SCOMM
74:23

Alaska State Legislature

SENATE SPECIAL COMMITTEE
ON DOMESTIC AND INTERNATIONAL FISHERIES

Official Business

P.O. Box V
State Capitol
Juneau, Alaska 99811

February 10, 1992

Dear Reviewer:

Attached is the Executive Summary of the **Draft Report of the Legislative Review of the Alaska Salmon Enhancement Program** which is being released today for public comment by the Senate Special Committee on Domestic and International Fisheries.

Many issues and concerns relating to the state's salmon enhancement programs have been brought to the Legislature's attention over the last few years. Last spring it became apparent that it was time the Legislature, as the state policy-setting body, step back and take a broad look at these programs. The Committee decided to undertake this review with the participation of all interested Alaskans.

I must strongly emphasize that this report is only a **DRAFT**. It is the result of an effort to identify and research various issues, concerns and conflicts associated with the state's salmon enhancement program, and to begin laying out some possible options (not recommendations at this point) to consider for improving the program.

This draft report has been prepared by legislative staff with the assistance of the Legislative Research Agency and the input of state agencies and others. It is a starting point. Now it is time to enlist the help, and incorporate the suggestions, of other legislators, hatchery operators, fishermen, scientists, processors and others who care about the state's enhancement programs.

It should be noted that one important segment of the review is missing. That is the economic analysis that was contracted to professional researchers at the University of Alaska. This analysis will not be complete and available for several months. Therefore, this draft report contains information gathered on other aspects of the program, with specific options presented at the end of each chapter. Until the economic studies are incorporated into the entire review, we cannot presume to be looking at the "whole picture." When that last major piece of the puzzle is in place, we will begin the process of formulating some overall conclusions.

Our goal now is to fine-tune the chapters contained in this draft report, see what conclusions can be reached with the information before us, and develop those options which we can act on right away. We are counting on your comments on the contents of this

draft report, especially regarding your thoughts about the lists of options: which ideas you like or dislike; which ones should be addressed immediately, and how; what additional options should be added to the list for consideration. Please let us know of any errors, omissions, or misinterpretations you see in this draft.

We urge you to participate in a teleconferenced hearing on this report scheduled for Monday, February 24, from 1:30 to 5:00 p.m. This will be the first of several hearings on the various aspects of the enhancement program and any legislative action that may be proposed. In addition to your testimony at the teleconference, it would be helpful to have your comments in writing as soon as possible. (To: Sen. Eliason, Senate Fisheries Committee, State Capitol, Juneau, AK 99801-1182, or to FAX #907-465-4928). Public input is vital to the success of this review!

Please note that what we are sending out is the executive summary of the draft report which includes the lists of possible options for consideration at the end of each chapter, and a table of contents for the full report. The complete draft report is several inches thick. If you would like to receive a copy of any particular chapter(s), please call my office at 465-4916, or check with your local Legislative Information Office as we will be sending a complete draft report to most LIOs to have available to the public.

Thank you for your interest in this review project, and for any ideas and input you can contribute. We look forward to working with you.

Sincerely,

Senator Dick Eliason, Chairman
Senate Special Committee on
Domestic and International Fisheries

DRAFT REPORT ** DRAFT REPORT ** DRAFT REPORT

LEGISLATIVE REVIEW OF ALASKA'S FISHERIES ENHANCEMENT PROGRAM
February 10, 1992

Executive Summary & Options to Consider

I. Introduction

II. History & Development of Hatcheries in Alaska

III. Production Policies and Trends in Alaska and Worldwide

IV. Fisheries Management Issues
- A. Mixed-Stock Fishery Management
- B. Quality
- C. Tagging Needs

V. Legal Issues Raised by Board of Fisheries

VI. Planning and Permitting Process

VII. Biological Issues

VIII. Enhancement Funding

IX. Economics

X. Marketing

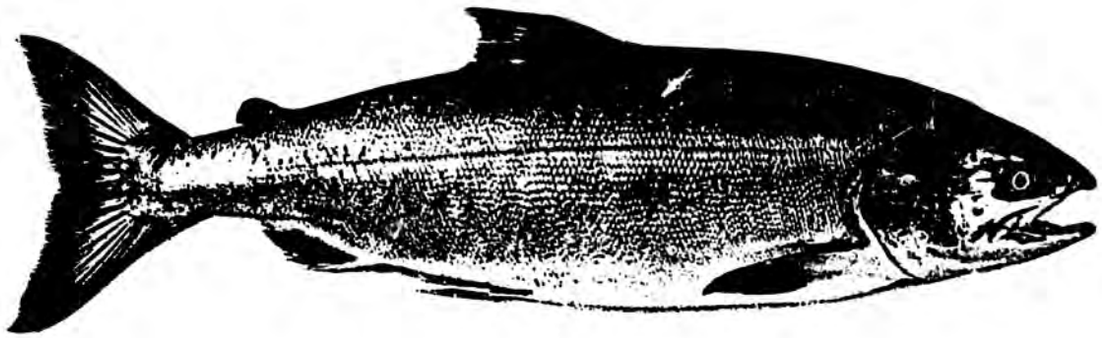
XI. Other Issues
- A. Use of Hatcheries as Environmental Mitigation
- B. Role of Hatcheries in International Treaties
- C. Environmental Regulations
- D. Use of Hatcheries as Tool for Economic Development
- E Importance of Hatcheries to Sport Fish
- F. Contribution to Subsistence Fish
- G. Enhancement of Other Species

This page intentionally left blank

DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT

LEGISLATIVE REVIEW OF THE ALASKA SALMON ENHANCEMENT PROGRAM

EXECUTIVE SUMMARY



Senate Special Committee on
Domestic & International Commercial Fisheries

February 10, 1992

This page intentionally left blank

Chapter I

INTRODUCTION

In the late spring of 1991, the Alaska Senate's Special Committee on Domestic and International Commercial Fisheries initiated a review of salmon fisheries enhancement in Alaska. The committee recognized that while hatchery and other enhancement projects in Alaska have been highly successful, they have not been comprehensively reviewed since the program's inception nearly 20 years ago. Since the program was initiated by the Alaska Legislature, and setting policy for state programs is a legislative responsibility, it is appropriate that the Legislature be the entity to conduct this review.

The committee began its work with no pre-conceived notions regarding its eventual findings and conclusions. Rather, legislative staff were directed first to compile relevant information, question interest groups, and develop a series of recommendations or options for action that could be taken to improve the state's program. This review is to serve as a starting point for a process of scrutiny and fine-tuning that may become an established part of the enhancement program itself.

It should be noted that an important segment of the review is not included in this draft report. The economic analyses, contracted to professional researchers, will not be complete and available for several months. Therefore, this draft contains information on the other topics of the review, with options presented at the end of each chapter regarding that specific chapter. Overall conclusions regarding Alaska's salmon enhancement program will be developed after the economic studies have been completed and analyzed in relationship to the information contained in this draft report.

Chapter II

HISTORY AND DEVELOPMENT OF HATCHERIES IN ALASKA

The development of Alaska's hatchery program was an evolutionary process. Beginning as early as the late 1800s, attempts at hatchery production of salmon were undertaken by the federal government and private industry. As harvests of salmon declined, interest in efforts to mitigate the economic impacts through enhancement and hatchery production increased. However, enhancement efforts were minimal until a dramatic drop in salmon harvests in the 1960s and 1970s prompted state action.

The expressed goal of the state hatchery program was to produce additional fish to supplement the existing wild salmon stocks. The Legislature acknowledged concern about the potential for detrimental biological impacts of large-scale hatchery development on wild stocks, particularly from the interaction between wild and hatchery fish. However, program development was primarily driven by concern about the economic decline of the fishing industry.

In 1969 the state began receiving large sums of revenue from oil and gas leases on the North Slope. The Legislature decided to channel some of the future public income from such nonrenewable resources into development of renewable resources for long-term economic stability. The salmon resource was an obvious candidate for this type of investment.

Throughout the 1970s, laws were enacted to facilitate development of a major fisheries enhancement program in Alaska. Program components included:

- creation of the Division of Fisheries Rehabilitation, Enhancement and Development (FRED) within the Alaska Department of Fish and Game,
- passage of a number of bond issues authorizing tens of millions of dollars for capital improvements for state hatchery facilities,
- authorization of private nonprofit (PNP) corporation hatcheries, and
- creation of regional aquaculture associations (as PNP) responsible for the regional planning and coordination of salmon enhancement activities.

After the initial start, it became increasingly apparent that a successful hatchery program was going to be more expensive than originally anticipated. New methods of financing were sought. The Legislature made funds available to PNP hatcheries through the Renewable Resources Development Fund, and by expanding the commercial fisheries loan program to include hatcheries. A separate fisheries enhancement loan program was later established. Statutes were also amended to allow proceeds from PNP sales of salmon or eggs to be applied to debt retirement, as well as operating costs.

A salmon enhancement tax was enacted that allows commercial fishermen in a region to vote to pay an assessment of 1 to 3 percent of the ex-vessel value of the landed salmon catch. The proceeds of this assessment are appropriated by the state to regional aquaculture associations. State law also provided for the establishment of other PNP operations run by private nonprofit corporations which are independent of regional associations, sometimes called "Mom and Pop" hatcheries. Both regional associations and "mom and pop" hatcheries are "PNPs" under state law. In this report, any reference to PNPs refers to both types unless otherwise indicated.

Legislation was passed creating a Fisheries Enhancement Revolving Loan Fund within the Department of Commerce and Economic Development. Over the years, a variety of other provisions were passed to assist in the construction and operation of hatcheries. These include such things as property tax exemptions, the granting of special harvest area entry permits to PNP hatchery operators for harvesting of their own broodstock and cost-recovery fish, exempting these broodstock and cost recovery fish from salmon enhancement taxes, and allowing the state to contract the operation of state hatcheries to regional associations.

Currently the state operates 12 hatcheries throughout the state, and PNPs operate 25 hatcheries, of which 4 are state-owned facilities. Hatchery fish represented 24 percent of Alaska's commercial salmon harvest in 1990. The FRED Division maintains two pathology labs, one genetics lab, one limnology lab, and a coded-wire tag processing lab. The Division also provides technical and management assistance to the PNP hatcheries. While PNPs tend to focus on production for the commercial fishery, FRED hatcheries emphasize research, some production of sport fish species, and experimental farming of shellfish and aquatic plants.

A review of legislative history reveals that many facets of the hatchery program which have evolved over the past two decades, such as financing, related fisheries management issues, and biological concerns, were not foreseen or were only briefly acknowledged or discussed by the Legislature during the initial stages of development of the program. The record does reveal legislative intent in some broad areas, but it appears that many current questions and concerns

regarding the role and future of hatcheries will have to be addressed without benefit of clear statutory or historical direction.

