

ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILE 8672
1802 SCOMM 74: SEN. SPEC. COMM. ON DOMESTIC & INTL. FISH., 1991-92...

$$V1 = \$.17 \times 1,224,666 \times 3 \text{ lbs} = \$ 624,580 \text{ net worth}$$

$$r = 51,260,000$$

$$B1 = \$.0122 = \text{Benefit factor '84 pinks per fish released.}$$

$$C/B = \$.802 \text{ total Cost/Benefit '84 pinks or}$$

$$\frac{\$501,395 \text{ out}}{\$624,580 \text{ in}} \text{ or a 24\% gain } (\$.80 \text{ spent per } \$1 \text{ gained})$$

SCENARIO #3

'84 pinks:

$$\begin{aligned} \text{AFI} = & \text{Egg Take (3,470 hrs)} + \text{Incubation (1,650 hrs)} + \text{Rearing (378 hrs)} + \\ & \text{harvest (160 hrs)} + \text{Mark Recovery (100 hrs)} = 5,758 \text{ hours} \times \$11.75/\text{hour} = \\ & \$67,657; + 3,536 \text{ Staff hrs.} \times \$18/\text{hr} = \$63,648; + \$25,214 \text{ (materials)} + \\ & \$20,740 \text{ (feed)} \end{aligned}$$

$$\text{AFI} = \$177,259$$

$$r = 51,260,000$$

$$C = \$.00346$$

$$B = \$.0122$$

$$C/B = .283 \text{ or } \frac{\$624,580 \text{ in}}{\$177,259 \text{ out}} = 252\% \text{ gain expenses vs. return}$$

or \$.28 spent per dollar gained.

If a normal 5% return would have been realized,

$$\text{then } B = \$.0249 \text{ and } C/B + .139 \text{ or } \frac{\$1,275,000 \text{ in}}{\$ 177,259 \text{ out}} = 619\% \text{ gain}$$

or \$.14 spent per dollar gained.

CORRECTION

**THIS DOCUMENT
HAS BEEN REPHOTOGRAPHED
TO ASSURE LEGIBILITY**

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SCENARIO #3

'83 silvers:

AFI = 749 seasonal hrs x \$10/hr = \$7,490 + 416 Staff hrs x \$18/hr = \$7,488 +
feed cost \$5,168

AFI = \$20,146

r = \$94,700

$C^3 = \$.2127$ = Cost factor '83 silvers
per fish released.

V = \$.90/lb x 4,241 adults x 9 lbs = \$34,355

$B^3 = \$.363$ Benefit factor per fish released.

$C^3/B^3 = .586$ or $\frac{\$34,355 \text{ in}}{\$20,146 \text{ out}} = 71\% \text{ gain expense/return}$
\$.59 spent per dollar gained.

ADDENDUM

Notes: Hatchery Staff time est. 85% on pinks; 10% silvers and 5% chums FY '83-'85
FY'87 forward, will be 70% pinks, 25% silvers and 5% chums.

So for '83, two people x 260 days per year = 4,160 hrs x .85% = 3,536 man hrs.

For figuring Total Time (TT), divide seasonal hours by % Staff time
estimate for that species to get a good approximation of Total seasonal
hours, then add to Total Staff hours. For Species Time, add actual seasonal
hours to % of total Staff hours for that species.

March 3, 1992
Senator Dick Eliason
Chairman, Senate Special Committee on Domestic and
International Fisheries
State Capital
Juneau, Alaska 99801-1182

Dear Senator Eliason,

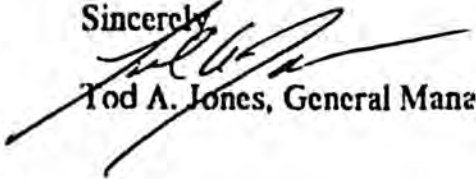
Please find enclosed testimony from my board of directors on the Draft Report on the Alaskan Hatchery Program. I, like my board members, am very concerned by the recent move to allow the Regional Aquaculture Associations to defer loan payments to the ten year limit. If these moneys are the majority of funds in the revolving loan fund, then the independent hatcheries that have much less political power, are going to be left without any operating moneys to get them up to self supporting status.

I would like to have someone assure me that this liberalization would not put us out of business. I and my wife have over the last twelve years had to personally invest over \$50,000 to keep our hatchery operating, plus use my home to collateralize a loan for the hatchery. If this action results in us being disallowed any additional loans, then not only does the State have to take over our facility, but I am personally held accountable, which no other hatchery operator has to face. I lose my \$50,000 and possibly my families home because the Regional Association wants to maintain a \$1.4 million carry over.

We, the independents have been painted as no friend of the fishermen for a decade now and it is getting tiring. Not only do we not participate in the 3% moneys, we are limited on loan amounts, restricted in broodstock development and now faced with possible closure just when we are within a year or two of full production and self sufficiency. We are attempting to do the very thing the Regionals are doing, put fish into the common property fishery! Its time the legislature looked at this with some degree of fairness and equity and not allow the circumstances of low fish prices, which will improve, to destroy a positive and successful program.

I hope your committee can find a solution that will allow the relief for the regional associations while not jeopardizing the independent operators. We would like to be considered citizens too! Please make available to the other members of the committee this letter and the enclosed testimony from my Board, who, as it states are all commercial fishermen. thank you.

Sincerely,



Tod A. Jones, General Manager



Alaska Aquaculture

Incorporated
P.O. BOX 830 WRANGELL, ALASKA 99929
(907) 874-2250

SENATE SPECIAL COMMITTEE ON DOMESTIC AND INTERNATIONAL FISHERIES

FEBRUARY 25, 1992

Gentlemen,

Having not been able to testify during your teleconference, we would like to do so in writing at this time. We will address several issues that may or may not be easily categorized in your February 10 Draft Report, but are germane to the Alaskan Hatchery Program. Thank you first for providing this opportunity.

Alaska Aquaculture, Inc. is an independent PNP, (not a "Mom and Pop") operator, with a board of directors of licensed commercial fishermen that represents all the gear groups of Southeast Alaska. To our knowledge we are the only all-fishermen board. In behalf of our organization the following testimony is proffered.

1) The Draft report covered many valid points. However, the proposed ideas for action have not sufficiently recognized that the mission or mandate for the hatcheries is being accomplished, i.e. to successfully produce salmon to insure an adequate supply for common property harvest. They were not charged with suppressing the wild stocks to maintain price levels. Therefore, rather than focus on restricting production, the focus should be on recapturing market share by 1) improving the quality of product produced and 2) broadening the market by innovative product development. The inertia extant in the processing industry that wants more money for advertising Alaskan canned salmon in overseas markets, is what needs to move into the 20th Century before we see the 21st New products that take advantage of the potential of pinks and chum need developmental moneys that the State could well afford to invest, rather than paying for canned salmon commercials in Japan and Taiwan.

2) As fishermen, we are not interested in micro-managing fish hatcheries, nor are we interested in seeing multi-million dollar facilities closed down prior to their being able to reach full production and make a contribution to the fishery. They should be encouraged to work with processors to develop better products, especially for pinks and chum, so that demand will increase. This may require novel and interesting new methods, and a strong partnership between government and the private sector. This should not be limited to the State and the Regional Associations. The Independents are a valuable part of the program and should not be treated as third class citizens any longer.

3) If the administration of the loan program is liberalized through legislation or administration, the financial support of independent PNPs must be recognized and provided for in that legislation, or its investment and the best interest of the State and user groups will be lost.

Under the present Hatchery Loan Program scenario, the PNPs have not shared in the millions of dollars of 3% moneys which is shared by the regional corporations, nor the millions of dollars of Federal Mitigation Funds. Given "most favored organization" status by the State

agencies, the Regional Aquaculture Associations are also able to generate funds through cost recovery harvest of returning fish. The sole source of funding for PNP operations is the cost recovery harvest! When production development is protracted over several life cycles of the fish being released, the disparity between PNPs and Regional Associations becomes more glaring. Because of this disparity PNP funding before reaching full production depends upon the funds in the revolving loan fund. Legislation providing forgiveness or additional deferment of loan payments by the major borrowers, i.e. the Regional Corporations, without recognizing and compensating for those losses to the revolving loan fund, would effectively eliminate the PNP segment of the State enhancement program.

4) We strongly endorse the idea of developing a Statewide set of goals and objectives for the enhancement programs. All segments of the producers should be allowed to give input, and it should have an aggressive forward looking posture.

5) We are concerned about the suggestion of eliminating the use of remote release sites. The argument against them is at best theoretical while their use is and has been, very effective in placing the right species and run timing in the right place for the benefit of the user groups and the hatchery operator. A central incubation facility can become much more cost effective and beneficial to the user groups by using remote release sites. Concerns about straying and deleterious genetics are based on hypothetical constructs yet to be substantiated.

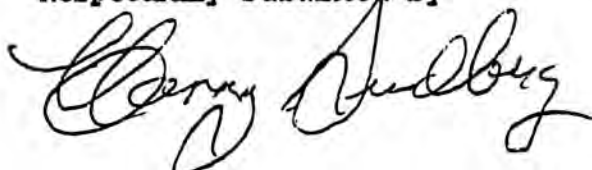
6) Managing for broodstock and cost recovery seems to have evolved into a hot potato where no one wants to make a decision for fear of upsetting one group or another. Ultimately, one needs to ask if loaning moneys to a hatchery operator, whether PNP or Regional Organization is based on the assumption that debt service would be met by cost recovery harvest, (and this is what the State has done) Then doesn't it follow that the intent of the State is for broodstock and cost recovery to be managed for? No operator can afford to continue operating if it doesn't have broodstock and independents cannot operate without cost recovery as it is their sole source of revenue! This issue must be addressed in an equitable manner that reflects a mutually beneficial relationship between the State and the private sector.

7) Several of the biological/genetics/management issues raised result in the possibilities of monitoring, surveying, identifying, etc. All of these action words come with price tags. Since we've mentioned tags, most of the problems outlined from determining the extent of and consequences of straying, to identifying genetic drift, require some form of hatchery stock identification as opposed to wild stock. Tagging costs money and tag recovery and analysis even more. Will we cease hatchery production until "concerned scientists" have resolved their concerns, or will we proceed and fund mass marking and recovery efforts? The 1985 genetics guidelines already mandates identification of areas where stocks are unique or of special "significance". Regional Comprehensive plans, which the public funded to be created and updated, talks of "sensitive zones". In reality little of this work has been done and little resources have been allocated for them to be done. Perhaps our biggest concern is not that the work isn't being done, but that decisions are being made using a policy that is

admittedly vague and inconsistent with animal genetics upon which it claims to draw reference. Even more disconcerting is that their application is applied unequally between State projects and PNP project proposals.

