rehabilitation and enhancement.

Sockeye salmon stock restoration has been a cornerstone of the Kodiak area program. Past emphasis has been placed on Karluk and Frazer Lakes restoration, ongoing restoration work continues at Malina Lake, and future restoration is planned for Paul's Lake.

Facilities:

The Kitoi Bay Hatchery currently has a capacity to incubate 5,000,000 sockeye salmon eggs and fry. and plans are to increase this capacity to 10,000.000 fry. Sockeye salmon reared at Kitoi are released in the immediate area of Kitoi Bay.

The Pillar Creek Hatchery, which is located on the Kodiak road system, is a central incubation facility where sockeye salmon are outstocked to barren or hanging lakes around Kodiak and Afognak Islands. The hatchery has an incubation capacity for 20,000,000 fry and an 800,000 presmolt rearing capacity.

Malina Lake:

The Malina Lake sockeye salmon rehabilitation project is a cooperative project funded jointly by ADF&G and KRAA. The project is designed to restore the returns of sockeye salmon to the lake. The total run should be approximately 50,000, with a projected escapement of 20,000 and a catch of 30,000. However, current low-level zooplankton densities indicate the lake can support an escapement of only 5,000 to 10,000. This level should increase once planned improvements are completed in the next five years. Migration timing of adults in the fishery is from June to August. ADF&G and KRAA have been fertilizing the lake since 1991. Fry plants were made in the lake in 1992 and will continue until the system is rehabilitated. A weir, operated for the first time this year (1992) at Malina, showed a total escapement of 7,610. Sockeye salmon began passage into the lake on June 3 and continued to run at a low rate until August 13. The system is managed under the North Shelikof Strait Management Plan.

Table 2. Supplemental salmon production necessary to meet desired 2002 GAP.

Species	Target Goal	Natural Runs	Supplemental Production	Total GAP
Pink				
odd year*	19,000,000	7,500,000	11,500,000	--
even year*	24,000,000	12,000,000	11,500,000	500,000
Sockeye	4,400,000	2,700,000		1,700,000
Chum	2,000,000	900,000		1,100,000
Coho	543,000	161,000		382,000
Chinook	15,000	12,000		3,000
Total catch:				
odd years	25,958,000	11,273,000	11,500,000	8,685,000
even years	30,958,000	15,773,000	11,500,000	9,185,000

* pink salmon only

Karluk Lake:

The Karluk Lake sockeye salmon rehabilitation effort is probably the largest rehabilitation effort undertaken in the state. The restoration followed a three-phase approach. The first phase started in 1971 and involved an extensive curtailment of fishing time during the June period on Kodiak's westside to protect the Karluk-based sockeye. A two-day June fishery began in 1978. The second phase from 1979 to 1986 involved an 80 million egg plant to restore a significant subpopulation within the early (June) run of fish. This was supported by a 1976 voter-approved Bond Issue. The final phase involved lake enrichment to improve the zoopiankton feeding base for juvenile sockeye salmon. A total of 96 tons of liquid fertilizer was sprayed onto the surface of Karluk Lake each year from 1986 to 1990. This was supported by the State of Alaska, Kodiak Island Borough, and KRAA.

The combined efforts contributed to rehabilitating this sockeye system, which is now considered restored. The significance of Karluk in relation to other Kodiak Island sockeye salmon systems is that Karluk's optimal fry rearing capacity, 46,600,000, is more than Frazer, Spiridon, Upper Station, Red, and Afognak Lakes combined. These are the next largest lakes in the Kodiak area; Karluk is now the second richest lake on the island. Since 1985, Karluk has had an average run strength of 1,600,000 sockeye, and the catch has approached or exceeded 1,000,000 sockeye per year for the past three years. The major strength in the run size is in the late-run stock which migrates on the westside of Kodiak from mid-July to late September.

Karluk sockeye have a history of extensive freshwater residence and lower return-per-spawner ratio than other lakes in the area. This long-term residency is not common for other Kodiak area stocks and affords a natural mark for stock separation purposes.

Frazer Lake:

The Frazer Lake sockeye salmon enhancement program is one of the clearest success stories in the State of Alaska. The sockeye run was introduced in the 1950s and resulted in construction of a large fish ladder in 1962. This ladder brought continued slow growth to the fishery up until the 1980s. Now, the Frazer Lake sockeye salmon run has approached and exceeded 1,000,000 fish from 1989 to 1991. Lake fertilization was undertaken in 1987-1991 to correct for overescapement and resultant zooplankton deprivation. The system is managed under the Alitak District Management Plan.

Spiridon Lake:

The Spiridon Lake sockeye salmon enhancement project began with site investigations in 1987. Spiridon Lake is the third largest lake on Kodiak Island, but does not support anadromous fish due to a series of cascading falls on the lake outlet which prevent access. Since the 1970s, there has been interest in enhancing Spiridon Lake with sockeye salmon; however, not until the recent completion of Pillar Creek Hatchery has the potential existed to consider a stocking project. Sampling was conducted to determine the mortality of smolts negotiating the falls on the lake outlet, and site surveys were conducted to determine the possibility of smolts bypassing the falls area. Results of these investigations indicate that Spiridon Lake could support an estimated

11,000,000 sockeye salmon fry and that a smolt bypass system on the lake outlet is feasible. Although this lake is capable of supporting 11,000,000 fry, a gradual approach to stocking is recommended to ensure maintenance of a macrozooplankton community capable of supporting a long-term stocking project. The lake was stocked with fry from a late-run Upper Station Lake parent stock in 1991 and 1992. A total of 3,300,000 and 2,200,000 fry were stocked in these respective years, and 8,000,000 fry will be planted in 1993. Smolt outmigration in 1992 showed over 1,300,000 one-check fish (42 percent survival). These fish will enter the fishery in 1994 and 1995 (Figure 2). All fish will be available for harvest since this is a continued stocking program. Fishpasses are not a viable option for Spiridon Lake.