Chapter III

PRODUCTION POLICIES AND TRENDS IN ALASKA AND WORLDWIDE

In 1980, Alaska salmon harvests accounted for 41 percent of world salmon supply. By the end of 1990, wild and enhanced Alaska salmon accounted for just 31 percent of the world supply. This occurred, despite the 50 percent increase in Alaska's production during the same period, as a result of the dramatic increase in farmed-salmon production. Farmed-salmon production nearly doubled between 1988 and 1990, increasing from about 310 million pounds to over 600 million pounds. In 1990, farmed salmon composed about 30 percent of world salmon production, up from a mere one percent in 1980. The increased supply of salmon on the world market has lowered prices. Lower salmon prices and rising operating costs have brought economic hardship to salmon farming operations worldwide, although many farms remain competitive. Recent trends indicate a slight reduction in farmed salmon production. Lower prices have also adversely impacted commercial salmon-fishing operations worldwide.

One interesting development in the salmon farming industry is that the glut of salmon on the world market has forced many salmon farmers to freeze their product for later resale. This trend could increase the competitiveness of Alaska frozen fish since it eliminates the perceived "fresh versus frozen" advantage of farmed fish.

The countries and regions which commercially harvest the largest quantities of ***wild and hatchery*** salmon are the United States (Oregon, Washington and Alaska), Canada (British Columbia), Japan and the U.S.S.R. Other areas have experimented with salmon ranching, but as yet produce few fish. Major salmon-farming industries are located in Norway, Scotland, Chile, U.S. and Japan. Iceland, the Faroe Islands, Ireland, Australia, New Zealand and France also farm salmon but are not considered major producers.

CHAPTER IV

FISHERIES MANAGEMENT

The success of the state's enhancement program has made managing Alaska's salmon fisheries more complicated. Much of this research project was initiated by a request from the Board of Fisheries to provide clearer legal and policy direction on the issues of managing fisheries for a wild stock priority, providing for broodstock, and providing for cost-recovery fisheries. These three issues encompass a number of legal questions and are addressed in Chapter V, Legal Issues. In this chapter a variety of other management issues are discussed.

MIXED-STOCK FISHERIES

A fundamental issue facing fisheries managers is how to control fishing effort in mixed-stock fisheries composed of both hatchery and wild stocks. The predominant management concern is that the weakest stocks will be overfished. In cases in which hatchery productivity is significantly greater than natural stock productivity, wild stocks face the risk of being depleted. In cases where hatchery stocks are smaller, these stocks run the risk of being lost among the wild stocks. Smaller stocks are more likely to be in danger of depletion in mixed-stock fisheries because there is a tendency to optimally harvest the larger stocks before quality declines in terminal fisheries.

With large scale hatchery enhancement, ADF&G's Division of Commercial Fisheries is concerned that the additional costs of managing mixed stock commercial fisheries composed of wild and hatchery stocks are not always accounted for in the planning and operation of hatchery facilities, and fisheries managers are often not given adequate funds to properly manage what can become a very complicated fishery.

QUALITY

State law requires that fish returning to hatcheries and sold for public consumption be of comparable quality to fish harvested by commercial fishermen in the area. Prince William Sound is the major focal point for the issue of managing hatchery and wild stocks to optimize quality and marketability.

During the planning process for the Prince William Sound hatcheries, the Basic Management Plans that addressed the harvest of hatchery fish were developed cooperatively by the department and hatchery operators. ***Returning adults were to be primarily harvested in terminal areas, thereby minimizing harvest conflicts with wild stocks.*** Additional harvest management costs were not considered under this strategy. Initially, fish quality was not an issue as terminally caught fish were of high quality. However, as the program grew, processing capacities became fully utilized, sometimes forcing delays in harvesting terminal fish. Such delays resulted in poorer quality fish, and thus, the demand to harvest fish farther away from terminal areas. This issue was highlighted last season in Prince William Sound.

During discussions at recent meetings of Governor Hickel's Salmon Strategy Task Force, it became apparent th .t there is no definitive information on how close to their spawning areas salmon can be harvested without sacrificing quality. ADF&G has suggested a research project be funded to analyze salmon quality at various distances from their spawning areas in an effort to determine how best to manage fishing effort to produce a top-quality and marketable product.

TAGGING NEEDS

Since hatchery-produced fish often complicate fisheries management, a way to simplify management is to determine the mix of hatchery and wild stocks in a mixed-stock fishery. For most mixed-stock fisheries composed of hatchery fish, an adequate program of tagging, recovery and analysis is required.

The tagging method most commonly used now is the coded-wire-tag (CWT). However, otolith marking is seen as the most viable mass marking technique on the horizon. The benefit of otolith marking is that virtually ***all*** hatchery fish can be marked at the same time. FRED Division is also actively pursuing genetic stock identification (GSI) research and applications using both protein electrophoresis and deoxyribonucleic acid (DNA) analysis.

The extent of any particular tagging program is determined by funding. The general assumption is that the people who tag the fish pay for the tagging. In the case of hatchery operators, that usually means the state or the PNP operator. However, the greater expense lies with the recovery and analysis of tags by the state, and the issue of who pays for that portion has never been resolved. Commercial fisheries managers would like to see more tagging to enable increased management precision. The Board of Fisheries would also like to see additional tagging in order to provide information for allocation disputes.

FRED Division is informing hatchery operators that new increments of hatchery production will be permitted with a requirement that the operator pay for tagging and analysis. Whether or not to require that of existing production is being debated. Some people, including some members of the Board of Fisheries, advocate for a requirement that all hatchery production be categorically tagged and analyzed. However, existing operations have permits that do not require tagging. These operations were planned, permitted and funded without accounting for tagging in their costs. It is likely that imposing a tagging requirement on permitted facilities would be subject to legal challenge.

Another issue, however, is whether an all encompassing tagging requirement is necessary. In some cases, a multi-year tagging study to show migration patterns and run timing would be sufficient. In other cases, where tagging is intended for in-season management, a large tagging program would need to be maintained. Not all hatchery production results in complicated, mixed-stock fisheries that would necessitate extensive tagging.

The question has also been raised concerning the extent of tagging or marking of natural stocks, and whether the current level is sufficient to provide the necessary information in mixed-stock fisheries composed both of hatchery and wild stocks.

OPTIONS FOR POSSIBLE CONSIDERATION:

- Development of a state policy on managing mixed-stock fisheries composed of hatchery and wild stocks.

- Requiring hatchery production to have tagging, recovery and analysis programs. This could range from a blanket requirement for all production to site-specific requirements.

- Development of a policy regarding funding for tagging, recovery, processing and analysis.

- Funding a study to analyze salmon quality at various distances from terminal streams to determine the effect of fishery management effort on product quality and marketability.

- Direction to the Board of Fisheries on how to factor managing for quality into fisheries management plans.

- Funding research and development of new tagging and marking techniques suitable for mass marking.

- Clarifying the roles and uses of tagging---for biological information, allocation, or management purposes.

- Expanding tagging and stock identification studies of wild fish stocks for the purpose of comparing wild and hatchery stocks.

Chapter V

LEGAL ISSUES RAISED BY BOARD OF FISHERIES

The Board of Fisheries ("board") has expressed to the legislature its concern over perceived ambiguities in the Alaska statutes relating to wild stock and hatchery fish management. ***One problem is that there is no clear statutory policy for the board to follow when it must make decisions that would favor wild stocks over hatchery fish or vice-versa. An additional problem is that the statutes are unclear about the state's duty to provide for hatchery broodstock and cost recovery, and about the hatcheries' obligation to contribute to the common property fisheries.***

The Alaska Statutes contain only two direct references to wild stock protection from hatchery-related dangers: AS 16.10.400(g), which requires the commissioner, during the development of a comprehensive regional plan and before a hatchery permit is issued, to determine that such an action would not jeopardize wild stocks; and AS 16.10.420(g), which directs the department to require, as condition of a permit, that the hatchery be located in an area where "reasonable segregation" from wild stocks occurs.

The board is concerned that these statutes protect wild stocks only prior to the start of a hatchery operation. This raises the inference that, once a regional plan is completed and/or a hatchery permit is issued, wild stocks no longer enjoy a statutory protection from hatchery operations.

Article VIII, sec. 4 of the Alaska Constitution ("Sustained Yield") states:

> Fish, forests, wildlife, grasslands, and all other replenishable resources belonging to the State shall be utilized, developed, and maintained on the sustained yield principle, subject to preferences among beneficial uses.

The board was created "for purposes of the conservation and development of the fishery resources of the state." AS 16.05.221. The Alaska Supreme Court has stated that, "'conserving' implies controlled utilization of a resource to prevent its exploitation, destruction or neglect" and that " 'development' connotes management of a resource to make it available for use." Kenai Peninsula Fishermen's Coop. Assn. v. State, 628 P.2d 897, 903 (1981).

ATTORNEY GENERAL OPINION

In an August 1990 opinion letter to the commissioner of the Department of Fish & Game, assistant attorney general Stephen White concluded that the board had the authority, and was in fact directed by law, to manage for hatchery broodstock. He further concluded that the board had the power to manage for cost recovery, but that it was not required to do so. He based these conclusions in part on the unstated assumption that the constitutional "sustained yield" requirement applied to hatchery fish. This assumption, coupled with the board's statutory charge to "conserve" the fishery resource, formed the basis for White's conclusion that the board was required to manage for broodstock.

White's conclusion that the board has the authority to manage for cost recovery was based on the board's statutory authority to "develop" the resource and to allocate among various user groups. Although hatchery operators are not specified on the list of user groups for which the board may allocate, AS 16.05.251(d), White concluded that the board had the power to make such an allocation by treating hatchery operators as a "subgroup" of commercial users. He noted that the Alaska Supreme Court, in Meier v. State, 739 P.2d 172, 174 (1987), has upheld a board allocation between two subgroups of commercial users.

OPINION RESPONSES

The White opinion generated two critical responses. The first was from ***Juneau attorney Michael A.D. Stanley, in a February 1991 letter to the Southeast Alaska Seiners. Stanley argued that the "sustained yield" clause may not apply to hatchery fish for a number of reasons.*** First, because humans play such a significant role in the development of hatchery fish, there is some question whether the framers of the constitution would have considered them "natural" resources "belonging to the state" as those terms are used in article VIII. Stanley then points to AS 16.10.440(a), which provides that hatchery fish are to be treated "in the same way as fish occurring in their natural state until they return for harvest by the hatchery operator." He argues that the "in the same way" language indicates the legislature did not view hatchery fish as already subject to article VIII.

Stanley also takes issue with White's conclusion that hatchery operators could receive a cost recovery allocation as a subgroup of commercial users. He asserts that the definition of "commercial fishing," AS 16.05.940(5), would have to be "strained" to include hatchery operators, and that such a broad reading would allow other inappropriate users (such as salmon derby operators) to be considered as a subgroup. He also notes that the definition of "commercial fisherman," AS 16.10.940(4), contemplates a "natural person," not a nonprofit corporation.

Finally, Stanley asserts that only the department, not the board, can make an allocation of fish for hatchery operators. He argues that AS 16.10.440(a), quoted above, allows for harve. only at an area designated by the **department**, and only after the hatchery fish have tra 'led through the common property fisheries. Stanley argues that for the board to decide otherwise would be a circumvention of the existing statute.