8) Our final comment is more philosophical than specific, but is of great concern: That there has developed an institutionalized dual class of citizenship between Regional Associations and Independent Hatchery operators, a direct result of poorly conceived legislation and the departmental regulation that political posture spawned. Those who have manipulated the fishing community to gain political advantage, have perpetuated the myth that independent operators are some how the enemy of the fishermen and that the Regional Associations, to which their three per cent moneys go are the only friends of the fleet. This fallacy breeds conflict, contention and disunity. We support any effort the legislature can take to move away from the perpetuation of this condition.

Respectfully Submitted by

A handwritten signature in cursive script, appearing to read "Harry Sundberg". The signature is written in dark ink and is positioned below the typed name.

Harry Sundberg, Sec/Treasurer
Alaska Aquaculture, Inc.

SOUTHEAST ALASKA SEINERS ASSOCIATION
P.O. BOX 9579
KETCHIKAN, ALASKA 99901
(907) 225-5156

March 9, 1992

Senator Dick Eliason, Chair
Senate Special Committee on
Domestic and International Fisheries
P.O. Box V
State Capitol
Juneau, Alaska 99811

Dear Dick,

In addition to the oral testimony given by Jim Bacon, President of Southeast Alaska Seiners (SEAS), I am submitting more detailed comments on behalf of SEAS. To assist in your review, I will address my comments to the list of possible options in the Executive Summary.

Wild Stock Priority

The top hatchery priority for SEAS is to seek statutory clarification on giving wild stocks preferential management treatment relative to hatchery raised fish.

Support:

Placing a wild stock priority into state statutes which clarifies Board of Fisheries requirement for hatchery broodstock and cost recovery stocks.

Rationale for Action:

- * The lack of statutory direction prevented the Board of Fisheries in 1991 from acting on a wild stock preference proposal for Southeast Alaska.
- * Legislative history indicates that legislative intent was to protect wild stocks.
- * In some regions of the state there already is serious concern for the negative impact of hatchery production on wild stocks.
- * UFA Board of Directors recently passed a motion supporting statutory clarification for a wild stock management priority which clearly identifies that the state has no obligation for assuring a hatchery's cost recovery.

Recommendation:

Add a new section to AS 16, Chapter 10, Article 8 which states:

Obligation for Management of Hatchery Stocks. In managing commercial and sport fisheries that involve hatchery raised fish, the department shall grant a preference to the protection and sustained yield of wild stocks. In managing for a wild stock preference the department recognizes an obligation to manage commercial and sport fisheries to return broodstock to the hatchery site in the same manner as it regulates fisheries to obtain a return to spawners to natural streams. While the department will not institute any irregular restriction on the traditional fisheries, it will strive for an escapement of spawners sufficient for stocking the hatchery. In managing for a wild stock preference, the department does not recognize any obligation to manage commercial and sport fisheries to return cost recovery stocks to the hatchery site. This however, does not prevent the Board of Fisheries from promulgating regulations at the request of regional non-profit associations to alter commercial and sport fisheries for a return of cost recovery stocks.

Hatchery Permitting

Another major concern of SEAS is to tighten up the permitting and funding programs for hatcheries.

Support:

As part of permit review and solicitation of state loans, adding new criteria to show public benefit, including marketability, a detailed cost/benefit analysis instead of a financial analysis, an indication of a 70% contribution to be made to the common property fishery, and ability to mark and recover fish. Institute a 10 year permit renewal requirement that would include the same criteria.

Rationale for Action:

* Regional hatchery associations have over time developed internal policy that reflects the criteria mentioned above. It would be sound state policy to extend this "check" to all hatcheries.

* UFA supports the Regional Planning Teams adopting a guideline of 70% contribution to common property fisheries in their evaluations of hatcheries.

* If all hatcheries had gone through this type of review when initially applying for a permit, much of this hatchery overview might have been unnecessary.

* With the potential risk of impacts on the state's common property fisheries, a mechanism for the timely revocation of a permit is necessary.

Biological Concerns

While legislators can not be expected to evaluate and assess the genetic health and biological diversity of wild stocks that have been co-existing with hatchery stocks, general policy and priority direction can be given to ADF&G and other research institutions. Given the experience in the State of Washington, more effort should be taken in Alaska to protect the biological health of wild stocks. To this end, SEAS supports these options listed in the Executive Summary:

* Evaluation of how well the current hatchery program protects wild salmon from possible negative effects of hatchery salmon.

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

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

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

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

Production Review

Given the results of last summer's pink salmon season, i.e. lack of sound markets, and small weight of pinks across the state, SEAS believes it is fair to surmise that the impacts of major hatchery production are no longer confined to one region of the state. Yet, there is no mechanism for a statewide review and modification when hatchery production crosses the threshold of inter-regional impacts. This matter was the subject of a vigorous debate at UFA's fall 1991 meeting. One of the outcomes of that meeting was a letter to Commissioner Rosier asking for a production overview through the Regional Planning Teams. UFA has yet to receive a response from Commissioner Rosier. Before commenting further on other possible options, we would like to learn how and when ADF&G will address this critical concern. Perhaps, the Committee could pursue this further with ADF&G.

Fair Funding

Because of the structure within Regional Aquaculture Associations, it may have been assumed that the user groups that pay the lion's share of tax revenues would receive a sizeable share of the returning fish value. This has not been the case for all regions. In fact, in some cases just the opposite is occurring because it is easy to vote to spend someone else's money. As such we support this option:

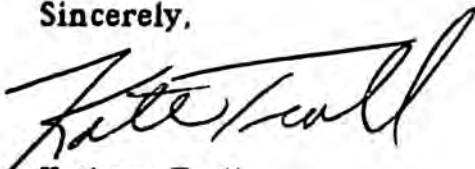
Support: Analysis of the enhancement tax program to determine the impact of a mechanism to allow specific gear groups to opt out of the program or pay in proportion to the enhancement benefits they receive.

While I recognize that the legislative overview will continue on for some time, SEAS urges the Senate Special Committee on Domestic and International Fisheries, to immediately address the outstanding need for wild stock statutory clarification. The Board of Fisheries has requested this direction. More importantly Alaska's wild salmon heritage deserves this critical recognition.

In closing, I must commend the legislative staff that put this concise but comprehensive report together. The Executive Summary did an excellent job of laying out a very complicated issue in a simplified, informed manner. Not only did I enjoy reading the Draft Report, but I learned a lot too. Please extend my appreciation for their efforts.

Thank you for the opportunity to provide input. Please call if you have questions or desire more feedback.

Sincerely,



Kathryn Troll
Executive Director

c.c. SEAS Board of Directors

MADDEN ASSOCIATES

Professional Consultants

P.O. Box 240616
Douglas, Alaska 99824
(907) 586-3847

February 24, 1992

Senator Dick Eliason, Chairman
Senate Special Committee on Domestic and International Fisheries
Alaska State Legislature
P.O. Box V
State Capitol
Juneau, Alaska 99811

Dear Senator Eliason:

Thank you for providing me the opportunity to review and comment on the Executive Summary of the "Draft Report of the Legislative Review of the Alaska Salmon Enhancement Program."

The Special Committee and others who prepared this Report performed a service not only to those directly involved in the Alaska Salmon Enhancement Program but also to the general public in both Alaska and other states and countries impacted by the program. If the achievements and potential of Alaska salmon ranching are to be realized, a better understanding must exist about the intent of the Alaska Legislature in establishing the program, how it has evolved, its current status and options for the future.

In your attachment letter you particularly requested comment on the lists of options following each chapter. My observations are on options and Report discussion of which I am knowledgeable.

I was employed from 1980-90 by the Alaska Department of Fish and Game (ADF&G) Division of Fisheries, Rehabilitation and Enhancement (FRED) as Salmon Rehabilitation and Enhancement Coordinator. In that position I administered the private non-profit (PNP) aquaculture program, regional planning teams (RPT) salmon production planning, and individual state and private hatchery management planning.

My position in FRED involved extensive policy planning for mixed stock fisheries and allocation of enhanced fish. The options developed for Chapter IV, FISHERIES MANAGEMENT, on pp. 6,7 highlight some of the policy issues I addressed. Options and conclusions about mixed-stock fishery management, and responsibility for funding such management tools as tagging have never been fully agreed-upon by either government or the users. Yet, fish tagging, other stock identification programs and the data they supply hold many of the answers about harvest quality and quantity.

The exchange between attorneys, reported in Chapter V, LEGAL ISSUES RAISED BY THE BOARD OF FISHERIES, on the subject of "...perceived ambiguities in Alaska statutes relating to wild stock and hatchery

fish management..." is interesting but too partisan to provide direction, except, maybe, for the August, 1990, letter prepared by Stephen White.

Throughout the development of the PNP hatchery program, protection of the wild stocks has always been the major consideration in permitting hatchery sites. Unfortunately, during the program's early days in the haste to produce fish, both the state and private sectors did not fully grasp the need to plan and control locations and magnitude of releases so that returns would not conflict with wild stock management, conservation and preservation. Until a few years ago when enhancement production from hatcheries or remote release sites took on major fisheries management and economic implications, the PNP and state programs, generally administered by mid-level management except when political considerations dictated higher-level involvement, functioned largely without Board of Fisheries or ADF&G top management direct involvement.

Alaska Statute (AS) 16.10.440 was amended in the 1970's to restrain the Board of Fisheries from being involved in the permitting process for PNP hatcheries. However, the Board clearly maintained under statute its authority to regulate hatcheries after they were permitted in order to control those areas about which there is now concern--fish production and harvest.

In my experience, the Board's only made one overt attempt to set policy under its statutory responsibility over the PNP program. During an informal work session, members agreed that PNP hatchery operators could conduct harvest activities in the "special harvest area"(SHA), designated in the PNP hatchery permit, until cost recovery needs were met. This conclusion was never recorded as an official action. So, to this day confusion remains about the aquaculture associations' jurisdiction over the SHA and their ownership of returning fish, even though the Board could have clarified that matter with formal action.

An effort was made in 1984 to address the question of SHA fish ownership and other hatchery-related issues by a joint committee of the ADF&G, the Alaska Department of Commerce and Economic Development, The Alaska Attorney General's Office and the aquaculture associations. This group agreed that the Board could clarify the management, escapement and allocation issues for all hatcheries through the process of setting policy and developing regulations that addressed any ambiguities in the PNP statutes.

Four issues concerning management of returns to PNP hatcheries were identified. They were:

1. Management of common property fisheries for mixed stocks containing hatchery returns;

Senator Eliason

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2. Management of segregated returns to PNP hatcheries;
3. Priority uses of fish in excess to corporate escapement goals at PNP hatcheries;
4. Methods and gear employed during PNP hatchery special harvest to satisfy corporate economic goals.