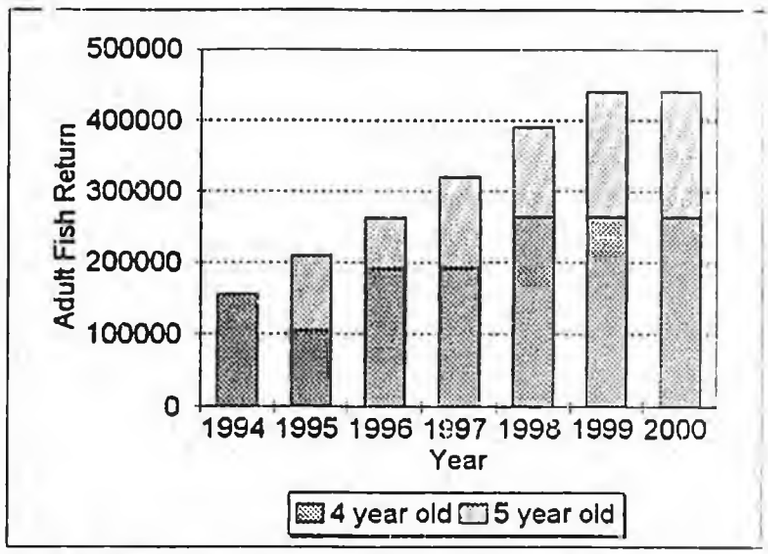


Figure 2. Projected returns to Spiridon Lake.

Spiridon Lake adults are projected to return similar to the parent stock at Upper Station Lake. These fish should be migratory through the westside fishery in mid-July to mid-August, peaking around August 5. This particular stock was selected for Spiridon as it affords fishing time to both set net and seine gear during the westside pink salmon fishery. The system is managed under the Westside Kodiak Management Plan under Proposal No. 272.

Hidden Lake:

Hidden Lake, in the Afognak District's Northwest Afognak Section, was stocked with 250,000 presmolt sockeye in 1992 that were reared at the Pillar Creek Hatchery. These fish are from the Afognak Lake early-run stock which will be available to the commercial fishery in June. The Hidden Lake plan calls for stocking 750,000 fry and 500,000 presmolts each year. Potentially, this could generate a return of 80,000 adults per year, and the first significant number of adults is projected to return in 1995. A weir will be installed in the lake outlet to prevent significant escapement upstream. An early run of fish was selected for this site to avoid conflict in the sockeye "cap," as defined in the North Shelikof Strait Sockeye Management Plan.

Waterfall Lake:

Waterfall Lake, in the Afognak District's Northeast Section, was stocked with 589,000 juvenile sockeye in 1992 from the Pillar Creek Hatchery. As at Hidden Lake, these fish are from the Afognak Lake early-run stock and will be harvested in the June fishery. This project should generate 16,000 adults each year starting in 1995. A weir will be installed at Waterfall Lake to prevent overescape-ment upstream. An early sockeye stock was selected for this site to avoid conflict with the sockeye "cap," as defined in the North Shelikof Strait Sockeye Management Plan.

Crescent Lake:

Crescent Lake, in the Northwest Kodiak District's Central Section, was stocked with 400,000 juvenile sockeye in 1992 from the Pillar Creek Hatchery. As at Hidden and Waterfall Lakes, these sockeye are from the early-run Afognak Lake stock which will be harvested in the June fishery. This project should generate 16,000 adults per year, with initial returns in 1995. These fish will provide subsistence, sport, and commercial fishery opportunities. The system is managed under the Crescent Lake Management Plan.

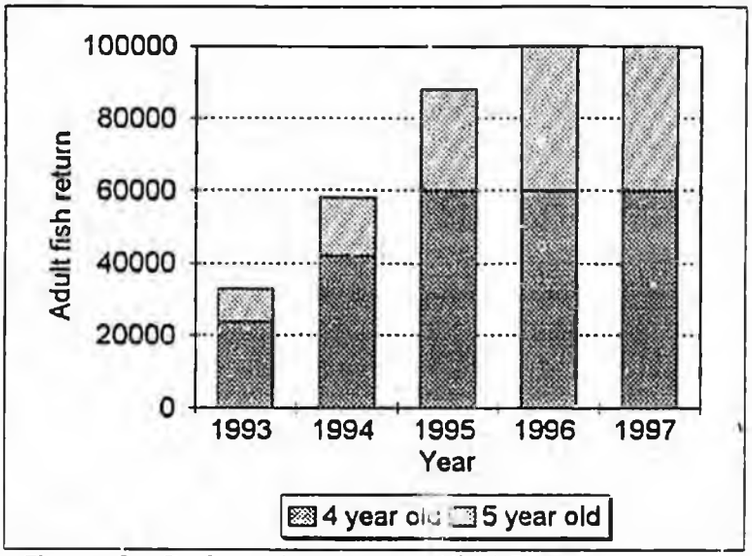


Figure 3. Projected returns to Kitoi Bay.

Kitoi Bay:

Kitoi Bay, in the Afognak District's Izhut Bay Section, has been the research site for development of "zero age," or "underyearling," sockeye smolt since 1989. The brood fish used in thisprogram is late-run Upper Station Lake sockeye salmon. As at Spiridon Lake, these fish are projected to be in the fishery in mid-July to mid-August, peaking around August 5. This stock was selected because it has a natural "zero-age" component in the population, and is intended to be the eventual brood stock source for Spiridon Lake. Projected returns, assuming a 5 percent survival from zero-age smolt to adult, are listed in Figure 3. The system is managed under the current Kitoi Bay Hatchery Management Plan.

Project Funding:

The ADF&G, FRED Division, and KRAA jointly submit cooperative project proposals for the production of new increments of salmon for restoration. The commissioner of ADF&G determines which proposals to accept based on recommendations of the Kodiak Regional Planning Team, KRAA, and ADF&G staff. Since 1982, approximately $5.6 million has been allocated to sockeye salmon enhancement and rehabilitation projects in the Kodiak area (Table 3).

Table 4. Production of sockeye salmon fry from Kodiak area facilities.