The second opinion that questioned assistant attorney general White's conclusions was from Legislative Counsel George Utermohle, in an April 8, 1991 letter to Senator Dick Eliason. He argues that, if the legislature had intended for hatchery fish to be managed on a sustained yield basis, it would have used the phrase "belonging to the state" when it wrote AS16.10.440(a), quoted above. Utermohle reasons that the legislature intended hatchery fish to be treated as if they were a part of the common property resource, but only until they return to the designated harvest location; at that point, the hatchery operator may harvest the fish. Utermohle asserts that this language "suggests some form of lingering private property interest in hatchery fish by the hatchery operator," and indicates that the fish do not "belong" to the state for purposes of sustained yield.

Utermohle also argues that if hatchery fish belong to the state, it does not mean they necessarily must be managed for sustained yield. He points out that the sustained yield principle is always "subject to preferences among beneficial uses." Citing commentary and minutes from the Alaska Constitutional Convention, Utermohle asserts that the delegates understood this qualification to mean that the state "could make reasoned decisions to prefer certain renewable resources over other renewable resources to achieve a more beneficial public purpose." He concludes that this "may permit the state to harvest hatchery fish without providing for sustained yield;" and points to AS 16.10.430(b), which allows the termination of a hatchery operation "in the best interest of the public, if the adverse effects of the operation are irreversible and cannot be mitigated."

The Stanley and Utermohle opinions generated a vigorous and lengthy response from Anchorage attorney A. William Saupe, contained in an October 17, 1991 opinion letter to the president of the Prince William Sound Aquaculture Corporation (PWSAC). Saupe concluded that any regulation significantly restricting PWSAC's broodstock and cost recovery practices would be inconsistent with existing statutes and with the Alaska Constitution. He further concluded that legislative history suggests the board was never intended to have the power to limit hatchery production.

Saupe points to the legislative history compiled by Linda J. Snow of the Legislative Research Agency as evidence that the legislature intended to assert state ownership of hatchery fish, and relies on statements made by several legislators and lobbyists to that effect. He also cites commentary from the framers of the constitution which states that the sustained yield principle is applicable to "plant and animal life subject to the immediate control of the state." Saupe argues that hatchery fish are so subject and therefore must be managed for sustained yield.

He answers the "beneficial use" argument by asserting that article VII, sec. 15, which speaks to the "efficient development of aquaculture in the state," indicates the importance and value of hatchery operations to the state; he also argues that hatcheries, specifically PWSAC's, would be seriously harmed if broodstock harvest was curtailed.

Saupe also points to "an extensive web of statutory provisions that evidence an unwavering legislative intent to sustain and expand hatchery operations through hatchery harvest," as evidence of the legislature's belief that harvests are necessary and beneficial. Among these provisions: AS 16.10.443, which requires the department to assist permit holders in the operation of their hatcheries; AS 16.10.450(a), which contains certain expenditure requirements for hatcheries that sell salmon or salmon eggs after harvest; AS 16.43.420, which allows for the sale of fish caught under the authority of a special harvest area entry permit; and AS 16.10.430(b), which allows sale, but not release, of fish during the period

of time that a hatchery operation is being terminated; AS 16.05 020, which requires the commissioner to "improve and extend" the fisheries of the state. Saupe concludes that the cited statutes, and legislative history, demonstrate the legislature's intention that cost-recovery harvests be the primary method of funding private nonprofit hatchery operations.

Saupe also takes issue with Michael Stanley's questioning of the board's authority to allocate for cost recovery. Saupe argues that the language of AS 16.05.440(a), quoted above, applies only to the time and location of a special harvest and not to allocation. To support his conclusion, he points also to legislative history indicating approval of board authority to regulate hatchery harvests, as well as to provisions of the Limited Entry Act that subject entry permit holders to board regulations.

On the question of board restrictions on local hatchery production, Saupe is less certain. He cites evidence to the effect that the legislature did not consider such restrictions during the time the private nonprofit hatchery system was put in place; and he takes the position that AS 16.10.440(b), which allows the board to amend hatchery permit terms relating to source and numbers of salmon eggs, was intended by the legislature to relate only to harvests and not to limiting hatchery production. On the related question of the board's ability to limit hatchery production on a regional basis, Saupe acknowledges that the answer is unclear, but he asserts that such a policy would conflict with many statutes already cited, and with the constitutional provisions relating to sustained yield and promotion of aquaculture.

CONCLUSIONS

1. There is no specific statutory mandate directing the board to give wild stocks preferential management treatment relative to hatchery raised fish.

2. The Alaska Constitution may require that hatchery fish be managed to allow for broodstock and cost recovery by the hatcheries, but that requirement may be invalidated by a determination that the sustained yield of hatchery fish is not as "beneficial" a "use" of the fishery resource as that of protecting the health of the wild stocks.

3. Existing statutes appear to allow the board to allocate fish to hatcheries for broodstock, but are less clear as to the authority for cost recovery.

4. Existing statutes are not clear on the board's authority to restrict hatchery production on a local or regional basis.

OPTIONS FOR POSSIBLE CONSIDERATION:

- Placing a wild stock priority into state statutes; or alternatively, making the status of wild and hatchery stocks of equal priority, or leaving the statutes ambiguous.

- Clarifying in state statutes whether or not the Board of Fisheries is required to provide for hatchery broodstock or for cost-recovery fisheries.

- Clarifying the Board of Fisheries' authority to restrict hatchery production.

Chapter VI

PLANNING AND PERMITTING PROCESS

A major element of the statewide salmon enhancement program is the planning and permitting process.

CURRENT PLANNING AND PERMITTING PROCESS

The Department of Fish and Game (ADF&G) is responsible for planning enhanced salmon production which is conducted on a regional basis throughout the state. Regional aquaculture associations have been formed in some regions to plan and implement enhancement projects. ***Regional Planning Teams*** (RPTs), composed of department personnel from the fisheries divisions and representatives from the regional aquaculture associations (or local fishermen if there is no association), are charged with developing long-term comprehensive salmon production plans. The state also involved the private sector in the enhancement effort through private nonprofit (PNP) corporations which can plan and build hatcheries. Those PNPs that are not part of a regional aquaculture association are referred to as "Mom and Pop" operations.

The RPTs not only develop the comprehensive salmon plans, but also review and comment on all hatchery permit applications, annual hatchery management plans, and annual reports. Each hatchery enhancement project is reviewed, based on some relatively consistent criteria:

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

The PNP permit application process is rigorous and includes substantial review, as well as a public hearing and full review by state and federal agencies through the coastal zone review process. Even in a best-case scenario, the review and approval process of a permit application takes at least six months.

Fish released by hatchery operators are available for common use 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 of hatchery special harvest areas. This is the basis for the board-regulated Fish Transport Permit process (see Biological Issues chapter), establishment of hatchery special harvest areas, and board approved terminal harvest area plans. The statutes also appear to give the Board the authority to limit or control production at individual hatcheries based on egg-take for broodstock. This authority has never been used, and there is a strong difference in opinion as to whether or not the Legislature

actually intended the Board of Fisheries to regulate hatchery production, or instead, to regulate the taking of eggs from wild stocks for hatchery production.

A ***Basic Management Plan*** (BMP) is developed as part of the actual permit. Marking programs for hatchery-produced fish can be required in the hatchery permit and BMP. Tagging is usually considered optional, unless during the permit or permit alteration process fisheries managers specify the need for special in-season management capability. When a permit is approved and operational, an ***Annual Management Plan*** (AMP) is developed for each year of operation.

FISH TRANSPORT PERMITS

The possession, transportation or release of live fish and their reproductive products (eggs) into the waters of the state requires a ***Fish Transport Permit*** (FTP) from ADF&G. The FTP permit application covers only one specific operation and is quite detailed. The application is intensively reviewed by the regional supervisors of the FRED, Commercial Fish and Sport Fish Divisions, the FRED pathologist and principal geneticist, as well as the FRED chief of technology and development and the FRED director. A signature page is attached to the actual permit which includes recommendations and comments. The permit is then approved or disapproved by the commissioner of ADF&G. The potential for disease and genetic impacts are the primary considerations in the FTP review process.

FISH RESOURCE PERMITS

ADF&G is currently developing a policy on ***Fish Resource Permits*** (FRP). The FRP was previously called a scientific/educational (sci/ed) permit. This policy is being developed as a result of a lack of standards for the scientific and educational projects allowed. Under the proposed policy, Fish Resource Permits will be issued with the stipulations of no commercial activities, no human consumption, and no sale of the species. These permits are classified into collecting permits for scientific or educational purposes, holding permits for either exhibition or scientific research, and limited propagation permits for various scientific or educational purposes.

PROBLEMS AND ISSUES

1. Lack of statewide goals and objectives for enhancement program.

The original goal of the enhancement program was to rehabilitate the state's depressed salmon fisheries. This goal has essentially been met, with the numbers of Alaska's wild and hatchery fish at an all time high. Other than the problems of marketing and price, most of the state's salmon fisheries are no longer depressed. ***The state does not have a clearly defined policy for future management and development goals for hatcheries and other enhancement efforts that goes beyond increased production.***

2. Regional v. Statewide Planning.

State law directs salmon production planning to be done on a regional basis. Little comprehensive statewide planning is done, with only minimal interaction between regions

of the state. At the time these provisions were enacted, it was not envisioned that hatchery-produced fish would become such a large proportion of the statewide harvest. ***Fisheries managers argue that the state needs a statewide planning policy that will take into account the potential impacts of the production of one region on another, as well as closely scrutinizing potential management problems and marketing feasibility. Others involved in the industry argue that regional differences are so unique and contentious, that such a statewide process would be futile.***

The Board of Directors of the United Fishermen of Alaska (UFA) in January 1992, requested the FRED Division to involve all RPTs in a statewide review process of hatchery production.

3. Funding and support for planning.

Fishermen, hatchery operators, and state fisheries managers agree that the RPT planning process provides an important forum for discussing and resolving difficult issues on an ongoing basis.

However, ***state support for planning has declined since the early 1980s*** when FRED had a budget of over $500,000 for grants to aquaculture associations. Despite the need for more rigorous planning due to increased enhanced production, FRED planning staff has declined from two to one and a half positions. These positions coordinate all enhancement efforts statewide, including state facilities, provide technical assistance to the PNPs, and plan new ventures. ***Budget reductions have forced state planners to shift priorities from plan development and implementation to plan maintenance.*** Those involved in planning say the current funding level is inadequate for FRED to properly oversee the functions of the 37 hatcheries in operation in Alaska. As a result, they believe many more conflicts and issues will develop that should have been resolved early in the process.

RPT members also complain that the cutback in funds for planning has limited their contribution to a cursory discussion and approval of permit changes. If a hatchery requests a change in a permit, they often have to wait six months or longer to be considered because funds are not available for some RPTs to meet more than twice a year.