An issue paper, proposed policy and regulations to clarify the Board's role in the allocation of enhanced fish were prepared for Board consideration at its winter meeting at Sitka on February 1, 1985. Unfortunately, before they could be considered at the meeting at the meeting, at someone's request the materials were removed from the agenda. Almost five years passed before the issues again surfaced, this time in a crisis mode.

Then in 1989 the Board directed the Prince William Sound Aquaculture Corporation (PWSAC) to develop a plan for allocating all enhanced salmon in the Area E management district. Through this act the Board appears to have delegated enhanced fish allocation planning to a user group association with directions to develop management plans for enhanced fish, even though management planning traditionally and statutorily has been the responsibility of the ADF&G and the Board.

I don't agree that the Board of Fisheries needs "...statutory policy ...to make decisions that would favor wild stocks over hatchery fish or vice-versa..." or that "...statutes are unclear about recovery, and about the hatchery's obligation to contribute to the common property fisheries." I believe the Board and ADF&G have ample authority to manage and allocate hatchery returns if the Board, ADF&G and the aquaculture associations, as representatives of the user groups, cooperated in developing the necessary policies and regulations to clarify and implement existing statutes.

Based on the above observations, in my judgement neither the conclusions or options of Chapter V on pp. 10,11 are valid.

Chapter VI, PLANNING AND PERMITTING PROCESS, addresses the areas with which I am most familiar. I believe all the options listed for this chapter on page 16 have merit except for the following:

- Widening the scope of the RPT review, including recommendations for allocation of enhancement production.
- Exempting the alteration, suspension, or revocation of an enhancement permit for violations from the Administrative Procedures Act.
- Clarifying Board of Fisheries authority to regulate hatchery

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production levels.

My reasons for not supporting the above options, in order of their listing, are:

The user representatives usually control the RPT's. Such has been the case particularly in recent years, as the aquaculture associations have become more financially affluent, and the ADF&G has cut travel funds so that departmental participation in the planning process has been limited. Another reason for spotty ADF&G participation was that the ADF&G administration for some years did not view the RPT as being a key participant in fishery development, production and management.

Depending on what weight the Board would give RPT recommendations on allocation, the general public might view the result of this RPT involvement in allocation decisions as having the "Fox guarding the henhouse," or the users assuming the Board's responsibility for fishery allocation and the ADF&G responsibility for fishery management.

Taking the permit violation review process out of the Administrative Procedures Act could cause an operator to claim lack of due process and open the State to legal action.

Finally, as I said earlier, the Board of Fisheries already has the authority and responsibility to regulate hatchery production levels, at least in matters when they would impact fishery management decisions or endanger conservation or preservation of wild stocks.

I would make one observation on the text in Chapter VI on page 14 under "5. Allocation Issues." The subsection entitled "Problems and Issues" speaks of the allocation plan developed by PWSAC. Actually, what PWSAC produced is an allocation policy which was then translated by the Prince William Sound RPT into a plan to the extent that it "allocates" through management practices portions of the enhanced fish to various user groups.

Such a plan can only peripherally address the problems of management and harvest of hatchery returns that occurred in Prince William Sound in 1991 and to a lesser extent in 1990. Only the Hatchery Basic and Annual Management Plans, developed in cooperation between ADF&G and PWSAC, have the economic and management tools to deal with the difficult issues of terminal harvest, contribution to the common property, and enhanced fish stocks conflicting with wild stocks harvest or conservation.

In fact after thinking about and rereading the Allocation Issues subsection, I find it confusing and in need of clarification and

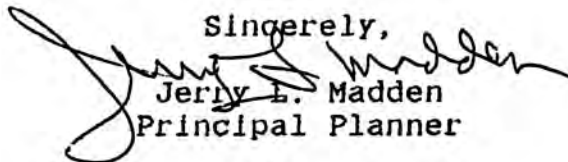
Senator Eliason
Page 5

further consideration. When the forthcoming economic analysis is available, it may clarify this and other areas of the Report.

I have no comment on the remaining chapters and their options except that the Report seems to have addressed all major areas of concern with the ALASKA SALMON ENHANCEMENT PROGRAM. To my knowledge this is the first time the program has been brought into perspective in one study. I anticipate participating in the teleconferenced hearings.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in dark ink, appearing to read "Jerry L. Madden", is written over the typed name and title.

Jerry L. Madden
Principal Planner

MAR 20 1992

TO: Denby S. Lloyd
Director
Division of Commercial Fisheries

DATE: March 13, 1992

THRU:

FILE: DL31392.txt

PHONE: 465-4210

FROM: Doug Eggers *Doug*
Chief Fisheries Scientist
Division of Commercial Fisheries

SUBJECT: Hatchery Research
Project Draft
Review

Hal Geiger and I have quickly reviewed Hatchery Research Project Draft Review. In general, the review has captured our concerns regarding largescale hatchery enhancement. Some minor comments:

mynt
P. 3.
Chapter IV, page 3. The genetics lab is a joint FRED and Commercial Fisheries Division laboratory. The laboratory was envisioned to function in two general areas: 1/ Implementation of the statewide genetics policy for hatchery enhancement, and 2/ implementation of genetics stock identification (GSI) in management of commercial fisheries. These two broad areas of activity correspond to FRED and Commercial Fisheries Division supervisory lines. The last paragraph on page three should be changed to reflect the fact that the labs scope of activity is departmental and not restricted to FRED division: "ADF&G is actively pursuing genetic stock identification ----"

Chapter VII, Letter from Glenn Gray to Senator Jones, page 13, last paragraph. I suggest that you strike "due to overfishing of wild stocks". Eggers et al. suggested that decline due to lower wild stock pink salmon escapement; however, escapement were generally above minimum escapement goals.

cc Geiger
Koenings



UNIVERSITY OF ALASKA FAIRBANKS
FAIRBANKS, ALASKA 99775-1080

10 March 1992

Senator Dick Eliason, Chairman
Senate Fisheries Committee
State Capitol Bldg., Rm. 111
Juneau, Alaska 99801-1182

Dear Senator Eliason:

Thank you for the opportunity to review the draft legislative review of Alaska's fisheries enhancement program. It seems clear to me that given the startling successes with ocean ranching observed in Alaska over the past two decades and the potential for adverse wild and hatchery stock interactions, it is high time to evaluate the status of the program as a basis for recommending future direction. I have some acquaintance with the issues having contributed to the Cordova conference on "The Biological Basis for Maintaining Strong Co-Existing Stocks of Natural and Enhanced Salmon Populations in Alaska".

I find your report to be a thoughtful and generally accurate portrayal of the history of salmon enhancement in Alaska and the issues arising from the overall successes with salmon ocean ranching. While I could take issue with how some of the "options" for change are articulated, overall the document presents itself as an objective instrument for program evaluation and future direction. Since my expertise is in the area of marine science and early marine salmon ecology, I will limit my comments to that part of the report.

Chapter VII "Biological/Genetic Issues" presents the major topical areas of concern including 1) The genetic effects of hatcheries; 2) Ocean carrying capacity; 3) Disease; and 4) State genetics program and policy. These subjects represent some of the major core issues associated with the biology of mixed stocks in Alaska and elsewhere. As you suggest in your report, more information about these issues will be forthcoming as the result of the Cordova conference. In lieu of that insight I make the following comments relative to your draft report:

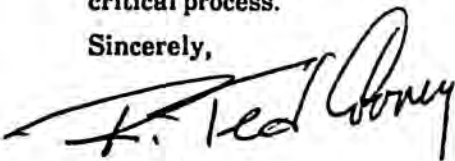
1. Alaska is in the enviable position of being able to benefit from the many mistakes characterizing past hatchery practices in the Pacific northwest. This means that Alaska doesn't have to start from scratch, but rather can (and must) exploit the important lessons learned elsewhere.
2. The genetics issues are probably the most straight forward to deal with. The development of a State of Alaska genetics policy is certainly appropriate and steps are being taken to create that posture now. I would think that both the public and private sectors will welcome this move.
3. The issue of carrying capacity is a very critical one that must be addressed. There will be several recommendations about this in the "Cordova report". The near shore and oceanic ecosystem supporting salmon also supports other fishes and shellfishes of commercial importance and many common forage populations as well (zooplankton, micronekton, small fishes and squids). Understanding the impact of increasing salmon production on these other critical elements of the ecosystem is crucial in as much as major system changes could theoretically be forced by upping the food requirements on key forage populations. At the moment there is no evidence that this is occurring, but somewhere down the line it could happen. If ecosystem restructuring does occur, changes in the way that matter and energy cycle could be disadvantageous to commercial species. This kind of problem should be avoided in the first place by trying to determine now what constitutes reasonable limits for salmon production. There are objective ways to approach this matter. Any limitations should be based in science rather than "gut feelings".

4. The major issue facing Alaska in terms of carrying capacity and wild and hatchery interactions is the complete lack of "testable hypotheses" regarding how these interactions might occur. Aside from the matter of differential fishing mortality (a problem apparent in Prince William Sound) on mixed stocks and the genetics issues, nothing has been posed regarding "competition" or other biological interactions that might adversely affect either wild or hatchery stocks (or both). Certainly there are speculations about what might be going on, but in the absence of any hard evidence, this kind of conjecture is more damaging than helpful. I would like you to see if there isn't a way the State can benefit from what has been learned in Prince William Sound under oil spill research that might help formulate the kinds of questions that can be addressed objectively. We understand that all data will soon be released from litigative restriction. A joint state and federally funded workshop on salmon ecology in Prince William Sound, using all the information on hand, would go a long way toward deciding where adverse wild and hatchery interaction might occur. This should be a priority for the near future and something your committee could recommend without the need for a 20-page justification.

5. Newly emerging results of juvenile salmon research being conducted by the University, the State and the private hatcheries suggest that the "black box" of interannual salmon production variability may soon give up some of its secrets. In fact, in Prince William Sound trends in wild stock abundance can now be explained with high accuracy for most years on the basis of growth conditions (fry food and ocean temperature) facing the juveniles during their first 2-4 months of early ocean residence (flyer attached). This consortium study demonstrates that a meaningful cooperative program can produce results on major salmon issues in a very cost effective manner. I am trying to elevate the Prince William Sound pilot study to a statewide level, arguing that a program of long-term low-level surveillance of juvenile salmon growth conditions is crucial to the overall enhancement of fish and shellfish stocks in the state. For years, the University marine science community has been criticized for its lack of attention to state needs. The cooperative study now ongoing demonstrates that oceanographers can provide information that should greatly improve the salmon forecasting procedure and provide information about levels of natural ecosystem variability missing in the past. I recommend that you include this kind of shared programmatic approach as an option for possible consideration under section VII.... "Continue to build on cooperative UAF, ADF&G and hatchery studies of environmental factors affecting regional-level production of salmon in southeast, southcentral and western Alaska".