Year	Millions of Fry
1982	1.8
1983	4.9
1984	4.8
1985	6.7
1986	7.0
1987	7.8
1988	0.0
1989	0.2
1990	3.5
1991	5.0
1992	5.5
1993	13.8 (projected)

Production Trends:

Production of sockeye salmon takes place in the two hatcheries operated under a formal cooperative agreement between ADF&G's FRED Division and KRAA. Major emphasis in the Kodiak area has been placed on rehabilitation of sockeye salmon to restore runs to former levels of productivity. For example, at Karluk this was done by a combination of management, egg takes, and lake fertilization. This same strategy is

Table 3. Summary of Kodiak area sockeye salmon enhancement projects.

	Facility or Project	Desired Run Goal	Agency	Goal	Status
1.	Karluk Lake Streamside Incubation	(included in #2)	ADF&G	FY79/86	Completed
2.	Karluk Lake Fertilization	1,650,000	KRAA/ADF&G	FY86/90	Completed
3.	Frazer Lake Fertilization	500,000	KRAA	FY88/92	Completed
4.	Afognak Lake Fertilization	120,000	KRAA	FY88	Ongoing
5.	Malina Lake Fertilization	50,000	KRAA	FY89	Ongoing
6.	Pillar Creek Hatchery Construction	600,000	KRAA	FY90	Ongoing
7.	Pillar Creek Hatchery Operations (Annual)	(included in #6)	KRAA	FY93	Ongoing
8.	Little Kitoi Zero Age	100,000	KRAA	FY88	Ongoing
9.	Sockeye Lake Inventory	(included in #6)	KRAA	FY89	Ongoing
10.	Pauls and Portage Sockeye Ladders/Weirs	60,000	KRAA	FY92	Ongoing
11.	Spiridon Smolt Bypass - Construction	(included in #6)	KRAA	FY92	Ongoing
12.	Spiridon Smolt Operation	(included in #6)	KRAA	FY92	Ongoing
13.	Hydroacoustics Operation	N/A	KRAA/ADF&G	FY88	Ongoing
14.	Hidden Lake Stocking	(included in #6)	KRAA	FY91/92	Ongoing
15.	Westfall and Crescent Lake Stocking	(included in #6)	KRAA	FY91/92	Ongoing
16.	Red Lake Overescapement	N/A	ADF&G	FY89	Ongoing
Desired Run Goal:		**3,080,000**			

now being employed at Malina Lake. At Frazer Lake, restoration was completed using a lake enrichment and management strategy. Restoration of wild runs adds fish to the common property fishery and escapement. However, it is difficult to separate what is "production" and what is natural. Production of sockeye fry at Karluk, Kitoi, and Pillar Creek Hatcheries from 1982 to present are shown in Table 4. A major rehabilitation effort from 1982 to 1987 was carried out at Karluk while recent production has all been at Pillar Creek and Kitoi Bay Hatcheries. The first significant returns to a sockeye enhancement project will not occur until 1994, and will occur at Spiridon Lake.

Table 5. Estimated harvest of Kodiak area sockeye salmon by gear type, 1982-1992.

	Gear Type			
Year	Purse Seine	Beach Seine	Set Gillnet	Total Harvest
1982	588,355	9,142	607,296	1,204,793
1983	782,719	3,929	445,341	1,231,989
1984	1,507,840	8,524	434,075	1,950,439
1985	1,195,010	3,762	644,413	1,843,185
1986	2,010,828	1,989	1,175,452	3,188,269
1987	1,248,368	1,582	542,360	1,792,819
1988	1,839,153	2,075	856,744	2,698,637
1989	3,151	329	1,284,067	1,289,536
1990	3,869,523	8,934	1,396,044	5,248,339
1991	3,818,673	5,386	1,878,584	5,704,041
1992	3,319,711	3,015	843,864	4,167,705

Harvest Trends:

The number of sockeye salmon harvested in the Kodiak area has increased over the past ten years to a record catch of 5,700,000 in 1991 (Table 5). The majority of the catch of sockeye salmon has been outside the influence of hatchery production. The Frazer and Karluk Lake system contributions have had a net positive impact on the fishery. The recent downward adjustment of the Karluk Lake early-run escapement goals should result in more June fishing for Kodiak westside fishing areas.

Evaluation:

An understanding of stock contributions to sockeye fisheries in the Kodiak area is important for proper fisheries management. It is important to have an understanding as to how the enhanced will affect fisheries. The best tool available in Kodiak to evaluate enhanced production is stock separation by scale characteristics. For example, the contribution of the Karluk Lake sockeye salmon can be discerned in the Kodiak fishery by distinctive markings on the salmons' scales. The Spiridon Lake sockeye will initially be marked by the wide growth bands on its scales due to a rapid growth rate during its freshwater life history. At Kitoi, the zero-age sockeye smolt can be separated from other sockeye stocks by its lack of a freshwater annulus. Scale samples will be collected in the affected fishery and at the return site. This scale information is combined with other data on the fishery, i.e., time and area of catch, and will be used to ascertain stock separation of enhanced sockeye from natural sockeye.

Evaluation of the Malina Lake sockeye contribution to the fishery in the Northwest Afognak District will be ascertained by scale pattern analysis, which was completed in 1990. At Kitoi Bay,

sockeye salmon juveniles will be fin clipped and otolith-marked, which is induced by fluctuations during egg incubation. Kitoi Bay sockeye will also be separated by zero-age scale-pattern analysis.

Other evaluation includes lake sampling to evaluate the effects of lake fertilization and fry plants on the lake environment. Smolts are sampled in the lake outlets for condition, and hydroacoustic sampling is conducted to ascertain growth and population density.

Future Production:

The following describes five ways the FRED Division sees to increase sockeye salmon production to meet the harvest GAP of 1,700,000 fish:

1. *Expand Production* - Increase fry, presmolt, and zero age smolt production at Kitoi and Pillar Creek Hatcheries.

2. *Continue Lake Fertilization* - Lake fertilization programs completed at Karluk and Frazer Lakes will continue at Malina and Afognak Lakes, and eventually expand to new lakes, such as Paul's and Portage. The division will also experiment with organic fish fertilizers.