4. Composition of Regional Planning Teams

Although many people believe the regional planning team (RPT) process is a good one if adequately staffed and funded, there are others who believe that the entire structure of the RPT should be changed. A frequent complaint is that the composition of the RPT is heavily weighted towards the commercial sector of the fishing industry, without sufficient representation of subsistence and sport fishing users, community and regional governments, environmentalists, and the general public. These critics argue that in order to have a truly ***balanced*** decision, all the varied interests of the region need to be adequately represented. Some RPTs have tried to address this complaint by broadening the composition of the team to include all interested groups.

Another, more fundamental concern is that ADF&G managers are usually out-numbered on the RPTs. As a result, the group can pressure department managers into approving projects that should probably be denied. Department personnel who raise future management concerns are under considerable pressure to be a ***positive*** presence in the

RPT process, which in some cases, translates into withdrawing or modifying their objections without these concerns being adequately addressed. On the other hand, concern has also been expressed that department managers sometimes have a strong, anti-hatchery bias that can influence their management recommendations.

There is also the concern that the non-Fish and Game members of the RPT may not be sufficiently capable of evaluating and making decisions on issues that are increasingly technical in nature.

5. Allocation issues.

The RPT does not have allocation authority; that responsibility is delegated by state statutes to the Board of Fisheries. ***Without the ability to consider allocation issues as part of the permit review process, ADF&G may approve a hatchery permit that could create future allocation problems.*** By the time the Board of Fisheries begins to consider allocation problems resulting from hatchery production, millions of dollars may have been invested through state loans. In addition, allocation conflicts over hatchery-produced fish may eventually require tagging programs as part of their resolution. The question of tagging--and who should pay for it--is one that is more easily addressed early in the planning and permitting process.

Recent developments seem to indicate a change for the future. ***In 1988, the Board of Fisheries charged the Prince William Sound Aquaculture Corporation (PWSAC) with development of an allocation plan for enhanced stocks in Prince William Sound.*** After an intense planning effort and several drafts, PWSAC was able to come up with an allocation scheme that all user groups and the department could support. The allocation plan was approved by the Board of Fisheries in 1991 and was in effect this past fishing season. Using the success of PWSAC as a model, the Board of Fisheries has also directed the two Southeast regional aquaculture associations (NSRAA and SSRAA) to develop an allocation plan for hatchery stocks by 1993.

6. Management issues.

Another complaint is that regional comprehensive salmon plans often focus exclusively on production goals for a hatchery, but provide little specific information on fishery management. FRED now requires an initial **Management Feasibility Analysis** (MFA) be completed before a final application is submitted. The MFA covers the basics of siting, species, timing, and magnitude of production, and is developed by the Commercial Fisheries and Sport Fisheries Divisions to avoid potential management problems. FRED planners believe that they have never permitted a hatchery or enhancement project that fisheries managers did not initially approve.

7. Uniform review.

State hatcheries and projects are not subject to the same permitting requirements as PNPs. Some fishermen believe that state projects cause the most allocation, management, and potential biological problems because of the lack of this additional layer of scrutiny. They would like to see permits required for state hatcheries and projects, as well as for PNP projects. FRED Division believes adding this requirement is unnecessary because of the many other layers of review these projects receive.

8. Criteria to show public benefit.

Four criteria must be considered by the RPT to determine if a permit application is in compliance with the regional comprehensive salmon plan:

- the contribution the proposed hatchery would make to the common property fishery,
- the provisions for protecting wild stocks from any adverse effects which may originate from the proposed hatchery,
- the compatibility of the proposed hatchery with the goals and objectives of the comprehensive salmon plan for the region, and
- whether the proposed hatchery would make the best use of the site's potential to benefit the common property fishery.

Critics say these criteria should be expanded to consider other public benefits and costs.

9. Operation performance reviews and permit revocation.

State managers and RPT gear group representatives are also concerned about ADF&G's authority over hatcheries that are out of compliance with state laws, regulations, and permit requirements. ***With the potential risk of impacts on the state's common property fisheries, managers and some RPT members believe a mechanism to allow for the timely revocation of a permit is necessary.***

10. Hatchery Siting Privileges

If a region has an organized aquaculture association, that association, under state statutes, has the preference rights to all potential hatchery sites in that region. Non-association PNPs (Mom and Pops) have expressed concern that giving priority use of potential to future sites to an association is not good public policy. The Mom and Pop operators believe that any unused hatchery sites should be available to both associations and non-association PNPs.

11. Canadian evaluation model.

The Canadian government is considered to have a model evaluation program of its national salmon enhancement program. The first evaluation project began in 1985 and concluded that there was not enough production and biological data available to carry out a proper program evaluation. The program audit branch then designed the optimum evaluation framework and determined what kind of data would be needed. These data included biological and production information, as well as an analysis of economic costs and benefits. With that data in hand, program auditors are now preparing to spend a year reviewing the entire program, with a final report due in March 1993. Federal funds are being used for this project, although university staff and consulting firms are conducting the actual evaluation.

OPTIONS FOR POSSIBLE CONSIDERATION:

- Working with the public and user groups to develop statewide goals and objectives for the state's entire fisheries enhancement program.

- Directing FRED Division to develop a program to implement these goals and objectives.

- Declaring a moratorium on further hatchery development or increased production until the Legislature's economic cost-benefit studies are complete and a full assessment of the hatchery program can be made.

- Development of a statewide planning process.

- Development of a statewide production plan.

- Requiring FRED to develop a comprehensive annual report that not only compiles production figures from state and PNP facilities, projects, and current management regimes, but also includes future production and management plans.

- Evaluation of the composition and procedures of the RPT to determine if changes in the RPT structure are necessary.

- Expansion of state statutes to require all hatcheries, including state facilities, to comply with a single planning and permitting process, with the same requirements for monitoring and review.

- Widening the scope of RPT review, including recommendations for allocation of enhancement production.

- Providing adequate funding for planning.

- Reviewing the required Management Feasibility Analysis to determine if it needs to be a more comprehensive review.

- As part of permit review and solicitation of state loans, consideration of adding new criteria to show public benefit, including marketability, a detailed cost/benefit analysis instead of a financial feasibility analysis, a more specific indication of the "significant contribution" to be made to the common property fishery, and some kind of environmental assessment.

- Providing concrete direction for the timely performance review of PNP hatcheries and a more workable mechanism for closing or converting hatcheries not making a "significant" contribution to the common property fishery.

- Exempting the alteration, suspension or revocation of an enhancement permit for violations from the Administrative Procedures Act.

- Instituting a regular review process similar to the Canadian model.

- Clarifying Board of Fisheries authority to regulate hatchery production levels.

•Re-evaluation of the policy of giving regional aquaculture associations the preference rights to develop future hatchery sites in the region.

Chapter VII

BIOLOGICAL/GENETIC ISSUES

In November 1991, in Cordova, Alaska, the Prince William Sound Science Center (PWSSC) and the School of Fisheries and Ocean Sciences, University of Alaska Fairbanks, convened a group of world-renowned experts to examine "The Biological Basis for Maintaining Strong Co-existing Stocks of Natural and Enhanced Salmon Populations in Alaska." This workshop followed a series of international symposiums on this topic during the past two years. Top fisheries biologists, ecologists and geneticists from the United States, Norway, Sweden, the Soviet Union and Japan were present at the Cordova workshop. As a follow-up to the workshop, the group intends to produce a summary report and list of recommended policies and procedures to be considered by the state of Alaska in managing its wild and enhanced salmon stocks. That report is expected in late February.

The cumulative effect of hydroelectric dams, habitat destruction, overfishing, and large-scale hatcheries has led to the decimation of many wild salmon stocks in Pacific Northwest states. Biologists in states with a long history of hatchery programs are generally less enthusiastic about these programs than biologists in areas such as Alaska and British Columbia with comparatively recent programs. ***Although poor hatchery practices can clearly endanger wild salmon populations, scientists do not agree on the extent to which hatcheries with sound practices can co-exist with sustained healthy runs of wild salmon.***

The lack of consensus among scientists largely results from insufficient data and research, and at times, professional bias. Even where information exists, however, it is often subject to conflicting interpretations. To complicate matters, results of specific studies may not be transferable to other areas or salmon species, and year-to-year environmental changes may affect the results of these studies.

THE GENETIC EFFECTS OF HATCHERIES

Most scientists agree that it is essential to have healthy wild stocks to maintain the health and genetic diversity of both wild and hatchery stocks; genetic diversity must be preserved. Scientific knowledge about the genetic impact on wild stocks of hatchery fish, however, is still incomplete. Reduction in the fitness of salmon stocks, to the extent it has been documented, may involve numerous factors. Most scientists agree that hatcheries can complicate mixed-stock fisheries and affect the genetic composition of wild fish stocks. Scientists do not agree on the extent to which genetic changes affect the short- or long-run fitness of wild stocks.

Straying and intermingling of stocks is a major concern to scientists. The extent of straying, the variables involved in imprinting, and the effects of interbreeding are largely unknown. Large-scale ocean ranching appears to set the stage for straying of wild stocks in the harvest areas of enhanced stocks and also for hatchery fish to stray into the natural streams. What impact this has on the genetic diversity of salmon stocks in a given

region is a question that remains to be answered. However, the concern is that intermingling may reduce the fitness of the locally adapted populations.

It is known that the greater the distance between the donor stream or hatchery and the release site, the greater the amount of straying. Many scientists are concerned about the extensive releases at remote sites practiced by many hatchery operations today, with many more planned for the future. They fear that such straying could potentially, in time, destroy genetic diversity -- resulting in a permanent, irreversible loss. Some scientists believe remote releases should be banned altogether. Others believe they should be permitted with stringent controls and careful monitoring.

OCEAN CARRYING CAPACITY

Some scientists suspect that the carrying capacity of nearshore marine waters and the high seas for salmon may be exceeded by large-scale releases of hatchery salmon. A reduction in the average size of salmon was reported throughout the Pacific region in 1991, but various factors may be responsible. Since 95 percent of the growth of salmon occurs at sea, some researchers believe ocean conditions affect the size of salmon more than competition. Much evidence, however, supports the theory of density-dependent growth for some salmon species, although there is considerable debate regarding its occurrence. More information is needed on the effects of predation and competitors.

DISEASE

Few studies document the transmittal of diseases between hatchery and wild salmon, and there is no documentation of such transmittal in Alaska. Where transmittal of a disease by hatchery salmon has been documented, it occurred after fish were transplanted long distances. Hatchery fish appear to be more vulnerable to disease than wild fish because of the stress of hatchery conditions and large concentrations of eggs and fry. Norway has had considerable problems with disease transmitted by farmed salmon that have escaped and mixed with wild stocks.

Active fish pathology laboratories are maintained by the FRED Division in both Juneau and Anchorage. Their basic function is to implement policies and procedures that guard against the spread of fish and shellfish diseases in Alaska. Reviewing fish transport permits in order to reduce the occurrence of disease is a major task of the labs, as is examining each broodstock for disease prior to its use in a hatchery.