I hope my comments will help strengthen your document. I appreciate the opportunity to input this critical process.

Sincerely,



R. Ted Cooney
Associate Professor of Marine Science

cc Jerome Komisar; President
University of Alaska

in
addressed
Biology
P.4

COOPERATIVE FISHERIES AND OCEANOGRAPHIC STUDIES (CFOS): SEEKING NEW ANSWERS TO OLD QUESTIONS ABOUT SALMON PRODUCTION VARIABILITY

Dr. Robert T. Cooney

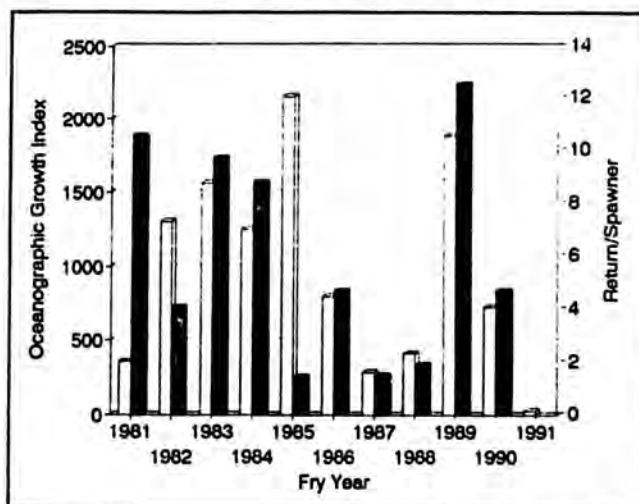
Oceanographers from the School of Fisheries and Ocean Sciences (SFOS) at the University of Alaska Fairbanks (UAF) and state and private fisheries scientists have joined forces to identify the causes of high- and low-production years for Alaska salmon. Members of this newly formed consortium – the Cooperative Fisheries and Oceanographic Studies (CFOS) program – have begun conducting research in Prince William Sound. Within CFOS, oceanographic monitoring is guided by researchers at the UAF Institute of Marine Science (IMS), and studies of salmon growth, production, management, and enhancement are carried out by the State and by private fisheries scientists.

CFOS research focuses on growth conditions experienced by juvenile salmon (fry) during the first two to four months after they migrate to the ocean. Scientific evidence indicates that most salmon mortality is due to predation during this critical growth period. In years with warm ocean temperatures and high food stocks, the rapid growth of salmon fry reduces losses to birds and fishes and produces a larger return of adults to fisheries and spawning grounds. In years with below-average temperatures and low food stocks, fry growth rates are reduced, the period of early risk is extended, and fewer adults return to spawn.

These salmon survival patterns are emerging from a new analysis of historical and contemporary databases provided by CFOS members. Jointly funded through SFOS by IMS and the Alaska Sea Grant College Program, CFOS scientists link time-series statistical analyses of ocean temperatures, local weather patterns, and plankton population levels over the past decade with production histories of wild and hatchery-released pink and chum salmon in Prince William Sound.

Another consortium member, the Alaska Department of Fish and Game (ADF&G), contributes historical catch and escapement data, wild fry population indices, and measurements of temperature, salinity, and zooplankton populations in the deep central basin of the Sound. ADF&G scientists are also examining factors that influence the annual migration of fry to the ocean and rates of fry growth and survival.

Regional salmon hatcheries (Prince William Sound Aquaculture Corporation and Valdez Fisheries Development Association, Inc.) provide records of spring ocean temperature, salinity, and zooplankton stocks. They also support faculty and graduate student experimental studies through contributions of lodging and small boat services. In addition, the corporations attempt to match hatchery releases with optimal growth conditions for salmon fry.



The relationship between growth conditions for fry (open bars) and the survival of adults (solid bars) for wild pink salmon in Prince William Sound. Causes for the 1981 and 1985 deviation from the established trend are currently being studied by Cooperative Fisheries and Oceanographic Studies researchers.

A major CFOS goal is the establishment of predictions for pink and chum salmon production based on coastal ocean conditions.



Dr. R. Ted Cooney (IMS File Photo)

Dr. Cooney joined the University of Alaska in 1970 to assist with the development of marine fisheries studies in the College of Biological Sciences. He obtained his Ph.D. from the University of Washington in 1971. In 1973 he became affiliated with the Institute of Marine Science and began studies of zooplankton in the Gulf of Alaska and the Bering Sea. This led to new understanding of the role of oceanic and coastal populations in marine food webs.

His work on juvenile salmon growth and food dependencies began in 1976 when the first non-profit hatchery in Prince William Sound began releasing fry. This effort eventually grew into the regional-level consortium study of juvenile salmon ecology and oceanography described in this issue of SFOS Highlights.

Related reports may be obtained from:

Publications Office
Institute of Marine Science
School of Fisheries and Ocean Sciences
201 O'Neill Building
University of Alaska Fairbanks
Fairbanks, Alaska 99775-1080



UNIVERSITY OF ALASKA FAIRBANKS

IMS researchers are analyzing oceanographic variables including sea-surface temperatures and wind-driven currents. They are also describing food requirements of juvenile salmon, growth ecology and energy composition of fry food stocks, and patterns in satellite-determined sea-surface temperature fields. These activities are made

possible in part by funding from the Alaska Science and Technology Foundation, which enabled CFOS to purchase and operate a modern meteorological and oceanographic buoy in Prince William Sound. Designated C-LAB 1, the buoy continuously measures upper-ocean temperatures, plankton stocks, and sea-surface weather. These observations are transmitted hourly to polar-orbiting satellites and retrieved later by phone modem. CFOS is one of the first programs to use this technology in investigations of fisheries enhancement and management.

A major goal of CFOS is to establish predictions for pink and chum salmon production based on coastal ocean conditions experienced by juveniles. This information will help ADF&G develop improved salmon forecasting procedures and assist in the management of important mixed-stock salmon resources in Prince William Sound. Eventually, this information will be applied to other commercially important fish and shellfish populations in Alaska.



A communication-linked automated buoy (C-LAB 1) moored near Smith Island in Prince William Sound continuously monitors weather and oceanographic conditions. Prior to deployment (right), the buoy underwent testing onboard the ADF&G M/V Montague. (Photos: John Smithhisler and Kevin Engle)



Over the past two decades, oceanographers at IMS have produced substantial information about temperature conditions, current patterns, and fry food stocks in the northern Gulf of Alaska. By pooling the resources and expertise of academic research, management, and commercial interests, CFOS provides a means to apply many of these fundamental results to questions about fish and shellfish resource production, management, and enhancement. The consortium approach assures that priority fisheries research is undertaken by acknowledged experts, and that study results are immediately distributed and applied. The resulting cooperative program is much more comprehensive and effective than any one of the single participants could manage alone.

1 issue in question.

SENATE SPECIAL COMMITTEE
ON DOMESTIC AND INTERNATIONAL FISHERIES

TESTIMONY OF THE PRINCE WILLIAM SOUND AQUACULTURE CORPORATION

REGARDING

LEGISLATIVE REVIEW OF ALASKA'S FISHERIES ENHANCEMENT PROGRAM
FEBRUARY 24, 1992

MR. CHAIRMAN:

I AM JOHN MCMULLEN, PRESIDENT OF THE PRINCE WILLIAM SOUND AQUACULTURE CORPORATION. WITH ME TODAY IS DAN HULL, A PRINCE WILLIAM SOUND FISHERMAN AND VICE CHAIRMAN OF OUR BOARD OF DIRECTORS.

THANK YOU FOR THE OPPORTUNITY TO RESPOND TO THE DRAFT REPORT OF THE SENATE SPECIAL COMMITTEE ON DOMESTIC AND INTERNATIONAL FISHERIES ENTITLED LEGISLATIVE REVIEW OF ALASKA'S FISHERIES ENHANCEMENT PROGRAM, DATED FEBRUARY 10, 1992.

ALTHOUGH MEMBERS OF OUR BOARD AND STAFF DEVOTED TWO DAYS TO A REVIEW OF THE DRAFT REPORT, WE HAVE BEEN UNABLE TO ASSEMBLE ALL OUR COMMENTS IN WRITTEN FORM. I HOPE IT IS ACCEPTABLE THAT THOSE COMMENTS BE SUBMITTED IN THE NEAR FUTURE. MEANWHILE, I WISH TO PRESENT AN OVERVIEW OF OUR RESPONSE TO THIS REPORT.

COVER LETTER: NO COMMENT.

CHAPTER I: INTRODUCTION. NO COMMENT.

CHAPTER II: HISTORY AND DEVELOPMENT.

WE AGREE WITH THE STATEMENT THAT THE GOAL OF THE STATE HATCHERY PROGRAM IS TO PRODUCE ADDITIONAL SALMON TO SUPPLEMENT THE EXISTING WILD SALMON STOCKS. HOWEVER, WE RECOGNIZE THAT PEOPLE STILL ASK THE QUESTION OF WHAT THE SALMON ENHANCEMENT PROGRAM WAS EXPECTED TO BE; REPLACEMENT, SUPPLEMENTAL DEVELOPMENT?

WE IN PRINCE WILLIAM SOUND SEE THE SALMON ENHANCEMENT PROGRAM AS ONE OF ECONOMIC DEVELOPMENT, WITHIN THE GUIDELINES OF OPTIMUM SUSTAINED YIELD OF WILD AND HATCHERY STOCKS AS DESCRIBED IN THE STATE CONSTITUTION AND TITLE 16 FISH & GAME STATUTES.

IN 1971, THE LEGISLATURE CREATED THE DIVISION OF FISHERIES REHABILITATION, ENHANCEMENT AND DEVELOPMENT (FRED) TO AMONG OTHER THINGS "ENCOURAGE THE INVESTMENT BY PRIVATE ENTERPRISE IN THE TECHNOLOGICAL DEVELOPMENT AND ECONOMIC UTILIZATION OF THE FISHERIES RESOURCES."

IT IS TRUE THAT THE HATCHERY PROGRAM IN ALASKA HAS EVOLVED OVER TIME, BUT WE BELIEVE IT IS UNTRUE THAT UNSEEN ISSUES HAVE NOT BEEN ADDRESSED AS THEY AROSE. WE BELIEVE THE RECORD SHOWS THAT THE LEGISLATURE HAS REGULARLY ADDRESSED HATCHERY ISSUES THROUGHOUT THE PAST 20 YEARS OF THE

PROGRAM'S EXISTANCE. CLEAR LEGISLATIVE INTENT DOES EXIST REGARDING MANY OF THE CURRENT QUESTIONS AND CONCERNS ABOUT THE ROLE AND FUTURE OF HATCHERIES.