3. *Improve Hatchery Techniques* - Different strategies can be used to increase survivals, and different brood stocks and experiments in freshwater net-pen rearing will more than likely create more fishing opportunities.

4. *Start Smolt Production* - Construct new raceways and a modular room at Kitoi to produce 1,000,000 early-run, one-check sockeye smolts.

5. *Management* - Expand management and stock separation capacities as enhanced sockeye returns increase. The use of cost-recovery funds is anticipated to pay for management needs.

Summary of Sockeye Program:

Sockeye salmon is the preferred species among commercial and subsistence fishermen. Opportunities aimed at increasing the number of sockeye salmon in the Kodiak management area receive the Kodiak Regional Planning Team's highest priority. Rehabilitation or restoration of sockeye salmon runs, such as Karluk and Frazer, received the highest priority by ADF&G and KRAA. Enhancement potential has begun on a production basis at Pillar Creek and continues on an experimental basis at Kitoi. The harvest of 4,400,000 sockeye remains the target goal for the Kodiak area. The total GAP of 1,700,000 sockeye harvest goal is being met through rehabilitation, lake fertilization, stocking fry and presmolts in barren systems, and releasing zero-age smolts.

Other Species

Pink Salmon:

The Phase II revision of the Kodiak Regional Comprehensive Salmon Plan calls for supplemental production of 11,500,000 pink salmon. ADF&G and KRAA have, under a cooperative agreement, expanded incubation to 180,000,000 fry and short-term rear about 75 percent of the Kitoi

Table 6. Kitoi Bay Hatchery pink salmon harvest from 1982-1992, and forcast for 1993.

Year	Pinks
1982	129,000
1983	268,000
1984	3,448,000
1985	350,000
1986	896,000
1987	1,061,000
1988	605,000
1989	6,553,000
1990	539,000
1991	1,390,000
1992	845,000
1993	(6,500,000)

Bay Hatchery production to meet the supplemental production of pink salmon. Table 6 shows the production of pink salmon at Kitoi from 1982 to present along with the forecast for 1993. The harvest of pink salmon at Kitoi is managed under the Kitoi Bay Hatchery Management Plan. The commercial catch of Kitoi pink salmon usually occurs from July 6 to August 30. The harvest of pink salmon in this area has been increasing

Chum Salmon:

T above-mentioned comprehensive salmon plan also calls for the emental production of 1,100,000 chum salmon. The Kitoi Bay Hatchery has been attempting to increase the chum salmon catch in the Kodiak area with an early-run chum stock from the Sturgeon River system. However, the program has been set back by outbreaks of infectious hematopoietic necrosis virus and low marine survival. A new high-tech water treatment (UV light) system was installed in 1991 to improve incubation success. The program has also been improved by rearing the chum to a 2-gram weight size. Returns to date show that the larger 2-gram release size increases survival from less than 1 percent (brood years 1984 and 1985) to more than 2.5 percent (brood years 1986 and 1987). The incubation and rearing capacity of the facility is 22,000,000 chum salmon fry. This should supply about half of the supplemental production of chum salmon. The comprehensive plan also has a supplemental production goal of 383,000 coho salmon.

Coho Salmon:

The Kitoi Bay facility has been outstocking coho fry into lakes on Afognak and Kodiak Islands. Significant fry stocking at Crescent Lake led to the development of the Crescent Lake Management Plan in 1990. Stocking of Hidden Lake with coho salmon was halted this year in order to facilitate sockeye salmon in the lake system. The program has been modified recently with the addition of presmolt and yearling smolt production. The current planned release of 700,000 yearling smolts at the hatchery should bring a return of 70,000 adults in 1994 using a 10 percent marine survival. Additionally, 300,000 presmolts released in 1992 should bring 15,000 adult returns using a 5 percent freshwater and marine survival. These fish will be in the fishery in August and September and are covered by the Kitoi Bay Hatchery Management Plan.

Chinook Salmon:

The comprehensive plan has a supplemental objective of 3,000 chinook salmon. The only project currently ongoing for this species is a transplant of 100,000 smolts from the Elmendorf Hatchery into Island Lake Creek on the Kodiak road system. This program parallels the Homer Spit chinook sport fishery. Returns to date have been small but have generated extensive sport fish effort in the Mill Bay area during the June period when sport fishing is generally slow in Kodiak. The returns to this program are expected to increase as multiple age-class returns and transport improvements occur.

REGULATIONS GOVERNING THE ALASKAN PRIVATE NON-PROFIT HATCHERY PROGRAM

By John McMullen, Special Projects Manager

Have you wondered how Alaska's non-profit salmon enhancement program originated, and what limitations are placed on the activities of organizations such as the Prince William Sound Aquaculture Corporation? If so, you should be interested in this summary of the pertinent regulations, and the precautions taken by the State of Alaska to ensure that proper planning precedes the approval of each and every salmon enhancement project in the state.

Alaska state law in 1974 authorized private ownership of salmon hatcheries by qualified non-profit corporations for the purpose of contributing, by artificial means, to the rehabilitation of the state's depleted and depressed salmon fisheries. The group of local commercial fishermen who formed the Prince William Sound Aquaculture Corporation (PWSAC) as a private non-profit corporation in 1974 immediately applied for and received a hatchery permit under this state statute.

In addition to state statutes, private aquaculture corporations in Alaska must comply with the requirements of permits, policies, and procedures of the **Alaska Department of Fish & Game**, which includes the **Alaska Board of Fisheries** and the **Regional Planning Team (RPT)**. The ADF&G Commercial Fisheries Division also manages the salmon which return to the hatcheries, including brood stocks.

The **Alaska Board of Fisheries** allocates wild and hatchery salmon stocks to user groups, including hatcheries. In February, 1991, the Board adopted a salmon management plan for Prince William Sound, which provides for the long-term balance of the seine and gill net fisheries.