STATE GENETICS PROGRAM AND POLICY

The state genetics program is intended to implement policies and procedures that protect and maintain the genetic uniqueness of Alaska's wild salmon stocks in the face of North America's largest salmon enhancement program. The state's fish genetics policy, considered to be one of the most stringent in the world, was last revised in 1985, and will be reexamined and updated this year.

Alaska's genetic policy contains guidelines and restrictions intended to protect the genetic integrity of wild stocks. The ***goal*** is to maintain adequate genetic variability, ensuring that the enhanced stock will be able to adapt to changing environmental conditions.

Geneticists have two primary concerns in protecting wild stocks and implementing a successful enhancement program. The first is possible genetic impacts due to gene flow between wild or enhanced stocks; the primary concern being, of course, for wild stocks. The second concern is the loss of genetic variation within or among stocks. Both impacts can potentially cause the reduction of total fitness in wild stocks and hatchery broodstocks. These problems are addressed in the policy's three main topic areas: stock transport, protection of wild stocks, and the maintenance of genetic variation.

Since specific knowledge of salmon population genetics and the genetic impacts of salmon enhancement on wild stocks was limited, the 1985 genetic policy was based primarily on information from agricultural genetics and research on other species. As a result, the policy contains guidelines that are rather flexible. The policy suggests that because scientific knowledge is limited, fish transport should be evaluated conservatively. For example, if genetic similarity decreases with distance, arbitrary limits must be set on the distance a stock can be transported. For that reason, the Fish Transport Permit process is the prime regulatory tool in the genetic policy. ***ADF&G is attempting to clarify some of the flexible guidelines in the revised policy by incorporating knowledge gained from recent studies of the population genetics of salmonids.***

The genetic policy also acknowledges that all salmon runs are not of equal importance. The effect of a salmon enhancement project depends to some degree on the relative value of the stock that might be impacted. However, the policy says that the concept of "significant stock" only relates to the size of a fish population in the context of local importance and use. A population that would be considered insignificant in size in one region, may be of vital importance in another region.

OPTIONS FOR POSSIBLE CONSIDERATION:

Although a report of recommended management actions resulting from the Cordova workshop is expected in late February, some preliminary options for consideration include:

- Evaluation of how well the current hatchery program protects wild salmon from possible negative effects of hatchery salmon. Such a review would help policy makers determine the risk of various alternatives for the future of Alaska's hatchery program.

- Increasing the amount of genetic monitoring required of hatchery operators, and directing ADF&G to continuously review and analyze resulting data statewide.

- Obtaining consensus about research priorities concerning the interaction of hatchery and wild fish in Alaska, coordinating future studies, and deciding how and when to apply the results of those studies to current management practices.

- Conducting research to define the minimum conditions for imprinting for remote release programs.

- Review of current and future programs for their compliance with the state genetics policy.

- Placing greater emphasis on management concerns in the permitting process in order to protect wild stocks.

- Re-examination of escapement goals in order to maximize wild productivity.

- Increased use of marking and tagging programs to monitor interactions between hatchery and wild populations.

- Policy development to minimize inbreeding and straying, including an evaluation of remote releases.

- Treating a remote release site as a de facto hatchery site in terms of broodstock and hatchery site guidelines, even if all fish are expected to be harvested.

- Identification of genetic population structures to determine what populations are genetically distinct.

- Survey of populations prior to any enhancement activity to provide a baseline for subsequent genetic monitoring. Evaluation of genetic consequences of hatchery production on adjacent populations during phased-in expansion, with production increases halted if adverse impacts are noted.

- Monitoring wild and hatchery stocks to determine extent of straying and intermingling.

CHAPTER VIII

FUNDING OF THE ALASKA SALMON ENHANCEMENT PROGRAM

Sources of funds for the Alaska salmon enhancement program and projects include bond issuances, state general fund appropriations, salmon enhancement tax assessments paid by fishermen, state enhancement loans, and cost-recovery sales of fish.

STATE PROJECT FUNDING

Funding for the operation of the state salmon enhancement program and state project construction, operation, and maintenance has been primarily through state bonds and general fund appropriations to ADF&G, FRED Division. From FY 72 - 92, funding for the FRED Division totalled approximately $210.3 million, the majority of which was for salmon enhancement. Bond issues totalling $56.17 million were authorized by the 1976 and 1978 Legislatures, and overwhelmingly endorsed by voters, to fund the construction and operation of hatchery production and other enhancement projects in each region of the state. Of the $56.17 million in bond issues for FRED enhancement projects, $50.3 million was spent on hatcheries, while the remainder was used for other enhancement projects. State funding for FRED division construction of state facilities totaled approximately $24.8 million through FY 92.

FUNDING FOR PRIVATE NON-PROFIT HATCHERIES

Funding for PNP hatcheries is primarily through state loans, the salmon enhancement tax, and cost recovery sales of fish. To a lesser extent, the state has provided grants to some facilities and fishing organizations; these have totalled approximately $12.3 million.

Since 1977, a significant portion of the funding necessary for the implementation of salmon rehabilitation and enhancement activities by PNP corporations has been provided through the ***Fisheries Enhancement Revolving Loan Fund*** administered by the Alaska Department of Commerce and Economic Development (DCED), Division of Investments (AS 16.10.500-620). The loan program has gone through several modifications by the legislature, the most recent occurring in 1987. The maximum loan amount available for an individual project is $10 million at approximately 9.5 percent interest, with a payback period of up to 30 years. According to state statute (AS 16.10.525), payments and accrual of interest on these loans ***must*** be deferred for 6 to 10 years. Loans for non-regional aquaculture association projects have these same terms with the exception that the loan maximum is limited to $1 million. Loans are available for the purpose of planning, construction, and operation of salmon rehabilitation and enhancement projects, primarily salmon hatcheries.

The ***Salmon Enhancement Tax*** (AS 43.76.010-.015) is charged to limited entry permit holders who are members of qualified regional aquaculture associations. State law allows the associations to set enhancement tax rates at either 1 - 3 percent of the ex-vessel value of the salmon catch, subject to the vote of the membership.

Through November, 1991, $71.0 million has been borrowed by PNP corporations. Approximately $67.7 million (95 percent) of the $71.0 million principal balance is currently outstanding. Including state appropriations ($12.3 million), approximately $83.3 million has been provided in state loans and grants to PNPs. Another $46.2 million has been generated through enhancement tax assessments. To date, PNP operators have sold approximately $70.9 million worth of cost-recovery fish to help pay for hatchery operations. The amount and percentage of funding by category is shown below.

$71.0 million	35 percent	State Loans
$12.3 million	7 percent	General Fund Grants
$46.2 million	23 percent	Enhancement Tax Assessments
$70.9 million	35 percent	Cost Recovery Sales of Fish
$200.4 million		Total

As can be seen, the private sector has provided over 58 percent of the direct funding for PNP operation and construction through self-imposed taxes and cost recovery sales of fish.

OPTIONS FOR POSSIBLE CONSIDERATION:

- Requiring a more extensive public benefit-cost analysis before providing enhancement loans. This means that a project or facility expansion would not only have to be financially feasible--capable of paying back loans--but also provide net benefits to the public.

- Eliminating the statutory loan repayment deferment requirement on operating loans.

- Development of a mechanism for placing moratoriums on state enhancement loans for increased fish production. Consideration of a moratorium on loans until results of the Legislative Enhancement Program Review economic studies are complete.

- Implementing a requirement for more complete analysis of transfers of the operation of state hatchery facilities that includes factors such as upfront capital costs to state to expand or upgrade facility before transfer is accepted, fisheries management implications, increased need fo :ost recovery, nd the impact on traditional common property fisheries.

- Analysis of the enhancement tax program to determine 1) whether costs are distributed in proportion to benefits, and 2) the impact of a mechanism to allow specific gear groups to opt out of the program or pay in proportion to the enhancement benefits they receive.

- Analysis of increasing the salmon enhancement tax so fishermen who benefit from the program will pay for more of the costs.

- In light of declining state revenues and lower fish prices, development of an auditing mechanism to ensure that annual PNP operating costs, paid by loans, enhancement tax receipts and cost recovery, are "reasonable."

- Development of a requirement that funds provided in treaty agreements for enhancement be used for fish production to the maximum extent possible. In addition, a requirement for a comprehensive feasibility analysis of using enhancement as part of treaty agreements could be considered.

Chapter IX.

ECONOMICS

Note: This section summarizes the economic studies that are currently in progress under contract. The results of these studies are not yet available and, therefore, are not included in this draft. The full chapter on economic studies provides more detailed information on the contracts. The final report will include the results of the economic studies.

The main focus of the review of the economic impact of salmon hatchery production on Alaska salmon prices is to determine:

- whether current levels of Alaska salmon harvests are over- or under-supplied from a world-market perspective, and

- whether increased hatchery production of salmon will lower prices, fishing and processing revenues, and the total net value of Alaska's salmon fisheries.

To answer these questions requires a complete benefit-cost analysis. Initially, the study group reviewed current research and identified specific issues that need additional economic research. Review of available data revealed that there are considerable gaps and insufficiencies in information compiled to date. Proposals were developed for additional research contracts by professional researchers. The proposal was designed with assistance from the Alaska Department of Fish and

Game. Funding for the research contracts was approved by the Legislative Council on November 1, 1991.

Due to time constraints, the research contracts were awarded on a "request for proposal" basis and funded through reimbursable service agreements (RSAs) between the Legislature and the University of Alaska.

The research is divided into five principal components, and is aimed at providing information on Alaska's salmon enhancement programs, and developing models that can be used for evaluating salmon management policy questions.

RESEARCH COMPONENTS

The five principal research components are:

- ***Hatchery Production and Cost Model***
  Principal Investigators: Economics Group, Legislative Research Agency, and the ADF&G FRED Division staff
  Anticipated Cost: $0

- ***Biological Population Model***
  Principal Investigators: Dr. Jeremy Collie, Juneau Center for Fisheries and Ocean Sciences, Univ. of Alaska, Fairbanks
  Anticipated cost: $10,000

- ***Salmon Demand Model***
  Principal Investigators: Dr. Mark Herrmann, Dept. of Economics, Dr.Joshua Greenberg, School of Land Resources Management, Univ. of Alaska Fairbanks
  Anticipated cost: $18,000

- ***Fishing Cost Model***
  Principal Investigator: Dr. John Boyce, Dept. of Economics, Univ. of Alaska Fairbanks
  Anticipated cost: $20,000

- ***Combining of Models for Policy Analysis***
  Principal Investigators: Drs. John Boyce and Mark Herrmann, Dept. of Economics, and Dr. Diane Bischak, School of Management, University of Alaska Fairbanks
  Anticipated cost: $10,000

Preliminary reports on the research being conducted under these contracts are to be submitted to the Legislature in April, 1992, and the final reports in June, 1992. The remainder of the Legislature's hatchery review project can move forward in the meantime. Information gathering and the formation of some conclusions, options and courses of action, regarding the other portion of the project can be accomplished independent of these economic studies.