CHAPTER III: TRENDS.

ANNUAL WORLD OUTPUT OF FARMED SALMON NOW EQUALS ALASKA'S PRESENT PRODUCTION OF WILD AND ENHANCED SALMON. OUR PRESENT EXPERIENCE IN MARKETING AND SALES REVEALS THAT THE SO CALLED WORLD MARKET IS DYNAMIC. PWSAC AND ITS CONSTITUENTS BELIEVE THAT NEW MARKETS FOR DOMESTIC PRODUCTION MUST AND CAN BE DEVELOPED BASED ON COMPETITIVE PRICING AND NEW PRODUCTS. IT IS SAID THAT FROZEN ALASKA SALMON CANNOT COMPETE WITH STEADY SUPPLIES OF FRESH, FARMED SALMON. HOWEVER, WE ARE HEARING WITH INCREASED FREQUENCY THAT FRESH, FROZEN ALASKA SALMON IS SUPERIOR TO ALL BUT THE FRESHEST OF FARMED SALMON.

CHAPTER IV: FISHERIES MANAGEMENT.

MIXED STOCK FISHERIES:

address on p. 1

THE REPORT STATES THAT THE CONTROL OF FISHING EFFORT IN MIXED STOCK FISHERIES COMPOSED OF BOTH HATCHERY AND WILD STOCKS IS AN ISSUE FACING FISHERIES MANAGERS. HOWEVER, WE BELIEVE THIS STATEMENT ALSO APPLIES TO MIXED STOCK FISHERIES INVOLVING ONLY WILD STOCKS. THERE ARE EXAMPLES, STATEWIDE, OF FISHERIES WHICH HARVEST LARGE NUMBERS OF SALMON WITHOUT REGARD FOR INDIVIDUAL STOCKS.

IN PRINCE WILLIAM SOUND, A SALMON HARVEST TASK FORCE, COMPOSED OF ADF&G STAFF, PROCESSORS, FISHERMEN, AND HATCHERY OPERATORS, WORK TOGETHER YEAR-ROUND TO DEVELOP FISHERY SCENARIOS WHICH ACCOMMODATE WILD STOCK ESCAPEMENTS AND THE MAINTENANCE AND IMPROVEMENT OF FISH QUALITY IN THE CATCHES.

QUALITY:

THIS HAS BECOME AN ISSUE WHICH ACCOMPANIES ALASKA'S INCREASED SUPPLY OF SALMON. THIS ABUNDANCE OF SALMON HAS MADE IT INCREASINGLY DIFFICULT FOR PWSAC TO SELL ITS FISH ON AN IN-SEASON, DAILY BID BASIS. THIS CONDITION LED OUR BOARD OF DIRECTORS TO AUTHORIZE THE PRE-SALE OF OUR COST RECOVERY FISH. FISH WILL AGAIN BE SOLD ON THE DAY THEY ARRIVE IN THE HATCHERY HARVEST AREAS, THUS AVOIDING THE BUILD-UPS OF MATURING FISH WHICH HAVE OCCURRED IN THE PAST TWO YEARS.

MANY LEGISLATORS HAVE RECEIVED COPIES OF PWSAC'S MARKETING PLAN WHICH, IN ADDITION TO DESCRIBING OUR WILLINGNESS TO SHARE RISK IN SELLING FISH, ALSO PROVIDES OPPORTUNITIES FOR PRODUCT DEVELOPMENT.

AS ALL ELEMENTS OF THE INDUSTRY - FISHERMEN, PROCESSORS, ADF&G AND HATCHERY OPERATORS - ARE INTERESTED IN AND RESPONSIBLE FOR MAINTAINING TOP QUALITY, THERE NEEDS TO BE A UNIVERSALLY RECOGNIZED QUALITY STANDARD.

TAGGING NEEDS:

PWSAC HAS THE MOST EXTENSIVE TAGGING PROGRAM IN THE STATE, WHICH IS PERFORMED IN COOPERATION WITH THE ADF&G. WE PLACE MORE THAN ONE MILLION TAGS IN FISH EACH YEAR.

THE CONCEPT OF "USER PAYS" IS ON THE RISE WITHIN ADF&G STAFF. HOWEVER, THAT SEEMS TO BE A POLICY QUESTION WHICH SHOULD BE DECIDED UPON AT THE HIGHEST LEVELS OF GOVERNMENT.

WE DO NOT BELIEVE THAT OUR REGIONAL ECONOMIC DEVELOPMENT PROGRAM WOULD BE SERVED WELL IF THE STATE DEMANDED THAT WE DEVELOP AND FUND FISHERIES EVALUATION PROJECTS WHICH WERE UNAFFORDABLE.

CURRENT TAGGING TECHNOLOGY DOES NOT ALLOW FOR THE USE OF THE DATA FOR IN-SEASON MANAGEMENT OF FISHERIES, ONE OF THE STATED GOALS OF THE PROGRAM. RESEARCH AND DEVELOPMENT OF NEW TAGGING PROCEDURES IS NEEDED.

OPTIONS FOR CONSIDERATION:

POLICIES FOR THE ALLOCATION AND MANAGEMENT OF WILD AND ENHANCED SALMON ARE WRITTEN INTO THE PRINCE WILLIAM SOUND SALMON MANAGEMENT PLAN WHICH WAS DEVELOPED BY THE REGIONAL PLANNING TEAM, SUPPORTED BY ALL LOCAL FISHERMENS GROUPS AND THE PUBLIC, AND ADOPTED BY THE ALASKA BOARD OF FISHERIES IN FEBRUARY, 1991.

THE BOARD OF FISHERIES HAS MORE RECENTLY DIRECTED THE TWO REGIONAL PLANNING TEAMS IN SOUTHEAST ALASKA TO DEVELOP ALLOCATION PLANS FOR COMMON PROPERTY FISHERIES AND HATCHERY HARVESTS, WHICH WILL REQUIRE AGREEMENT AMONG USER GROUPS, AND SHOULD RESOLVE ISSUES REGARDING THE MANAGEMENT OF FISHERIES FOR HATCHERY COST RECOVERY.

CHAPTER V: LEGAL ISSUES RAISED BY BOARD OF FISHERIES.

THE STATE'S MANAGEMENT PLAN FOR PRINCE WILLIAM SOUND SALMON FISHERIES PROVIDES FOR HATCHERY BROOD STOCK AND REVENUE NEEDS. THEREFORE, WE BELIEVE THE CONCERNS OF THE BOARD OF FISHERIES ARE FOCUSED MORE ON REGIONS SUCH AS SOUTHEAST ALASKA.

PWSAC'S VIEWS ON LEGAL ISSUES ARE CONTAINED IN THE LEGAL OPINION WRITTEN AT OUR REQUEST, AND WHICH IS INCLUDED IN THE FULL REPORT OF THE HATCHERY STUDY GROUP. WE BELIEVE WE HAVE THE HISTORICAL PERSPECTIVE TO UNDERSTAND THAT THE LEGISLATURE NEVER INTENDED TO ALLOW THE BOARD OF FISHERIES TO HAVE THE POWER TO LIMIT HATCHERY PRODUCTION. DIFFERENCES IN OPINION ON THAT SUBJECT WOULD BE TESTED.

CHAPTER VI: PLANNING AND PERMITTING PROCESS.

THE PRIVATE, NON-PROFIT HATCHERY PROGRAM IN ALASKA OPERATES UNDER TIGHT CONTROL OF THE STATE. EVERYTHING WE DO IS REGULATED BY LAW, ADMINISTRATIVE PROCEDURES, POLICIES, AND PERMITS--ALL OF WHICH ARE INTENDED TO PROTECT WILD STOCKS OF SALMON. RATHER THAN DISCUSSING THESE POLICIES AND PERMITS, I AM ATTACHING A LISTING TO THIS WRITTEN TESTIMONY, WHICH YOU HAVE OR WILL RECEIVE.

REGIONAL PLANNING TEAMS COMPOSED OF THREE REPRESENTATIVE EACH OF THE ADF&G AND THE APPROPRIATE REGIONAL AQUACULTURE ASSOCIATION, PROVIDE RECOMMENDATIONS TO THE ADF&G COMMISSIONER REGARDING EACH APPLICATION FOR HATCHERY OPERATIONS OR INCREASE IN HATCHERY PRODUCTION WITHIN THEIR REGION. NON-VOTING MEMBERS, REPRESENTING STATE AND FEDERAL RESOURCE MANAGEMENT AGENCIES, AND MOM & POP HATCHERY OPERATORS, ARE EFFECTIVE PARTICIPANTS IN THE DELIBERATIONS OF THE REGIONAL PLANNING TEAM.

* [THE REGIONAL PLANNING TEAMS ASSESS HATCHERY APPLICATIONS BASED ON THE FOUR CRITERIA CONTAINED IN THE HATCHERY STUDY GROUP'S REPORT. THE PRINCE WILLIAM SOUND REGIONAL PLANNING TEAM MEMBERSHIP HAS DEVELOPED AN EXPANDED LIST OF CRITERIA (WHICH IS ATTACHED TO THIS WRITTEN TESTIMONY) AND INTENDS TO REQUEST THE ADF&G COMMISSIONER TO AUTHORIZE ITS USE IN DEVELOPING THE TEAM'S RECOMMENDATIONS ON HATCHERY APPLICATIONS AND PRODUCTION INCREASES.

PROBLEMS AND ISSUES:

LACK OF STATEWIDE GOALS AND OBJECTIVES:

WE BELIEVE THAT THE GOALS OF THE REGIONAL SALMON ENHANCEMENT PROGRAMS SHOULD BE OPTIMUM SUSTAINED YIELD OF THE COMBINATION OF WILD AND ENHANCED STOCKS, WITH FOREMOST REGARD FOR THE MAINTENANCE OF THE WILD STOCKS.

WE BELIEVE OUR CONCEPT OF ECONOMIC DEVELOPMENT IS COMPATIBLE WITH THE OPTIMUM SUSTAINED YIELD PRINCIPLE.

REGIONAL VERSUS STATEWIDE PLANNING:

SALMON FISHERIES IN ALASKA ARE REGULATED ON AN AREA AND REGIONAL BASIS, ACCORDING TO THE LIMITED ENTRY SYSTEM. IT SEEMS REASONABLE THAT PLANNING SHOULD BE CONFINED TO THESE FUNCTIONAL UNITS. PWSAC'S CONSTITUENTS, THE PRINCE WILLIAM SOUND FISHERMEN, HAVE SHOWN NO INDICATION THAT THEY WISH TO PLACE CONTROLS ON THE HARVEST OF SALMON IN OTHER REGIONS OF THE STATE THROUGH THE CONTROLS OF A STATEWIDE PLAN.