The **Regional Planning Team (RPT)**, which is composed of ADF&G and PWSAC representatives, is responsible for the development of a regional comprehensive salmon plan which defines salmon production goals by species, area, and time. The management plan adopted by the Board of Fisheries provides for the implementation of this regional comprehensive plan.

The RPT also reviews applications for hatchery permits, and requests for alterations in the production at existing hatcheries; its recommendations are forwarded to the ADF&G Commissioner.

ADF&G FISHERIES POLICIES

Several policies guide the development and ADF&G approval of hatchery basic and annual management plans, hatchery permits, permit alterations, and fish transport permits. These include specific policies regarding genetics, fish disease, fish stocking and fish transport.

The **Genetics Policy** protects the genetic integrity of important wild stocks and increases productivity of enhancement programs through brood stock selection and defined egg-take procedures.

ADF&G's **Fish Disease Policy** is a series of regulations that prevent dissemination of infectious diseases within or outside the borders of Alaska through diagnosis of wild stocks intended for hatchery use, and through utilization of disease prevention and treatment measures in hatchery stocks. Alaska is a leader among states with its fish disease prevention and treatment program.

The **Fish Stocking Policy** protects wild stocks as a first consideration in managing enhancement programs.

The state's **Fish Transport Policy** prohibits possession, transport, or release of live fish into the waters of the state without a permit issued by the ADF&G Commissioner. The permit holder must be in compliance with the conditions of the permit.

HATCHERY PERMITTING PROCESS

A hatchery permit application is submitted to the analysis of the Department of Fish and Game, and reviewed by the Regional Planning Team. The RPT then makes a recommendation to the ADF&G Commissioner, who alone may grant the permit to build and operate a hatchery.

Management Feasibility Analysis of a Proposed Hatchery: The ADF&G staff determines the desirability and compatability of the proposed production with existing fisheries, and may provide recommendations to assist hatchery permit applicants.

Review of Applications for Permits and Permit Alterations: The Department has the responsibility to assess the technical feasibility of the proposed operations. It also estimates the impacts of hatchery production on wild stock management.

The Regional Planning Team also has responsibilities. The RPT must determine the compatability of proposed operations with the goals of the Regional Salmon Plan. Also, the RPT determines if the proposed operations provide protection for wild stocks.

In addition, the RPT must provide for public comment on the proposals, then forward its recommendations to the ADF&G Commissioner.
The hatchery permit applicant, in collaboration with ADF&G staff, must then devlop a basic management plan -- an overview plan for hatchery production and for the management of returning fish. The basic management plan is presented at a public hearing, which provides guidance for the Commissioner's decision to issue a hatchery permit.

HATCHERY OPERATIONS AND REVIEW

Once a hatchery is operational, it must submit an **annual management plan** to the Department of Fish and Game. The plan must describe the annual production goals of the facility, and contain a statement of the number of returning fish needed for brood stock and cost recovery.

The hatchery management plan is prepared jointly by ADF&G and the hatchery operator, and requires the approval of the ADF&G Commissioner.

A **hatchery permit alteration** is required for changes in planned production or release locations of hatchery fish. Approval is based on past performance of the hatchery, and compatability of the change with wild stock protection and the fishery management program. Each hatchery permit alteration must be approved by the ADF&G Commissioner.

A **hatchery performance review** is a process in which the ADF&G reviews hatchery operations to ensure adequacy of all phases of hatchery production, ranging from brood stock development to hatchery contributions in the fisheries.

Standard performance measures for egg and fish survivals in hatcheries are used to evaluate adequacy of fish culture methods.

EVALUATION OF PWSAC ENHANCEMENT PROGRAM

PWSAC cooperates with ADF&G and the University of Alaska Fairbanks to evaluate, through fish tagging and oceanographic studies: (1) ocean survival of hatchery fish, (2) performance of hatchery fish in the fisheries, (3) interactions between wild and hatchery salmon, and (4) utilization of food sources available to juvenile salmon.

Program evaluation will be the subject of an article in a later edition of the Sound Quarterly.

MEMORANDUM

STATE OF ALASKA
Department of Fish and Game

TO: Commercial Fisheries Management and Development Division Core Planning Group

DATE: January 28, 1993

FILE NO:

THRU:

TELEPHONE NO: 465-4160

SUBJECT: Core Planning

FROM: Jeffery P. Koenings
Team Leader

As you are aware, the decision has been made to consolidate the FRED and Commercial Fisheries Divisions. An executive order was introduced into the legislative process on January 11, the first day of the session. On March 13, the transfer of the functions and duties of the FRED Division to the Department of Fish and Game will be completed. The duties and functions of both divisions will then be incorporated as such into the consolidated division.

The commissioner has charged the core planning group with the responsibility of determining organizational structure(s) or form(s) of the new division. Hopefully, form will follow function. The intent is to have the process be as forward looking as possible.

On July 1, a divisional structure will be implemented; however, the actual time for all required changes to be completed may take several years to accomplish. The core planning group will consist of the following divisional teams:

FRED	Comm Fish	Sport Fish	Comm Office
Bob Burkett	Bob Clasby	Paul Krasnowski	Geron Bruce
Karen Crandall	Doug Eggers		
Kevin Duffy	Ken Florey		
Tom Kron	Paul Larson		

With the addition of myself, the core planning group consists of eleven (11) members. Although the group is fairly large, it will allow consistency, given differing schedules and time commitments.

The biggest hurdle to overcome appears to be the upcoming plethora of Board of Fish meetings. I hope to hold the first organizational meeting of the group next week by teleconference. The main topic will be the meeting schedules, places, and overall approach.

The overall framework to seek divisional input is described as follows: two or three core planning team members would form and then lead subgroups along the functional lines of administration (personnel, budgets), science and technology (research and technical services), resource management (managers, planning, and permitting), and people management (work levels, joint supervision), etc. The subgroups should consist of individuals that represent vertical and horizontal cross sections of the combined staff. By vertical, I would like several ranges included, whereas horizontal integration

requires several disciplines and geographic areas. The size of the subgroups is open, but I would suggest an upper limit at less than 12.