It is hoped that research currently being conducted by the Alaska Department of Commerce and Economic Development and the Alaska Seafood Marketing Institute on developing new markets and products for Alaska salmon will also be available and useful to the Legislature in its look at the overall economic picture of Alaska salmon and salmon enhancement.

Chapter X.

MARKETING

As a result of the precipitous decline in Alaska salmon prices in 1991, Governor Hickel formed the Salmon Strategy Task Force to identify the problems facing Alaska's salmon fishing industry and recommend state actions to address these problems. A primary focus of the task force was salmon marketing. The task force recently finalized its recommendations. To avoid duplication with the task force's efforts, it was decided that the Legislative review of the Alaska salmon enhancement program would analyze the economic costs and benefits of the enhancement program and review past state salmon marketing efforts. A summary of the Salmon Strategy Task Force's final recommendations is included (a copy of the Task Force's report is attached).

INTRODUCTION

The Alaska Seafood Marketing Institute (ASMI) was established in 1981 as a quasi-state corporation in the Alaska Department of Commerce and Economic Development (DCED). The institute's statutory responsibilities include:

- To conduct educational, research, advertising, and sales promotional programs to increase awareness of all species of seafood and their by-products that are harvested in Alaska.
- To develop quality specifications to enhance the high quality image of Alaska seafood worldwide, and to adopt recommendations for the handling of seafood from the moment it is caught until it is shipped to the marketplace.
- To prepare market research and product development plans for all species of seafood and their by-products harvested in Alaska.

State statutes prohibit ASMI from favoring any region, product, or processor. For that reason, ASMI uses "generic" marketing campaigns aimed at enhancing the sales of particular "species" of fish or broad product categories (such as canned or frozen) rather than specific products. Also, because it is likely to favor individual processors, ASMI does not promote new products.

ORGANIZATION

To accomplish its statutory mission, the ASMI organization consists of a board of directors, numerous committees, and a relatively small number of staff. Policy and program direction is set by the 18-member board of directors. The ASMI committee system is extensive with the largest portion being a system of marketing committees. The ASMI executive director is selected by the board of directors and permitted to hire additional staff upon approval of the board. The central staff members include: communications manager, comptroller, quality coordinator, special projects coordinator, and office manager.

ASMI FUNDING SOURCES

A portion of ASMI's funding is derived from a self-imposed seafood marketing assessment. All fish processors who purchase annually $50,000 or more (ex-vessel value) of seafood pay an

assessment of 0.03 percent of their total purchases. These assessments are collected in the state's general fund and are appropriated annually to ASMI. The balance of ASMI's funding is derived from state general fund and federal appropriations.

Federal funding, which has increased as a result of the Targeted Export Assistance (TEA) program, is restricted to international marketing efforts. ***State general fund appropriations and industry contributions are used primarily to fund domestic marketing efforts. Since these are declining, ASMI will have fewer resources for domestic marketing at a time when the domestic market has been identified by analysts as having the greatest potential for increasing sales of Alaska salmon.***

EFFECTIVENESS OF THE ASMI PROGRAM

When ASMI was established, the Alaska salmon industry provided most of the U.S. production and about half of the world production from wild and ocean-ranched salmon stocks. When Alaska was the dominant supplier, the generic marketing of Alaska salmon was relatively effective.

A recent Legislative Audit report evaluated whether there has been an increase in awareness of Alaska seafood since ASMI's inception. The Legislative Audit review of market research provided by ASMI, concluded that increases had occurred in consumers' perception of Alaska seafood. In addition, consumers are more aware of Alaska as a seafood-producing region.

Despite these overall improvements in consumer perceptions and increased consumption of seafood, Alaska has lost a significant share of both the domestic and international salmon markets as a result of the tremendous growth in world farmed-salmon production. The dramatic rise in production and growing acceptance of farmed salmon as a source of fresh salmon represents the single greatest threat to the Alaska salmon market.

A significant problem is the fact that canned salmon production represents 59 percent of all of Alaska salmon sold in retail markets. U.S. per capita consumption of canned salmon declined 60 percent from 1980 to 1989, at the same time that harvests of pink salmon--the majority of which is canned--increased approximately 50 percent.

Analysts who are critical of ASMI's marketing programs maintain that the "generic" approach promotes all salmon, regardless of origin, because Alaska products are not clearly identified in the market. They argue that without brand identification and a quality assurance program to guarantee that Alaska salmon is superior, generic marketing may actually be helping Alaska's competitors.

LABELING OF ALASKA SALMON

A recent *Consumer Reports* article attacking the quality of seafood sold in the United States has caused considerable concern within the Alaska fishing industry. The article illustrates the problem of insufficient labeling of seafood products when sold in retail markets. Alaska does have a statute that requires that any farmed salmon sold in the state must be labeled that it is farmed and is from outside Alaska. The Alaska State Legislature recently requested the Alaska delegation to introduce federal legislation requiring the labeling of all seafood products sold in the United States.

THE SALMON STRATEGY TASK FORCE RECOMMENDATIONS

The Salmon Strategy Task Force finalized its recommendations on January 24, 1992. These included:

Recommendations for Immediate Action. 1) ASMI should develop a budget and strategy for selling the existing inventory surplus of Alaska salmon; 2) processors and fishermen should initiate price negotiations early; 3) The University of Alaska, DCED, and ADF&G should provide the best possible information to fishermen regarding world salmon markets; 4) DCED should review Prince William Sound processing capacity; 5) DCED and the Alaska Commercial Fishing and Agriculture Bank (CFAB) should provide loan extensions as needed.

Mid-Range Recommendations. The mid-range recommendations include actions for product and market development, salmon quality, and marketing, and a review of ASMI's role.

Long-Term Recommendations. The long-term recommendations include the development of a strategic plan to help strengthen the fishing industry and its support sector.

ASMI'S SALMON RECOVERY PROGRAM

One of the recommendations of the Salmon Strategy Task Force is to support ASMI's Salmon Recovery Proposal. According to an ASMI briefing paper, the ***goal*** of the Salmon Recovery Program is to increase annual per capita U.S. salmon consumption from 1 to 1.5 pounds. The ***cost*** of the proposal is $10 million annually for five years, totalling $50 million. Senator Jones has introduced legislation to appropriate $10 million to ASMI for domestic salmon marketing efforts during Fiscal Years 92 and 93.

ALTERNATIVE PROPOSALS TO INCREASE MARKETING EFFORTS

Proposed Changes to Alaska Statutes:

A number of pieces of legislation have been introduced to address the salmon marketing problem. The general intent of the legislation is to provide funding for the immediate increased promotion of Alaska salmon and to increase the voice of fishermen in those marketing efforts either through changes to ASMI or creation of a new salmon marketing association. Funding for increased marketing efforts would be provided through temporary marketing assessments.

- Representative Gene Kubina has proposed legislation to create six regional salmon marketing committees and the Alaska State Salmon Marketing Association. Two fishermen from each committee would sit on the association. Funding for marketing efforts would be provided through a 1 percent marketing tax on value of salmon landed.

- Representative Dave Choquette introduced legislation that would expand ASMI's statutes to allow for targeted development of Alaska salmon markets and product development.

- Representative Bill Hudson introduced legislation that would impose a temporary one percent (1%) marketing tax on the value of salmon landed and increase the ASMI Board of Directors by two positions that must be filled by commercial fishermen.

•Senator Dick Eliason introduced a bill that would establish a temporary one percent (1%) salmon marketing tax and a committee within ASMI to provide fishermen with control over how the funds would be expended.

•Representative Cliff Davidson and Senator Fred Zharoff have introduced legislation that would endow the Alaska Fisheries Development Foundation to fund fisheries development research projects.

Development of a Salmon Marketing Council

Under the federal Seafood Promotion Act of 1986, after rigorous fisherman and processor review and approval, a salmon marketing council could be developed to increase the U.S. marketing efforts of salmon.

Marketing Efforts by Groups Such as PWSAC

Recognizing the need to develop markets for their very successful salmon hatchery production program, PWSAC has a Product Development Strategy. In the short-run PWSAC would like to pre-sell all 1992 cost-recovery fish by January 1992, ensure the utilization of all cost-recovery fish, and negotiate one-to-three year contracts for the sale of fish. ***The primary marketing obstacle identified by PWSAC is processing capacity for frozen fish.***

OPTIONS FOR POSSIBLE CONSIDERATION:

•Review of the state's role in the marketing of Alaska seafood, and salmon in particular, including a review of the ASMI program.

•Given that ASMI's generic approach to marketing was statutorily established prior to the significant increase in world farmed-salmon production, expansion of ASMI's statutes to reflect changes in world salmon markets. In particular, ASMI's marketing efforts could be expanded to include new product and market development, including targeting and distribution of salmon products at the wholesale and retail levels.

•Providing funding for ASMI's Salmon Recovery Proposal.

•Supporting the Salmon Strategy Task Force's recommendation that ADF&G review the impact of fisheries management practices on fish quality, especially related to the quality of cost-recovery fish harvested in terminal areas.

•Conducting a comprehensive analysis of ASMI privatization including whether 1) privatization would provide greater flexibility and possibly more effective marketing and 2) privatization would result in the loss of control over marketing activities to the detriment of Alaska and Alaska fishermen.

•Encouragement of the development of a national salmon marketing council.

CHAPTER XI.

OTHER ISSUES

A. HATCHERIES AS ENVIRONMENTAL MITIGATION

Hatcheries are sometimes built with the goal of mitigating environmental damage caused by such things as construction of dams and other projects, and water pollution. While the goal of environmental mitigation has been a driving force in salmon hatchery development in the Pacific Northwest, Alaska's hatchery system has been developed for fisheries enhancement, mitigation of the effects of overfishing, and offsetting reductions in fishing quotas due to treaty provisions.

However, Alaska law does contain several provisions regarding use of fisheries enhancement projects as a means of mitigating environmental damage. The primary one is the ***Fishways Act*** which can require the builder of a dam or other obstruction across a stream containing fish to provide and maintain a fishway or other device for fish passage; pay a lump sum to the state Fish and Game Fund; convey land and fund the construction, maintenance and operation of a fish hatchery, rearing ponds, buildings and other facilities; or agree to provide money to expand, maintain, and operate additional facilities at existing hatcheries.

Since passage of the Fishways Act of 1959, other environmental protection laws and regulations pertaining to fish habitat have been enacted setting water quality standards and regulating the types, locations, and designs of development projects. The *Anadromous Fish Act* (AS 16.05.870) is especially important as it spells out requirements for pre-approval of any projects which could potentially impact fish or fish habitat.

The construction of a fishway or spawning channel is frequently required in Alaska. ***Although the state rarely imposes the other provisions of the Fishways Act which require construction of hatcheries or monetary compensation, those provisions encourage modifications in project plans that will avoid the actual stream obstruction and serious risk to fish that would activate the very expensive mitigation measures.***

In other states and countries, where environmental protection measures have not prevented a project from damaging fish habitat, hatcheries have indeed provided enough fish to avoid the total destruction of fisheries. However, ***there is growing concern that when natural stocks decline to very low levels, hatcheries may actually cause the further depletion, even to the point of the extinction of natural stocks.*** These concerns are further addressed in Chapter VII of this report, Biological Issues.