FUNDING AND SUPPORT FOR PLANNING:

WE BELIEVE THAT THE REGIONAL PLANNING TEAM IN PRINCE WILLIAM SOUND CARRIES OUT ITS RESPONSIBILITIES IN A HIGHLY CONSCIENTIOUS MANNER. SINCE THE FALL OF 1989, WE HAVE MET ON A MONTHLY BASIS FOR THE PURPOSES OF DEVELOPING A SALMON ALLOCATION AND MANAGEMENT PLAN AND RE-WRITING THE COMPREHENSIVE SALMON PLAN FOR PRINCE WILLIAM SOUND.

THE PWSAC PLANNER ACTS AS A FACILITATOR TO THE REGIONAL PLANNING TEAM. ALL CLERICAL AND REPORT PRODUCTION COSTS ARE CARRIED BY PWSAC. TRAVEL AND PERDIEM FOR TEAM MEMBERS ARE PROVIDED BY THEIR RESPECTIVE ORGANIZATIONS.

COMPOSITION OF REGIONAL PLANNING TEAMS

WE WOULD LIKE TO KNOW WHO THOSE INDIVIDUALS ARE WHO BELIEVE THAT THE ENTIRE STRUCTURE OF THE REGIONAL PLANNING TEAM SHOULD BE CHANGED. THE PRINCE WILLIAM SOUND RPT IS COMPOSED OF REPRESENTATIVES OF THE ADF&G'S COMMERCIAL, SPORT, AND FRED DIVISIONS. THE DEPARTMENT'S SUBSISTENCE DIVISION IS AN EX-OFFICIO MEMBER. THE AQUACULTURE REPRESENTATIVES INCLUDE TWO EX-ADF&G BIOLOGISTS TURNED FISHERMAN AND ADMINISTRATOR, AND ONE PERSON WHO HELPED DEVELOP THE LAWS AND REGULATIONS WHICH AUTHORIZED AND HAVE GUIDED THE STATE'S SALMON ENHANCEMENT PROGRAM. THE ADF&G REPRESENTATIVES ARE BACKED BY TECHNICAL PEOPLE SUCH AS THE ADF&G FISH GENETICIST. WE CERTAINLY DO NOT THINK ADF&G MANAGERS ARE OUTNUMBERED.

ALLOCATION ISSUES:

NEITHER THE REGIONAL PLANNING TEAM OR THE ADF&G HAS SALMON ALLOCATION AUTHORITY. HOWEVER, AS STATED IN THE HATCHERY STUDY GROUP REPORT, THE PRINCE WILLIAM SOUND PLANNING TEAM DID DEVELOP ALLOCATION PROPOSALS WHICH WERE ADOPTED BY THE ALASKA BOARD OF FISHERIES.

THE ADF&G MUST CONDUCT A MANAGEMENT FEASIBILITY ANALYSIS AS PART OF THE HATCHERY ALLOCATION PROCESS. PROPOSED HATCHERIES WHICH WERE NOT COMPATIBLE WITH THE EXISTING SALMON ALLOCATION AND MANAGEMENT PLAN FOR THE REGION OR AREA WOULD NOT BE RECOMMENDED BY ADF&G MANAGERS OR THE REGIONAL PLANNING TEAM.

MANAGEMENT ISSUES:

THE PRINCE WILLIAM SOUND SALMON ALLOCATION AND MANAGEMENT PLAN WAS DEVELOPED AS PART OF THE UPGRADE OF THE REGIONAL COMPREHENSIVE SALMON PLAN. NEW CHAPTERS IN THE PLAN WILL INCLUDE FISHERIES MANAGEMENT AND FISHERIES ECONOMICS.

UNIFORM REVIEW:

STATE HATCHERIES HAVE NOT RECEIVED THE INTENSIVE TECHNICAL AND ADMINISTRATIVE REVIEW THAT HAS BEEN DIRECTED AT PRIVATE HATCHERIES IN ALASKA. THAT IS CHANGING, BASED ON THE ADF&G'S ACKNOWLEDGEMENT THAT IT MUST REGULATE ITS OWN ACTIVITIES.

CRITERIA TO SHOW PUBLIC BENEFIT:

PWSAC, AND THE PRINCE WILLIAM SOUND REGIONAL PLANNING TEAM, AGREE THAT THE LIST OF CRITERIA FOR DETERMINING THE ACCEPTABILITY OF A HATCHERY PERMIT REQUEST SHOULD BE EXPANDED. AS STATED EARLIER IN THIS TESTIMONY, THE PRINCE WILLIAM SOUND RPT'S LIST IS ATTACHED.

OPERATION PERFORMANCE REVIEWS AND PERMIT REVOCATION:

WE BELIEVE THAT THE ADF&G PRESENTLY HAS THE AUTHORITY TO MONITOR HATCHERY PERFORMANCE AND TO BRING WAYWARD HATCHERY OPERATORS INTO COMPLIANCE WITH STATE LAWS, REGULATIONS, AND PERMIT REQUIREMENTS AS AN ALTERNATIVE TO PERMIT REVOCATION. PERHAPS FUNDING IS NOT AVAILABLE TO THE ADF&G TO ACCOMPLISH THIS FUNCTION.

CANADIAN EVALUATION MODEL:

THE CANADIAN SALMON ENHANCEMENT PROGRAM HAS FALLEN FAR SHORT OF ITS ORIGINAL GOALS AND OBJECTIVES. OTHER OF THEIR FISHERIES INITIATIVES HAVE GONE THE SAME WAY. IF THEIR EVALUATION PROGRAM IS TO BE APPLIED TO ALASKAN FISHERIES, WE WOULD SUGGEST WAITING UNTIL IT HAS BEEN FIELD TESTED.

OPTIONS FOR POSSIBLE CONSIDERATION:

RATHER THAN COMMENT EXTENSIVELY ON THIS SECTION OF THE REPORT, WE CHOSE TO COMMENT ON THE INDIVIDUAL SECTIONS WITHIN THIS CHAPTER ON PLANNING AND PERMITTING. HOWEVER, THERE ARE A FEW POINTS WHICH REQUIRE CLARIFICATION.

THE ADF&G COORDINATES THE STATEWIDE PLANNING PROCESS. THE VALUE IN THAT IS THAT GOOD IDEAS AND PROCEDURES ARISING WITHIN INDIVIDUAL PLANNING TEAMS CAN BE SHARED WITH OTHER PLANNERS.

WE DISAGREE WITH MORATORIUMS ON HATCHERY PRODUCTION WHICH DISREGARD THE OPTIMUM SUSTAINED YIELD CONCEPT. GENERAL MORATORIUMS OR SPECIES MORATORIUMS ARE EQUALLY DISTASTEFUL, AT THE SAME TIME, PWSAC HAS NO PLANS FOR EXPANSION OF PINK SALMON PRODUCTION FOR AT LEAST THE NEXT SEVERAL YEARS.

CHAPTER VII: BIOLOGICAL/GENETIC ISSUES:

GENETIC EFFECTS OF HATCHERIES:

THE HATCHERY STUDY GROUP'S REPORT STATES THAT SCIENTISTS DO NOT AGREE ON THE EXTENT TO WHICH HATCHERIES WITH SOUND PRACTICES CAN CO-EXIST WITH SUSTAINED, HEALTHY RUNS OF WILD SALMON.

FOR THIS REASON, GENETICS AND FISH HEALTH MATTERS AT HATCHERIES ARE CLOSELY REGULATED BY THE ADF&G. HATCHERY BROOD STOCKS ARE CHOSEN VERY CAREFULLY FROM AMONG WILD STOCKS TO MINIMIZE THE POTENTIAL FOR STRAYING. ALTHOUGH STRAYING BETWEEN WILD STOCKS OCCURS ON A REGULAR BASIS, WITH POTENTIAL FOR BOTH POSITIVE AND NEGATIVE EFFECTS, LARGE NUMBERS OF HATCHERY STRAYS MIGHT REDUCE THE REPRODUCTIVE POTENTIAL AND SURVIVAL ATTRIBUTES OF WILD STOCKS WITH WHICH THE HATCHERY FISH SPAWNED.

OCEAN CARRYING CAPACITY:

THE CARRYING CAPACITY OF THE OCEAN CHANGES ON A CONTINUING BASIS. IN 1991, RECORD RETURNS OF PINK SALMON TO MOST REGIONS IN ALASKA WERE COMPOSED OF ABNORMALLY SMALL FISH. IF CARRYING CAPACITY HAD BEEN TESTED, IT SEEMS THAT OCEAN SURVIVAL RATES WOULD HAVE BEEN LOWERED AND THAT FISH WOULD NOT HAVE RETURNED IN RECORD NUMBERS..

WE AGREE THAT MORE INFORMATION IS NEEDED FOR THE ASSESSMENT OF INSHORE AND OFFSHORE GROWTH AND SURVIVAL OF SALMON. ONE SUCH STUDY IS BEING CONDUCTED BY THE UNIVERSITY OF ALASKA-FAIRBANKS IN COOPERATION WITH PWSAC AND THE VALDEZ FISHERIES DEVELOPMENT ASSOCIATION, A MOM & POP HATCHERY GROUP.

DISEASE:

THE STATE OF ALASKA'S FISH HEALTH PROGRAM IS THE LEADER AMONG PROGRAMS OF ITS KIND THROUGHOUT THE UNITED STATES AND CANADA. I BELIEVE OUR HATCHERY OPERATIONS ARE FULLY INTEGRATED INTO THIS PROGRAM.

STATE GENETICS PROGRAM AND POLICY:

THE STATE OF ALASKA'S FISH GENETICS POLICY, WHICH IS NOW BEING RIGIDLY INTERPRETED, IS CONSIDERED TO BE THE BEST OF ITS KIND ON THE NORTH AMERICAN WEST COAST AND POSSIBLY THE ENTIRE CONTINENT. STATE GENETICISTS WORK CLOSELY WITH PWSAC AND THE REGIONAL PLANNING TEAM REGARDING HATCHERY PRODUCTION PROPOSALS.

OPTIONS FOR POSSIBLE CONSIDERATION:

PWSAC WAS A SPONSOR OF THE WORKSHOP ON "THE BIOLOGICAL BASIS FOR MAINTAINING STRONG CO-EXISTING STOCKS OF NATURAL AND ENHANCED SALMON POPULATIONS IN ALASKA", WHICH WAS HELD AT CORDOVA LAST NOVEMBER. WE CONTRIBUTED TO THE REPORTS AND RECOMMENDATIONS WHICH WERE PRODUCED AT THE WORKSHOP.