I am enlisting the aid of a facilitator from Kodiak who is trained in strategic planning. The facilitator, Mr Bruce Johnson, will hold a 2-3 day meeting in Juneau for the core planning group during the last week of February or first week of March. Some of you are familiar with the process, some are not. Some are tired of the process, others are not. At any rate, the experience needs to be shared equally.

At the Juneau meeting with the facilitator, the subgroups will be formed and charged with delivering a product within 60 days to the core planning team; e.g., May 1. The planning team will then use the subgroup products to craft an overall organizational structure for the new division.

Between now and the end of February, the core planning group ill need to become familiar with the functions of each division, including those of the Sport Fish Division. Organizational charts, duties, functions (e.g., fisheries), and budgets, by region, of the divisions should be summarized by the divisional teams. The depth of this will be discussed at the first teleconference. I do not want to sacrifice the last tree in Prince William Sound in order to accomplish this effort.

There are some sideboards to this process which include the continuation of existing services to the public, the likelihood that budgets are not necessarily going to decrease, a focus on efficiencies of operation, and the necessity of involving headquarters, regional, and area staffs.

I view this assignment as a tremendous opportunity. Let's get started!

cc: Carl Rosier
Chuck Meacham
Ron Somerville

Alaska Department of Fish and Game
Division of Fisheries Rehabilitation, Enhancement and Development
Jeffery P. Koenings, Ph.D., Director

Report to the 1993 Legislature

FUNCTIONS AND SERVICES

The primary role of the FRED Division is to sustain and enhance Alaska fisheries through the development, application, and dissemination of technologies in supplemental production and natural stock rehabilitation. The division operates five laboratories which provide technical services to the Alaska Department of Fish and Game (ADF&G) and other state, federal, and private nonprofit agencies. For example, the Coded Wire Tag Processing Laboratory in Juneau decodes metal tags implanted in fish and supplies resultant information for in-season management of specific chinook and pink salmon stocks. The Fisheries Genetics Laboratory in Anchorage has an active program to provide wild stock protection as well as new tools for use in stock identification.

The division's Private Nonprofit (PNP) Program oversees the state's aquaculture industry. This includes coordination of statewide fishery planning within eight planning regions, as well as the newly established drainage wide Yukon River planning effort. The division also provides technical assistance to shellfish farmers and has permitting responsibilities for the state's emerging mariculture industry. The latter exemplifies the division's lead role in developing new opportunities for rural economic diversification. The division is also continuing to develop fish culture technology, such as sockeye salmon culture at Snettisham Hatchery and chinook salmon culture at Crystal Lake Hatchery. Finally, resource economics is becoming an integral part of the division's focus, as the rapidly changing world wide supply and demand for fish has impacted all aspects of Alaska's fishery resource.

STATUTORY AUTHORITIES

Plan and implement a program that insures the perpetual and increasing production and use of Alaska's fisheries resources (AS 16.05.092).

Coordinate the rehabilitation and enhancement activities of the department and regional aquaculture associations (AS 16.10.380).

Process fish transport permits and applications for private nonprofit (PNP) hatcheries (AS 16.10.400).

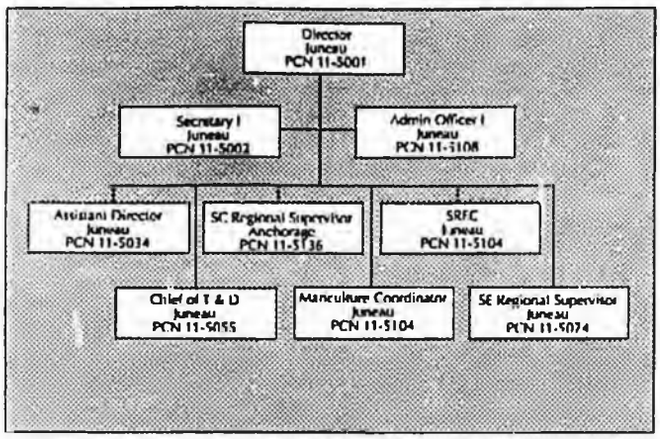
Technically assist the PNP hatcheries to the extent possible (AS 16.10.443) and cooperate in the development of regional salmon plans (AS 16.10.375).

Develop a disease management and control program for aquatic farms and hatcheries (AS 16.40.150), and review suitability of proposed aquatic farms or hatcheries to traditional fisheries, fish, wildlife, or their habitats (AS 16.40.105).

STAFFING

An organizational chart which depicts the division's structure to the regional level and number of full-time and seasonal staff are shown in the following figures.

Location	PFT	PSEA	Location	PFT	PSEA
Anchorage	20	5	Kotzebue	3	8
Clear	3	3	L Pt Walter	1	2
Cordova	1	1	Nome	1	1
Crystal Lake	5	3	Petersburg	1	6
Homer	1	8	Snettisham	4	10
Juneau	44	27	Soldotna	4	7
Ketchikan	8	8			
Kodiak	1	7	TOTAL	97	96



Organizational structure to the regional level

BUDGET OVERVIEW

In FY93, the division's general operating budget was increased by $813.1 in program receipt authority to cover costs necessary to operate the Gulkana, Kitoi, and Pillar Creek Hatcheries. The FRED Division also accepted a $200.5 reduction in personal services as well as a $350.0 miscellaneous reductions targeted toward hatchery operations. These losses resulted in closure of the Russell Creek Hatchery in FY93 and a downsizing of staff in the division's two regional offices and the Headquarters Office.

The FY93 general fund budget was further reduced through an exchange of $500.0 in general funds for federal funds. The final FY93 budget did provide funding for the operation of the Big Lake Hatchery, which had not been included in the division's original FY93 request.

Overall, the FRED Division's FY94 operating appropriation has been reduced by 31% in general funds and 64% in federal funds from FY93 levels. A reduction in general funds totaling $3,359.0 results in the closure or transfer of operations of 10 production hatcheries throughout Alaska: Deer Mountain, Klawock, Big Lake, Crooked Creek, Gulkana, Kitoi, and Pillar Creek Hatcheries are targeted for transfer or closures and the Fort Richardson, Elmendorf, and Broodstock Development Center will be transferred to the Division of Sport Fish. These hatchery transfers or closures will be accompanied by a decrease in staff at each region who have responsibilities in facility oversight and support.