It is important to consider how the federal Endangered Species Act (ESA) relates to the use of hatcheries for mitigating environmental damage. In the state of Washington, where hatcheries have been used extensively with mitigation as a goal, it is apparent that even very productive hatcheries cannot prevent the federal government from invoking the provisions of the ESA if wild stocks are determined to be endangered. In 1991 several Washington salmon stocks were listed as ***endangered*** or ***threatened*** by the National Marine Fisheries Service, which has jurisdiction over endangered species. Decisions regarding two other stocks are pending.

The Washington Legislature is considering legislation to address ESA salmon issues. These include salmon habitat, wild stock protection, tagging of hatchery stocks, and defining ***species*** or ***stocks*** of fish.

Declaration of a salmon stock as ***endangered*** can have enormous impacts on fisheries and local and state economies, even those which are far from the spawning area of that stock.

The ESA sets the parameters within which hatcheries can be used to mitigate environmental damage. ***Because of the Act, efforts to mitigate damage through hatcheries can result in the closure of fisheries if the hatcheries contribute to the further depletion of a stock.*** A preservation of wild stocks focus is necessary to avoid the impacts of the strict protective measures which can be imposed under the ESA.

In some instances, such as where dams have irreparably destroyed the habitat of a particular salmon stock, a carefully designed hatchery or other enhancement project may represent the only hope for survival of that stock. Thus, ***while the ESA serves as a warning against hatchery development that could deplete natural stocks, it also recognizes the potential usefulness of hatcheries in the ultimate survival of an endangered stock.***

The use of hatcheries to mitigate damage must be employed with the understanding that salmon which have been provided ***free*** and perpetually by nature, are being replaced by salmon that will initially and continuously cost money to produce. This cost, along with the possibility that hatcheries may harm remaining natural stocks, must be realistically evaluated in each case.

OPTIONS FOR POSSIBLE CONSIDERATION:

- Re-evaluation of the state Fishways Act and Anadromous Fish Act in light of the provisions of the federal Endangered Species Act.

- Evaluation of whether specific consideration of potential consequences of the ESA should be required before the commissioner can pre-approve a project (under the Anadromous Fish Act) or approve of mitigation measures (under the Fishways Act).

- Tracking the current and upcoming debate and actions occurring in other areas, particularly the state of Washington, regarding environmental mitigation of damage to fish habitat. Determine the relevance of findings to Alaska.

B. ROLE OF HATCHERIES IN INTERNATIONAL TREATIES

U.S./Canada Pacific Salmon Treaty

After many years of negotiation, the United States and Canada signed a treaty in 1985 regarding the interception of Pacific Salmon. ***The primary goals of the treaty were to protect and rebuild depleted salmon stocks, assure the long-term viability of salmon stocks within the jurisdiction of the treaty, and bring equity by providing that each country receive benefits from the fisheries which are roughly commensurate with their respective production of salmon in the treaty area.*** Fisheries management guidelines for the region covered by the treaty

(Oregon, Idaho, Washington, Southeast Alaska and British Columbia, Canada) are provided in a series of annexes to the treaty which are renegotiated on a regular basis. The annexes establish baseline-harvest numbers for many areas but the authority over allocation of fish between user groups within specific areas is maintained by the respective states, provinces, and tribes.

In 1983, a tentative treaty agreement was reached, but Alaska fishing groups found the provisions to be unacceptable and the treaty was not signed. Concerns centered on the concessions to be made by Alaska in the treaty. The reduction in the level of chinook salmon that Alaska trollers would be allowed to harvest was especially controversial. Key to the eventual acceptance of the treaty by Alaska was an offer by the U. S. federal government to give Alaska approximately $20 million for salmon enhancement to help offset impacts of the treaty. ***This mitigation money was not part of the negotiated multi-party treaty. It was a separate agreement between Alaska and the U.S. federal government, offered fundamentally as an incentive to Alaska to agree to the treaty.***

Under the terms of the treaty, Alaska hatchery fish caught after 1985 were not to be counted as part of the negotiated quota of allowable catch, and could be taken in addition to that quota. ***While everyone involved seemed to understand that the federal mitigation money was intended to replace what the Southeast Alaska fisheries groups had lost in the treaty settlement, the specific purpose of the money was not clearly spelled out at the time of the agreement. This lack of clarity and documentation has caused considerable confusion and controversy over the years.*** Initially many fishermen and the Alaska Department of Fish and Game believed that the money was to go towards an annual production goal of 100,000 chinook for the trollers, 1,000,000 chum for the seiners, and 20,000 to 40,000 sockeye for the gillnetters. Although the state appears to have honored the general purpose of salmon enhancement with the mitigation funds, it has not spent the funds in accordance with the most widely-held understanding of the intent for those funds.

The governments of Washington and Oregon have not allocated any funds specifically for enhancement projects related to this treaty. British Columbia instigated a treaty-related enhancement project on the Fraser River, but has since run out of funds to continue it.

A computer model was developed to calculate the allowable catch of each of the parties to the treaty, and to update that quota annually. Information about hatchery-bred fish indicates the health and numbers of the natural stocks for the computer model.

Alaska fishermen agreed to the Pacific Salmon Treaty, despite the sacrifices it required in their allowable catch levels, because of guarantees that increased hatchery efforts and production would result in increases in these allowable catches. For reasons which may have included misunderstandings of original intentions, a lack of clear binding language in the treaty, or ineffectual negotiating at annual sessions to update agreements and re-negotiate treaty annexes, many fishermen are dissatisfied with what the treaty has accomplished. Hatchery efforts funded with mitigation funds have indeed produced salmon, but fishermen, particularly trollers, do not believe they have received the benefits they were promised from that production.

While fishermen may not have seen the specific benefits they had hoped for in the form of increased allowable catches, the state hatchery program has received more funding than it would have had without mitigation funds, and the Alaska Department of Fish and Game has been able to use mitigation money to supplement their budget for projects and personnel which are related directly or indirectly to the goals of the treaty.

Yukon River Treaty

Salmon restoration and enhancement have been discussed as part of the United States/Canada Yukon River salmon negotiations since 1985. The goal of the United States in these talks has been to ensure the long-term health of salmon stocks and assure consistency in harvest for both countries of the Yukon River system.

The U.S. proposal, agreed to by the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Yukon River Drainage Fisheries Association, includes:

- Restoration projects to increase production of transboundary stocks that do not respond to harvest management.
- Fisheries enhancement projects where appropriate, consistent with state genetics and disease policies.
- Planning strategies to allocate and manage restored stocks before the program starts.
- Operational plans for enhancement projects, with protection of wild stock genetic diversity as the paramount concern.

The FRED Division has developed a Yukon Fisheries Enhancement Initiative with its key components being overall design and planning work, expansion of the Clear Hatchery near Nenana, Alaska, and rehabilitation of natural salmon production. The cost of this initiative is estimated to be more than $13 million.

Fishermen along the Yukon are primarily interested in bringing natural stocks back to historic levels. Rehabilitation projects and protection of wild stocks are their top priorities.

Some biologists believe that supplemental hatchery production on the Yukon River will only further complicate mixed stock fisheries management, and risk the reduction or elimination of small wild stocks. They are also concerned about the risks of genetic dilution of natural stocks, reduced stock fitness, and disease. The Alaska Chapter of the American Fisheries Society is currently considering a resolution to support setting aside the Yukon River drainage as a Wild Stock Management Zone (hatchery-free).

OPTIONS FOR POSSIBLE CONSIDERATION:

- Evaluation of the effectiveness of enhancement as an international treaty component.
- Requirement of a comprehensive feasibility and benefit-cost analysis of enhancement in treaty proposals prior to treaty agreements. Because state agency budgets tend to "benefit" from enhancement agreements, consider contracting these reviews to disinterested third parties.
- Development of an auditing mechanism to determine if enhancement benefits are realized by fishermen impacted by treaty agreements.

C. ENVIRONMENTAL REGULATIONS RELATED TO HATCHERIES

There are a number of environmental considerations involved in the siting, construction, and operation of hatcheries. In addition to the biological and genetics matters associated with the fish and eggs themselves, other environmental protection issues include the siting of hatcheries, their water usage requirements, the effluent they produce, and the disposal of fish carcasses (of broodstock or fish which are excess or diseased).

While Alaska law does not contain many environmental statutes and regulations which are specific to hatcheries, it does have a number of general provisions regarding protection of the environment which come into play during the planning, development, and operation of hatcheries. These include the Anadromous Fish Act which controls and requires approval for any construction projects or other action which might affect "rivers, lakes or streams or parts of them that are important for the spawning, rearing or migration of anadromous fish"; the Fishways Act which requires the construction of a fishway or hatchery construction if a dam or other obstruction will impact the passage of fish (see section on environmental mitigation); plus many laws and regulations about water quality and pollution, protection of genetic purity of fish stocks (see chapter on biology and genetics), fish health inspections (AS 16.05.868), and siting of hatcheries.

A significant environmental protection issue associated with hatcheries is the discharge of waste into public waters. The procedures and permits required of hatchery operators in this regard have been confusing and in a state of flux for several years, but now seem to be headed for some resolution and streamlining. Part of the confusion stems from the fact that both the Federal Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (DEC) have some jurisdiction in this matter.

It appears that both EPA and DEC have been fairly lenient about requiring the various waste disposal permits that have technically been required. Even so, there have been very few complaints or problems regarding hatchery impacts on water. Hatcheries do discharge effluent which may contain organic fish waste, as well as some disinfectants or other chemicals used to prevent or control disease, but generally they discharge only very small amounts of pollutants. ***However, recent developments necessitating the disposal of large numbers of fish carcasses have raised the subject of waste disposal monitoring.*** These developments include 1) a joint decision by the Federal Food and Drug Administration and the Alaska DEC in 1990 that the carcasses of hatchery broodstock (mature fish used for the taking of eggs and milt) should no longer be sold for canning for human consumption, and 2) the recent huge returns of fish, particularly in Prince William Sound, which have resulted in the inability of hatcheries to sell large numbers of their "cost-recovery fish." Both of these developments demonstrated the need to establish procedures for hatcheries to dispose of large numbers of fish carcasses.

The federal Clean Water Act prohibits the point source discharge of pollutants by any person into the waters of the United States, except in compliance with the terms and conditions of a National Pollutant Discharge Elimination System (NPDES) permit issued by EPA. ***Under federal regulations, discharges of concentrated aquatic animal production facilities require NPDES permits.*** The regulations identify the annual level of production and feeding of a facility to require an NPDES permit, but also leaves to the EPA the discretion to require the permit of any facility it deems to be a significant contributor of pollutants.