MANY OF THE OPTIONS FOR POSSIBLE CONSIDERATION ARE PRESENTLY BEING CONSIDERED AND STUDIED BY THE ADF&G, THE PRINCE WILLIAM SOUND PLANNING TEAM, AND PWSAC. THE FISH GENETICS LABORATORY IS UNDERFUNDED AND OVERWORKED AT THIS TIME IN HISTORY WHEN STOCK IDENTIFICATION WORK HAS EMERGED AS A TOOL FOR FISHERY MANAGERS.

CHAPTER VIII: FUNDING OF THE ALASKA SALMON ENHANCEMENT PROGRAM.

STATE PROJECT FUNDING: NO COMMENT.

FUNDING FOR PRIVATE NON-PROFIT HATCHERIES:

PWSAC DEDICATES 70% OF RETURNING HATCHERY FISH TO THE COMMON PROPERTY FISHERIES. THE REMAINING 30% ARE UTILIZED FOR BROOD STOCKS AND COST RECOVERY.

DEFERMENT OF PAYMENT ON STATE LOANS IS NECESSARY TO PROVIDE FOR PERIODS OF HATCHERY STOCK DEVELOPMENT PRIOR TO THE TIME THAT COST RECOVERY CAN BEGIN TO MEET THE FUNDING NEEDS OF HATCHERY OPERATIONS. AS AN EXAMPLE, PWSAC, IN ACCEPTING FINANCIAL RESPONSIBILITY FOR THE THREE STATE OWNED HATCHERIES IN THE PRINCE WILLIAM SOUND/COPPER RIVER REGION, HAS FOUND IT NECESSARY TO UPGRADE PRODUCTION AND FACILITIES AT TWO OF THOSE HATCHERIES TO ACHIEVE AN ACCEPTABLE COST RECOVERY PROGRAM.

GIVEN THE SCENARIO JUST DESCRIBED, A MORATORIUM ON LOANS TO UPGRADE HATCHERIES MIGHT RESULT IN FINANCIAL DISTRESS FOR SOME HATCHERY OPERATORS.

CHAPTER IX: ECONOMICS:

OUR CONCERN WITH THE ECONOMIC STUDIES CONTRACTED BY THIS COMMITTEE IS THAT SALMON PRODUCTION IN ALASKA AND THE WORLD WILL BE EVALUATED ON THE BASIS OF ITS IMPACT ON EXISTING, AND NOT POTENTIAL, MARKETS. WE ARE ALSO CONCERNED THAT THE EVALUATION OF HATCHERY PRODUCTION, NOT TOTAL ALASKAN OR WORLD PRODUCTION, OF SALMON IS BEING TESTED AS THE CAUSE OF PRICE DECLINES.

ON A POSITIVE NOTE, THERE IS A SALMON MARKETING INITIATIVE DEVELOPING WITHIN THE STATE AND WITHIN STATE GOVERNMENT. WE ARE SUPPORTIVE OF YOUR LEGISLATIVE EFFORTS WHICH WILL RESULT IN INCREASED OPPORTUNITY FOR THE SALMON INDUSTRY.

PWSAC'S CURRENT ATTEMPTS TO MARKET ITS COST RECOVERY FISH INCLUDES A PROJECT IN PRODUCT DEVELOPMENT FOR DEMONSTRATION BY OUR CONTRACTOR AND PWSAC AT THE BOSTON SEAFOOD SHOW IN MARCH. A MEMO FROM OUR CONTRACTOR (ATTACHED) IS RAISING OUR EXPECTATIONS AS TO THE VALUE OF THIS PROJECT.

CHAPTER X: MARKETING.

WE BELIEVE THAT THE LEGISLATURE IS ADDRESSING MARKETING AS AN ISSUE TO THE EXTENT THAT WE NEED NOT COMMENT ON ASMI'S STATUTORY RESPONSIBILITIES OR ITS ACTIVITIES.

PWSAC HAS, HOWEVER, GONE ON RECORD IN SUPPORT OF THE GENERAL CONCEPT SUGGESTED IN HOUSE BILL 447.

PWSAC PARTICIPATED AS A MEMBER OF THE GOVERNOR'S SALMON STRATEGY TASK FORCE. A QUESTION I ASKED AT THE FIRST TASK FORCE MEETING WAS, "WHAT IS THE TRADITIONAL PROCESSING INDUSTRY'S CAPACITY (BOTH PHYSICAL AND PHILOSOPHICAL) FOR EXPANDING AND DIVERSIFYING THE SALMON INDUSTRY?" TO MY KNOWLEDGE, THAT QUESTION WAS NOT ANSWERED.

CHAPTER XI: OTHER ISSUES.

HATCHERIES AS ENVIRONMENTAL MITIGATION:

WE DO NOT UNDERSTAND THE DISCUSSION OF THE ENDANGERED SPECIES ACT IN THIS REPORT. CONSIDERATION OF ENDANGERED SPECIES MIGHT BE A HOPELESS TASK LACKING IDENTIFICATION OF STOCKS AND STOCK GEOGRAPHICAL BOUNDARIES.

THIS REPORT DESCRIBES WILD SALMON AS BEING PROVIDED FREE AND PERPETUALLY BY NATURE. THIS STATEMENT IS ERRONEOUS IN THAT MANAGED RENEWABLE RESOURCES ARE NEITHER FREE OR GUARANTEED TO BE PERPETUAL.

ROLE OF HATCHERIES IN INTERNATIONAL TREATIES:

WE HAVE NO COMMENT ON THIS SECTION. PWSAC IS NOT INVOLVED IN THIS TYPE OF ACTIVITY.

ENVIRONMENTAL REGULATIONS RELATED TO HATCHERIES:

PWSAC SUPPLIED THE HATCHERY STUDY GROUP WITH DOCUMENTS WHICH DESCRIBE THE MANNER IN WHICH HATCHERIES ARE AUTHORIZED TO DISPOSE OF FISH CARCASSES. WE DEAL WITH THE ENVIRONMENTAL PROTECTION AGENCY AND THE ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION IN THESE MATTERS.

PWSAC DEALT WITH THE EPA FOR THE DISPOSAL OF UNUTILIZED PINK SALMON IN PRINCE WILLIAM SOUND LAST SUMMER. WE OPERATED UNDER OUR PRESENT AUTHORIZATION TO DISPOSE OF CARCASSES WITH THE EXCEPTION THAT A REPORT OF THOSE SPECIFIC ACTIVITIES WAS REQUIRED. WE ARE HOPEFUL THAT WE WILL NOT BE REQUIRED TO REPEAT THAT PROCESS EVER AGAIN.

USE OF ENHANCEMENT AS A TOOL FOR ECONOMIC DEVELOPMENT:

AS STATED EARLIER IN THIS TESTIMONY, WE BELIEVE THAT HATCHERIES ARE AN ECONOMIC DEVELOPMENT TOOL, AND WE SUPPORT THE EFFORTS OF GROUPS THROUGHOUT ALASKA WHO WOULD USE THE RESOURCES AT HAND TO BETTER THEIR LIVES.

IMPORTANCE OF HATCHERIES TO SPORT AND SUBSISTENCE FISHERIES:

THE IMPORTANCE OF SPORT, SUBSISTENCE, AND PERSONAL USE FISHERIES WILL BE DESCRIBED IN OUR REGIONAL PLANNING TEAM'S UPGRADED COMPREHENSIVE REGIONAL SALMON PLAN. THE PLAN WILL IDENTIFY USES AND OPPORTUNITIES FOR THESE FISHERIES IN THE SOUND AND ALONG THE COPPER RIVER.

OTHER RECOGNITION OF THESE FISHERIES IS INCLUDED IN PWSAC'S PRODUCTION PLAN. KING AND COHO SALMON ARE STOCKED EVERY YEAR AT CORDOVA, VALDEZ, AND WHITTIER FOR NON-COMMERCIAL FISHERIES USERS.

ENHANCEMENT OF OTHER SPECIES:

WE HAVE NO COMMENT OR RECOMMENDATIONS ON THIS SUBJECT.

THIS CONCLUDES OUR TESTIMONY. THANK YOU VERY MUCH.

REGULATIONS GOVERNING THE ALASKAN PRIVATE NON-PROFIT HATCHERY PROGRAM

By John McMullen, Special Projects Manager

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

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

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

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

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

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

ADF&G FISHERIES POLICIES

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

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

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

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

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

HATCHERY PERMITTING PROCESS

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

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

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

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

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

HATCHERY OPERATIONS AND REVIEW

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

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

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

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

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

EVALUATION OF PWSAC ENHANCEMENT PROGRAM

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

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

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Alaska State Senate

Office of the President

Senator Richard I. Eliason, President

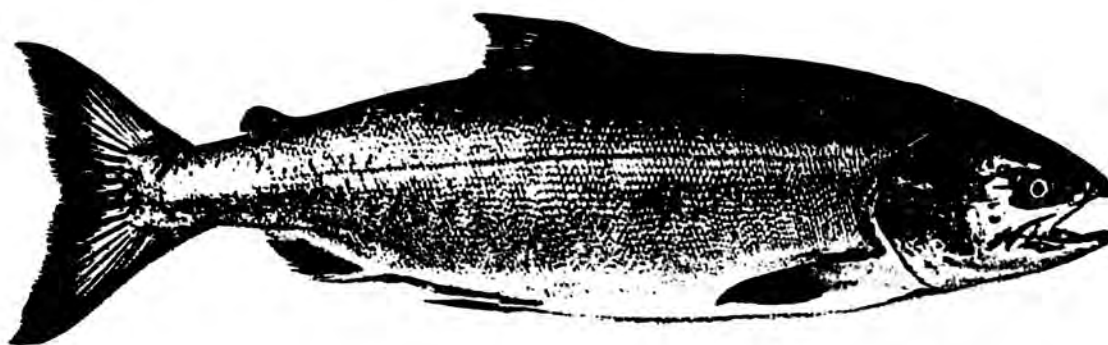
Original
Full Draft
Report -

Double-sided, and
includes Exec. Summary

(ready for making
more double-sided
copies)

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**LEGISLATIVE REVIEW
OF THE ALASKA SALMON ENHANCEMENT
PROGRAM**



**Senate Special Committee on
Domestic & International Commercial Fisheries**

February 10, 1992

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**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

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 fisheries enhancement in Alaska. The committee recognized that while hatchery and other enhancement projects in Alaska have been highly successful, the statutes that regulate them and the role that they play in the overall fisheries picture in the state have not been thoroughly reviewed since the original enabling legislation was enacted nearly twenty years ago. Besides the change, growth and success experienced by the enhancement program itself, the entire fishing industry, of which this program is an important component, has undergone enormous change. New variables have entered the fisheries scene that were not anticipated or factored into our enhancement laws: the implementation of limited entry, the advent of fish farming, oil spills, a worldwide glut of salmon markets, the rising and crashing of various fish and shellfish stocks, impacts of trawling and highseas driftnets, annual state revenues that grew dramatically for some years and are now declining, and the possibility of the enhancement and pen-rearing of fish and shellfish species not thought to be feasible in the past.