In FY94, the FRED Division will expand the mariculture program and the present Coded Wire Tag Processing Laboratory. The expanded lab will include otolith mark evaluation. The division will expand its efforts to stimulate rural economies through fisheries development and wild stock restoration projects.

CURRENT PROGRAMS

Technology and Development

The genetic program's research into possible oil spill related chromosome damage to pink salmon in **Prince William Sound** holds promise of being an extraordinary discovery. The chromosome damage could be inheritable.

Division limnologists continue to investigate fish survivals in the **Kenai River** lakes. Large overescapements of sockeye salmon have led to very poor overwinter survivals of juvenile fish in **Kenai** and **Skilak** lakes. The dramatic reduction in smolts heading to sea questions the sustainability of both commercial and sport sockeye salmon fisheries.

The in-hatchery thermal marking of sockeye salmon otoliths (ear bones) is proving up. Marked otoliths were recovered from adults returning to Sweetheart Lake located south of **Juneau**. FRED limnologists are also pioneering image analysis of sockeye otoliths as a means of wild stock identification.

The genetics laboratory continues its exciting work with cryopreservation to both simplify aspects of hatchery production and to preserve, or bank, sperm of wild salmon, such as the Chilkat River chinook stock near **Haines**.

FRED Pathology staff continue to work on the prevalence of Bitter Crab disease in **Southeast**, **Kodiak**, and **Bering Sea** Tanner Crabs. Fishermen did not crab in **Upper Lynn Canal** due to the very

high prevalence of the disease, but the disease does not appear to be seriously impacting the fishery elsewhere.

Real time coded-wire-tag processing by FRED's tag lab has allowed fishery managers to adjust inseason catches of pink salmon in **Prince William Sound** and chinook salmon in southeast for hatchery and wild stocks.

Hatchery Contracts

A total of 10 state hatcheries are now being operated or funded by regional aquaculture associations under the state's privatization program. At existing levels, over $5.5 million in annual operating costs are now user-generated.

The FY94 budget requires that 7 additional hatcheries either be operated, as well as funded, by the private sector or closed. If none are closed, this would bring the total to 14 state hatcheries that have been privatized.

Comprehensive Salmon Planning

The PNP Program is administered by the FRED Division. PNP Program staff organize and oversee the regional salmon planning teams which are comprised of ADF&G and regional aquaculture association member. Staff also coordinates the review of PNP hatchery applications, coordinates management of statewide enhancement data and reporting, annual facility management plans (38 facilities), and the permitting process for hatchery, fish transport, and scientific/educational permits. More than 230 fish transport and 85 scientific/educational permits were reviewed.

In conjunction with the **Kodiak** Regional Planning Team, FRED staff prepared a complete revision of the Kodiak Regional Comprehensive Salmon Plan, Phase II, 1982-2002. The document was approved by the commissioner in March 1992.

A public review draft of the **Chignik** Regional Comprehensive Salmon Plan was distributed in August 1992. The document will be completed in February 1993.

A planning core group comprised of ADF&G representatives, the **Northwest Arctic Borough**, and the National Park Service completed a plan entitled, "Sikusuilaq Springs Hatchery Development Alternatives" for the Kotzebue Region. The document was approved by the commissioner in October 1992.

A primary goal of a new salmon management and stock restoration planning process will be to assist **Yukon River** salmon users and resource managers in making informed decisions regarding management and stock restoration activities. The result will be a comprehensive salmon plan for the Yukon River.

A draft regional comprehensive salmon plan for **Area M (Aleutian Islands)** was prepared for review by the regional planning team in September 1992. A draft should be available for public review and comment in February 1993.

FRED staff chaired public information sessions and discussions regarding chinook salmon production and harvest in **Ketchikan, Petersburg, Wrangell, Sitka** and **Juneau** prior to Board of Fisheries deliberations.

U.S. Treaties

In the fall of 1992, the Northern Panel and Alaska Commissioners to the Pacific Salmon Treaty developed **Southeast Alaska** positions for treaty annex arrangements for negotiation between the U.S. and Canada during the 1992/1993 Pacific Salmon Commission cycle.

FRED Division staff coordinated and chaired a U.S./Canada treaty negotiating session to develop criteria and guidelines for restoration and development on the **Yukon River**.

Mariculture

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

In 1992, 24 aquatic farm permit applications were received and processed and 16 farm operation permits issued. A total of 68 farms and one hatchery are currently permitted which range from **Ketchikan** to **Kodiak**, including **Yakutat, Prince William Sound**, and **Lower Cook Inlet.**

Aquatic farm sales in 1992 approached $197,000, and current inventory indicates almost $5 million in future sales.

Hatchery Enhancement

In 1992, out of 127 million fish caught in the commercial salmon fisheries, the statewide fisheries enhancement program contributed 9%, and 18% of the total chum catch. Over 400,000 enhancement-produced fish were caught in 1992 sport fisheries.

Chinook salmon produced by hatcheries in **Southeast Alaska** contributed nearly 34,000, or 16%, of the total 1992 southeast chinook salmon catch.

In **Northwest Alaska**, Sikusuilaq Springs Hatchery contributed a record 35,000 chum salmon to the 1992 **Kotzebue** gillnet fishery.

Approximately 66% of the sport fish harvested in the **Tanana Valley** were hatchery produced, keeping fishing pressure off of natural stocks and allowing them to rebuild.

In 1992, enhancement projects accounted for approximately 79% of the $2.7 million ex-vessel value of the **Lower Cook Inlet** sockeye salmon harvest.