In a January 1991 letter to all hatchery operators in Alaska, the EPA explained these requirements and noted that even if the regular operations of a hatchery did not fall under the NPDES permit guidelines, a permit would be required if the operator planned to dispose of fish carcasses in the water. It further explained that fish processors who dispose of greater than 1000 pounds of waste per day may be covered by the "Authorization to Discharge Under the National Pollutant Discharge Elimination System for Alaska Seafood Processors" general permit (the GP), and that for the purposes of carcass disposal, the EPA was willing to cover hatcheries under the same GP. The letter explained that this "greatly simplifies the administrative process and reduces the time frame in which a NPDES permit is obtained." The letter ended by asking that hatchery operators notify the EPA of their plans for fish waste disposal prior to the 1991 season.

In April 1991, the Anchorage EPA office sent another letter to all hatchery operators stating that many of the responses they had received to the January letter had raised a number of issues to be considered. Since resolving these issues is likely to take some time, the EPA established an interim policy to allow the hatcheries to operate and to provide for environmental protection in the interim period. The letter goes on to lay out three conditions under which the disposal of whole fish carcasses would be permissible. The criteria include 1) the depth of water where discharge may occur, 2) a requirement of pre-approval of the discharge site by EPA, and 3) a requirement that the skipper of the discharge vessel maintain records of each discharge occurrence, its location, and the date.

Alaska is currently operating under the interim criteria spelled out in the EPA's April 1991 letter. Many hatcheries, particularly state-run hatcheries, have submitted their applications for the NPDES permits to EPA. However, the EPA considers these state hatcheries to be minor dischargers and has agreed to turn over to the state the authority for permitting and monitoring of their waste discharge. EPA has forwarded copies to DEC of all the NPDES permit applications they have received from hatchery operators, and has asked that the state implement a hatchery waste permitting process.

Under current state law, hatchery effluent is covered under the DEC waste disposal permit statute (AS 46.03.100). DEC reports that few hatcheries apply for this permit but DEC has been comfortable with the situation, and has made permitting hatcheries a low priority, since hatcheries generally handle effluent in a manner that maintains acceptable water quality standards.

DEC has drafted a "General Waste Disposal Permit for Fish Hatchery Discharges," to be issued to hatcheries to fulfill the state waste permit requirement. Once the state has officially adopted this permit, hatchery operators will obtain waste permits only from DEC under the operating agreement between DEC and EPA. This state permit would in effect fulfill both state and federal waste permit requirements. This centralization and consolidation should simplify the permitting and reporting processes for hatchery operators, ensure more compliance, and improve uniformity in the monitoring and information available.

The state's draft permit contains a provision stating that the permit is effective until a specified date, "unless superseded before that time by a state certified EPA permit." This statement is included in order to provide for any potential situation in which EPA might require an NPDES permit, which would then supersede the state permit. The draft permit contains specific language regarding discharges, carcass disposal, drugs, chemicals and medications, operational, monitoring and reporting requirements, and so on. It lacks specific language to address disposal of diseased fish or eggs but other general provisions

in the permit, or language in the hatchery operational permits from ADF&G may sufficiently provide for that circumstance.

Despite the lack of clear regulations and enforcement, and the confusion over federal and state requirements, there have been very few problems reported regarding such things as hatchery waste disposal in Alaska. Even during the situation in Prince William Sound during the 1991 season when processors would not buy many of the hatchery fish that later had to be dumped, both DEC and EPA report that their agencies worked very closely with the hatcheries to devise and carry out plans for large-scale carcass disposals, and things went quite smoothly. The Alaska Departments of Fish and Game and Environmental Conservation, and the federal Environmental Protection Agency, generally believe that for this aspect of environmental protection, current laws are adequate.

Other environmental issues related to hatcheries are covered in this report in the chapters on Biology and Genetics, Planning and Permitting, and Environmental Mitigation. The topics covered in those chapters appear to raise more serious and complex environmental concerns and questions, and need more extensive review, than the more direct environmental protection regulations discussed here.

OPTIONS FOR POSSIBLE CONSIDERATION:

- Encouraging DEC and EPA to coordinate waste disposal permitting requirements to the extent possible.

- Ensuring that adequate direction is provided in regulation regarding the disposal of any diseased hatchery fish.

D. USE OF ENHANCEMENT AS TOOL FOR ECONOMIC DEVELOPMENT

The state's financial support of hatchery production and other enhancement efforts has focused primarily on Southeast Alaska, Prince William Sound, Cook Inlet, and Kodiak. However, fisheries enhancement is increasingly being viewed in other rural areas of the state as a tool for local economic development. Potential benefits from enhancement activities include the increased number of jobs, the potential for attracting processors or other value-added businesses to the region, as well as increased harvest for fishermen.

In some cases, the regions interested in enhancement for economic development have small, localized commercial fisheries based on local stocks of fish which in many cases are depleted, and which local residents would like to see replenished. In other areas of the state, residents are interested in the potential of creating entirely new fisheries. For many rural areas of the state, fisheries development represents the most viable -- and in many cases, perhaps the only -- opportunity for economic development.

Some of the projects being discussed and planned include:

- ***Sikusuilaq Springs Hatchery.*** Residents of Kotzebue Sound are meeting with a planning core group that includes ADF&G, the National Park Service, and the Northwest Arctic Borough to develop increased production proposals as part of a basic management plan for this small state hatchery located on the Noatak River.

A regional aquaculture association will probably be established in 1992, and a comprehensive salmon plan for the region should be completed in 1993.

- ***Yukon Enhancement Initiative.*** Residents of the Yukon River area are organizing an aquaculture association and seeking legislative funding so that regional enhancement planning can be reactivated and expanded. A draft comprehensive salmon plan could be completed by the fall of 1992. Enhancement efforts are also being considered as part of the U.S./Canada Yukon River treaty negotiations.

- ***Western Alaska.*** Feasibility studies are underway for potential fisheries enhancement projects in the Nelson Island/Chevak area. Local villages and the Bering Sea Fishermen's Association are contributing to the effort, with additional funding requested from the Bureau of Indian Affairs and the National Coastal Resources Research and Development Institute. Although there are no natural runs currently, fishermen in this region are interested in developing salmon returns in streams that are ice-free year round.

- ***Norton Sound Economic Development Initiative.*** Under this proposal, developed in February 1991, FRED Division is providing technical support in developing a fisheries enhancement program at Elim, including stream rehabilitation and a possible hatchery.

- ***Port Graham Salmon Development Project.*** The goal of this pink salmon development project is to create a local village economy based on high quality value-added salmon products. The goal of the hatchery is to produce fish for the processing plant.

- ***Kake Nonprofit Fisheries Corporation.*** This southeast Alaska community proposes to expand its Gunnuk Creek Hatchery with the express goal of contributing to the economic development of the village. Kake has historically been a fishing village, but in recent years saw logging replace fishing as the major form of employment in the community. Logging is now on the decline, and the village wishes to expand its fishing industry.

It should be noted that these enhancement proposals are subject to the same concerns and conflicts generated by enhancement projects elsewhere in the state. The continued interest in enhancement and in hatcheries however, should be a prime reason for addressing the issues highlighted in other chapters.

OPTIONS FOR POSSIBLE CONSIDERATION:

- Evaluation of how much weight to give the need for local economic development when considering a new hatchery permit application.

E. IMPORTANCE OF HATCHERIES TO SPORT FISH

While the Senate Special Committee on Domestic and International Commercial Fisheries initiated the Legislative Review of Alaska's Fisheries Enhancement Program to evaluate the contribution of the program to commercial salmon fisheries, the role of the program in

sport fisheries warrants attention. This section summarizes information provided by a FRED Division report attached to this chapter.

Many projects in the statewide enhancement program produce fish, primarily chinook, coho, pink, sockeye, and chum salmon, steelhead, rainbow trout, grayling, and Arctic char, that are highly valued by sports fishermen. Fish targeted for sport fisheries are released in over 350 locations around the state. Many of the projects operated by the FRED Division are entirely dedicated to improving recreational fishing opportunities.

Sport fishing has been growing in Alaska as evidenced by the increase in the number of licensed anglers from 1977 (200,000 total license sales) to 1990 (425,000 total license sales). This dramatic increase in sport fishing participation can be attributed to many factors, including changes in population, real per capita income of residents and non-resident visitors, and the opportunities for quality sport fishing experiences. A major component of a high quality fishing experience, especially for resident anglers, is the probability of catching a fish during the fishing experience (called the harvest per angler day). According to ADF&G, the economic value of fishing experiences are directly related to higher harvests per angler day. The statewide enhancement program has been a key factor in maintaining and augmenting these harvests despite increasing fishing effort.

The statewide salmon enhancement program has grown to the point of supporting a significant portion of total sport and commercial fishing harvests. For example, total 1990 recreational harvests of salmon, trout, grayling, Arctic char, and steelhead was approximately 1.3 million fish. The enhancement program is estimated to have contributed 28 percent of the harvest. State facilities provided 73 percent of the enhanced harvest while PNPs provided 27 percent.

According to recent studies completed by the ADF&G, sport fishing provides significant economic benefits in Alaska.

OPTIONS FOR POSSIBLE CONSIDERATION:

- If the Legislature initiates an on-going enh[illegible] program review similar to Canada's, include sport as well as comme[illegible]pects of the program in order to achieve a more comprehensive pe[illegible]
- Increasing the sport fish license fees to pa[illegible]n of the enhancement projects that benefit recreational fisheries.
- Encouraging Congress to increase Dingle-Jo[illegible] funds provided to Alaska to support increasing sport fishery enhancement and rehabilitation efforts.

F. CONTRIBUTION TO SUBSISTENCE FISH

In addition to commercial and sport fisheries, there is increasing demand for the state's enhancement program to provide fish for subsistence and personal use fisheries.

Sikusuilaq Hatchery on the Noatak River provides a substantial number of chum salmon for subsistence gillnets in Kotzebue Sound and on the Noatak. Subsistence users in southern Southeast harvested 5,000 sockeye salmon produced from the McDonald Lake

fertilization project. Production from the Klawock Hatchery, located on Prince of Wales Island, is extensively used by subsistence fishermen.

OPTIONS FOR POSSIBLE CONSIDERATION:

- If the Legislature initiates an on-going enhancement program review similar to Canada's, include subsistence and personal use as well as commercial and sport fishing aspects of the program in order to achieve a more comprehensive performance report.

G. ENHANCEMENT OF OTHER SPECIES

In addition to its work on such sport fish species as grayling, rainbow trout, and arctic char, FRED Division is also exploring king crab rehabilitation in a cooperative effort with Kodiak fishermen and the Kodiak Island Borough. Additional funding is being requested from the Alaska Science and Technology Foundation in order to examine shellfish rehabilitation projects in other countries and states.

Currently, research and production of non-salmon species is done almost entirely by the FRED Division. If private entities became interested in taking on such efforts, statutory changes would be required since the entire PNP program is based on salmon production.

OPTIONS FOR POSSIBLE CONSIDERATION:

- Amending statutes to allow the private sector to enhance non-salmon species.

- Taking action to encourage the production of non-salmon species.

This page intentionally left blank