Since the fisheries enhancement program in Alaska is statutorily established and regulated, the Legislature has a clear obligation to stand back and take a comprehensive look at where this program started, where it has gone during these first two decades, and where it ought to be headed in the future. Consideration must be given to how the context in which this program operates has changed over the years, in order to ensure that current and future enhancement efforts will be economically and biologically sound and fulfill the goals for which they were established.

The Committee did not begin with any preconceived notion of the conclusions, recommendations, or actions that might result from this review, just a desire to gather and study information in hopes that some patterns, gaps, and areas which need legislative direction would become evident. It was decided that a group of legislative staff members would do the bulk of the research, assisted by the Legislative Research Agency and private contractors as necessary. Upon release of the draft report, public input would be solicited and hearings held to finalize the report and consider legislative action.

The Senate Special Committee on Domestic and International Commercial Fisheries and the other legislators and staff members who have worked on this review recognize and commend the outstanding successes of the salmon enhancement program in Alaska over the last two decades. It is our hope that the attached review will serve as a starting point for the scrutiny and eventual fine-tuning that will ensure that Alaska's fisheries enhancement programs are the best they can be.

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.



Alaska State Legislature

Official Business

SENATE SPECIAL COMMITTEE
ON DOMESTIC AND INTERNATIONAL FISHERIES

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

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**LEGISLATIVE REVIEW OF ALASKA'S FISHERIES
ENHANCEMENT PROGRAM**

February 10, 1992

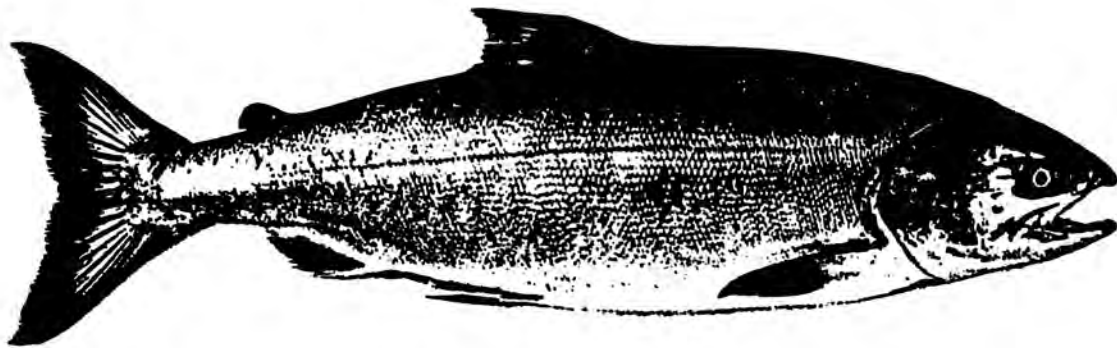
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**LEGISLATIVE REVIEW
OF THE ALASKA SALMON ENHANCEMENT
PROGRAM**

EXECUTIVE SUMMARY



**Senate Special Committee on
Domestic & International Commercial Fisheries**

February 10, 1992

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 PNP's 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 that 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 harvest only at an area designated by the department, and only after the hatchery fish have travelled 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 Ellason. 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 AS 16.10.440(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
<u>\$70.9 million</u>	<u>35 percent</u>	<u>Cost Recovery Sales of Fish</u>
\$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 for cost recovery, and 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 requires, 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:

- Sikusuilag 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 enhancement program review similar to Canada's, include sport as well as commercial fishing aspects of the program in order to achieve a more comprehensive performance report.
- Increasing the sport fish license fees to pay for a larger portion of the enhancement projects that benefit recreational fisheries.
- Encouraging Congress to increase Dingle-Johnson 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.

Sikusilaq 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.

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CHAPTER II. HISTORY AND DEVELOPMENT OF HATCHERIES IN ALASKA

See the attached memorandum from Linda J. Snow of the Legislative Research Agency, regarding "Legislative History of Alaska's Fish Hatchery Program."

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Alaska State Legislature

Legislative Research Agency



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July 31, 1991

MEMORANDUM

TO: Senator Richard I. Eliason, Chairman
Senate Special Committee on International and Domestic Fisheries

FROM: Linda J. Snow *L. J. Snow*
Legislative Analyst

RE: Legislative History of Alaska's Fish Hatchery Program
Research Request 91.296

You asked us to review the legislative history of Alaska's salmon hatchery program and to assess legislative intent regarding several current program issues. This memorandum has two sections. The first reviews the development of the hatchery program. The second addresses 12 specific questions about probable legislative intent.

Few relevant legislative records exist from the early 1970s, the formative years of Alaska's hatchery program.¹ We examined the few committee files and hearings records, as well as other available documents. Also, we interviewed several key players in the development of the hatchery program, including former Representative Terry Gardiner; former Senators Bob Palmer, Chancy Croft, Clem Tillion and Kay Poland; Bob Roys, former director of the Fisheries Rehabilitation, Enhancement and Development (FRED) Division within the Alaska Department of Fish and Game (ADF&G); Dr. Mike Kaill, former private nonprofit coordinator for the FRED Division; and Dr. William J. McNeil, a former biologist with the U.S. National Marine Fisheries Service (NMFS).

Attachment A presents a list of all legislation introduced in the Alaska Legislature concerning Alaska's hatchery program from 1959 to 1990.

¹Alaska's salmon hatchery program involves salmon ranching, where salmon eggs are hatched, reared to a juvenile stage, and released into the natural waters of the state. Salmon farming involves hatcheries also, but Alaska does not allow salmon farming in the state. Therefore, in this report, all reference to Alaska's hatchery program refers to salmon ranching, not salmon farming.

DEVELOPMENT OF ALASKA'S HATCHERY PROGRAM

The development of Alaska's hatchery program was an evolutionary process. Prior to statehood, several attempts at hatchery production of salmon were undertaken by the federal government and by private industry. These attempts proved largely unsuccessful, as hatchery technology was crude and undeveloped. In the late 1960s, Alaska was faced with the crisis of a severely depleted commercial salmon fishery, which wrought economic hardships for fishermen, fish processors, and others who depended indirectly on the fishing industry. The state legislature took the lead in revitalizing Alaska's commercial salmon fishery. The development of Alaska's salmon hatchery program was a crucial component in that revitalization. Generally speaking, this development had three phases. Initially, the legislature established state-owned and state-operated hatcheries and research programs. Then the emphasis shifted to encouraging the private sector to participate in hatchery development and operation. As the nonprofit hatcheries grew in number and scale of operation, the legislature turned its attention to the problems of economic viability and improved methods of hatchery funding.

A recurrent controversy underlies the development of Alaska's hatchery program. Although during initial development of the program in the early 1970s it was unknown if salmon hatcheries would be successful in Alaska, many people--including fishermen's groups and processors--believed that because the fishery was already depressed, there was nothing to lose by a failed attempt to propagate fish by means of hatcheries. The legislature seemed enthusiastic about the program, apparently more so than professional fishery biologists, who perhaps feared the unknown biological and management problems associated with pell mell development of hatcheries. Such questions as genetic intermingling, disease, and habitat competition were raised, and the legislature understood that the venture was not without biological risks. However, the depression of the fishery was an immediate and pressing economic problem. The legislature decided to proceed, but with an eye toward protecting the wild stocks. It was hoped that potential problems could be solved or at least mitigated by reasonable precautions, such as regional management plans and careful siting of hatchery facilities to segregate hatchery and wild stocks.

Hatchery Development Before Statehood

By the late 1800s commercial salmon fishing was a major industry in Alaska. The fishing industry was not regulated, and it became evident that the huge catches were beginning to deplete the salmon runs. There was concern about sustaining the resource, and fish hatcheries were viewed as a possible solution. The first salmon hatchery in Alaska was built by several fish processors at Karluk Lagoon on Kodiak Island in 1891. Technology was new and expertise lacking, and consequently this and other early private hatcheries proved largely unsuccessful. In 1900, federal regulations were adopted that required fish processors to build hatcheries capable of releasing four times as many fish as the company processed in a year. The regulations were not enforced. In 1905, the U.S. Bureau of Fisheries built the first government

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hatchery in Alaska. Beginning in 1906, the bureau instituted a federal tax credit for fish processors with hatcheries in order to encourage this type of enhancement.

Despite the operation of private and government hatcheries, depletion of the salmon runs continued. In 1915, the U.S. Bureau of Fisheries office in Alaska made an unsuccessful attempt to have Congress buy out all private hatcheries in Alaska. Franklin Roosevelt closed all government hatcheries in 1932 after the Commissioner of the Bureau of Fisheries declared that they had been a "complete waste of public funds." Only one private hatchery remained in operation, and it closed in 1936. Between 1932 and 1951, the U.S. Bureau of Fisheries approached the problem of depleted salmon runs by imposing regulations on fishermen in order to decrease the commercial catch, not by encouraging artificial propagation of salmon. During this time a few experimental hatcheries were started. The federal government built an experimental hatchery at Little Port Walter on Baranof Island in 1939, which stressed research on salmon biology, rather than fish production.

A territorial department of fisheries was established in 1949. Policy makers again looked to artificial propagation as a tool to sustain the fishery. The availability of king and coho salmon for sport fishing was increased by lake stocking and transplanting. Salmon enhancement research continued at the Little Port Walter facility. In 1952, the Deer Mountain hatchery near Ketchikan was built, and in 1953, the Kitoi research station on Kodiak Island became operational. When Alaska achieved statehood in 1959, the U.S. National Marine Fisheries Service was developing a fish culture research lab at Auke Bay near Juneau.

State-Operated Hatchery Program

Salmon runs in Alaska had been declining rapidly since 1936, and were in a state of depression during the 1960s and 1970s. The 30-year consecutive high average annual commercial harvest (1945 to 1975) was 83,300,000 fish, compared to an average annual harvest of 45,108,000 fish between 1960 and 1975, and an average annual harvest of 23,111,000 fish between 1973 and 1975. This dramatic drop in commercial salmon harvest prompted state action. Although the state Department of Fish and Game had been involved on a small scale with enhancement of the sport fishery, and with research and experimental hatchery production of salmon for the commercial fishery, the legislature sought to consolidate and expand the programs despite possible risks to Alaska's natural salmon runs.

By 1968, public concern about the depressed fishery was high, and the progress of hatchery programs in other states and countries was being watched with interest. A general obligation bond authorization for \$3,000,000 to build state hatcheries was passed by the legislature, and overwhelmingly approved by the general public that year.

In 1969, Alaska received \$900,000,000 from the sale of oil and gas leases on the North Slope. The legislature realized the potential of the future income