1992 Alaska salmon hatchery production

	Eggs taken	Fish released	Fish returned
Northwest	15,275,000	11,069,000	155,557
Cook Inlet	107,732,000	69,166,771	1,298,280
Kodiak	228,740,000	191,829,000	3,373,313
PWS	844,760,000	631,304,200	9,981,528
Southeast	550,557,800	438,129,230	8,739,412
	1,747,065,700	1,341,498,489	23,543,090

Education

In 1992, 56 permits were issued for classroom fish incubators in 41 different cities, towns or villages from **Ketchikan** to **Nome** to **Cold Bay**. FRED biologists frequently assisted with such projects, and provided teacher in-service workshops and classroom assistance. Tests of fisheries biological knowledge among rural school students along the **Yukon River** indicated a significant increase.

Economic Development

FRED Division staff from conducted fisheries development and restoration projects in the areas surrounding **St. George, Nome, Kotzebue, Nelson Island**, and **Elim**. These projects included experimental in-stream incubation boxes and site evaluations.

The Toklat River fall chum salmon have been targeted by the **Yukon River** Drainage Fisheries Association for a rebuilding and restoration pilot study. In 1992 the Clear Hatchery began incubating the first Toklat River eggs taken. Funding was received from the 17th legislature to begin a comprehensive regional fisheries restoration planning process on the Yukon River.

ISSUES

Reduction of Program Receipts

A reduction of program receipt authority will result in the **Kodiak** Regional Aquaculture Associations having to operate existing state facilities within their own limited infrastructure.

Increased Economic Diversification

The need for increased economic diversification in rural **North/Northwest Alaska** will require identification of new project opportunities to meet the demand for fisheries development in these areas and funding to implement such programs. Working with the Department of Commerce and Economic Development, the FRED Division has recently developed a Western Alaska Salmon Restoration Initiative.

St. George Island is an example of a community that is looking toward fisheries development as a tool for economic diversification. Currently no wild stocks of salmon return to the island. Feasibility studies for salmon development began in 1991 are continuing.

Increases in Mariculture

The demand for oyster seed stock for the mariculture industry in Alaska currently exceeds the capability of out-of-state suppliers. The FRED Division needs to supply a consistent and sufficient in-state supply of oyster and other shellfish seed stock, as well as meeting other requirements of the burgeoning Alaskan mariculture industry.

Development of Mark Analysis

To respond to harvest management of fish, PNP hatchery operators are requesting that the division establish a capability to process otoliths. Thermally marked otloliths will identify hatchery fish contributions to fisheries and facilitate wild stock management.

Regional Comprehensive Planning

FRED is the lead agency within the ADF&G responsible for implementation of comprehensive salmon planning. With two international salmon fishing treaties, the increasing involvement with salmon enhancement and restoration activities in the **Yukon** and **Northwest Alaska**, and the maintenance of current regional salmon plans, the magnitude of the division's planning effort is a major issue.

Fishery Resource Economics

There is a pressing need to establish within state government a group of economists to work on issues related to international demand for salmon, price expectations, and the cost/benefits associated with salmon management and enhancement. Like with crude oil, issues surrounding salmon harvest, processing, and sale are nowadays so complex that in order to provide answers to salmon policy questions which repeatedly confront the state, it is necessary to have analyses ongoing at all times.

FUTURE DEVELOPMENTS

In FY94, the FRED and Commercial Fisheries divisions will be combined. This possibility was discussed with the 17th legislature during the FY93 budget process. The department identified a potential $300.0 in savings that could result from the potential merger. In anticipation of the department's plans, the legislature reduced the FRED Division's FY94 budget by $90.0. Another $210.0 was taken from the Commercial Fisheries Division's budget.

The process of consolidating FRED and Commercial Fisheries functions has precedent in the combination of the department's fisheries genetics capability. Two years ago, the two divisions began a joint approach to expanding the fisheries genetics program out of Anchorage. The program has already outgrown existing laboratory space. Consequently, the department's FY93 CIP request includes funding for increased laboratory space for the joint program.

In a similar manner, the two divisions have planned to combine their individual programs in coded wire tag and otolith processing into a single laboratory that will be located in the Juneau/Douglas area. The department, again, has included funding for a new laboratory in a FY94 CIP request which seeks to establish a Fisheries Mark/Tag Laboratory.

In the future, the consolidated division will be looking at, for example, establishing a resource economics capability. FRED currently has a fisheries economist on staff who is concentrating on salmon supply/demand questions which are of critical importance to the state. The Commercial Fisheries Division has two years of funding for an economist to work on ground fish questions. Within the new division, both economists will serve as a focus for a consistent resource economics thrust within the ADF&G.

HOUSE RESOURCES COMMITTEE

DATE: 1-29-93

PLACE: Capitol, Room 124

SUBJECT OF MEETING:

EO 83: Geographic Bd & Historic Sites Advisory
EO 85 Fisheries Labor Training Program
EO 86. Div. of Fisheries Permits, Enforce., & Develop.

	NAME	REPRESENTING	BUSINESS/PERSONAL MAILING ADDRESS	ZIP	(H) PHONE	(W) PHONE	DO YOU WANT TO TESTIFY?		WHAT SUBJECT/ WHICH BILL?
(1)	Kristi Leal	Gov. Ofc.	P.O. Box 110301	99811	~~35~~	3500	(Y)	N	EO 83
(2)	Leo A. Zand	Self	Box 122 Haines AK	99827	766-2466		(Y)	N	EO 83 for Cruiseship visitors
(7)	John McMullen Prince Wm Sound Aq.	(PWSAC) Aquaculture	Box 1110 Cordova AK	99574	424-4334	424-7511	(Y)	N	EO 86 (FRED)
(5)	Gordon Bruce	ADF&G				6143	(Y)	N	EO 86
(3)	Donald G Study	DOL	PO Box 21149 Juneau	99802	~~586-6035~~	465-4855	(Y)	N	EO 85
(4)	Rod Moorhead	Revenue					Y	(N)	Questions EO 85
	Paul Dick	"					Y	(N)	" EO 85
(6)	Jeff Koenings	ADF&G					(Y)	N	EO 86 (FRED)
	[illegible]	[illegible]	[illegible]				Y	N	EO 86
							Y	N	
							Y	N	