

ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILE 8672
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28

HOUSE BILL ANALYSIS

HB 2626

AN ACT RELATING TO WILD STOCKS OF SALMONIDS

Brief Description: Conserving and enhancing wild stocks of salmonids.

Committee: Fisheries & Wildlife

Sponsor(s): Representatives R. King, May, Orr, Rust, Belcher, Fraser, Hochstatter, Horn, Morris, R. Meyers, Basich, Jones, Sheldon, Leonard, Franklin, Zellinsky, Valle, Pruitt, O'Brien, Nelson, Bowman, Brough, Jacobsen, Haugen, Rasmussen and J. Kohl

Background:

Recovery Planning

The Northwest Power Planning Council, in their Phase II Amendment process, developed a management plan for salmon on the Columbia and Snake Rivers, which will be used by the National Marine Fisheries Service as a basis for their recovery plan for sockeye salmon. The Snake River sockeye salmon was listed as endangered under the Endangered Species Act in November of 1991.

There is currently no mandatory or ongoing recovery effort for wild stocks of salmon, steelhead and cutthroat trout that have not been petitioned for listing under the Endangered Species Act. There are many other wild salmon, steelhead, and sea-run cutthroat trout stocks that have been identified as declining by the American Fisheries Society. Forty-one of these are in Washington, outside of the Columbia River Basin.

Management Techniques for Increasing Wild Fish Runs

The Department of Wildlife regulates the recreational harvest of resident fish including steelhead trout and sea-run cutthroat trout. The Department of Fisheries regulates the harvest of the commercial and recreational salmon fisheries for non-treaty fishers. Both agencies coordinate with the tribes in developing commercial harvest regulations. Regulations are designed to provide harvest opportunities and sustain fish runs.

The Northwest Power Planning Council, in their Phase II Amendment, proposed a reduction in harvest of fall chinook in the Columbia river. Part of the mechanism for accomplishing this will be by providing for a commercial license leaseback program. The federal government will assist in paying to temporarily lease back commercial fishing licenses. Current Washington law requires that a commercial fisher, in order to renew a salmon license, catch one fish. The director of the Department of Fisheries has the authority to waive this requirement if the fisher has not had the opportunity to catch fish, such as would occur if a fisher participated in the leaseback program.

Marking and Catch and Release

Where a distinction between wild and hatchery stocks needs to be made for the purpose of allowing wild fish, if caught, to be released, the hatchery fish may be marked by clipping the adipose fin, using a coded wire tag, or using a newer ocular marking technique. The Department of Wildlife has marked most of its hatchery raised steelhead and sea-run cutthroat trout and is therefore able to implement catch and release regulations for recreational fishers. For almost all of the steelhead and sea-run cutthroat stocks identified by the American Fisheries Society as stocks of concern, these regulations are already in place. The Department of Fisheries has not marked all hatchery fish. Even if all were marked, the utility in returning wild fish caught commercially with current techniques is low, since these fish, caught in nets are usually dead shortly after the nets are hauled in. The recreational fishery could be managed for catch and release if all hatchery raised salmon were marked.

Hatcheries

The Department of Fisheries operates 39 major hatcheries and 19 satellite facilities. The Department of Wildlife operates 32 hatcheries. The tribes and the U.S. Fish and Wildlife Services also operate hatcheries, and there are hundreds of cooperative production facilities operated by volunteers and coordinated by the state Departments of Fisheries and Wildlife.

Captive Broodstock and Wild Stock Supplementation:

Wild salmonids spawn in river gravel. Their progeny reside in freshwater until ready to go to the ocean, where they mature. As adults, they return to their natal streams to spawn. Fish produced in hatcheries are artificially spawned by removing eggs from the female and raising the young fish and releasing them to travel downstream as smolts. New technologies are being developed to use artificial production means to supplement wild populations of salmonids with fish that are genetically of the same wild stock. One technique, called captive broodstock rearing, raises the fish from egg to mature adult, rearing in saltwater if necessary by using saltwater net pens. That adult is spawned artificially. Wild stock supplementation is the process of using eggs from the wild stock that one wants to supplement, by taking the fish out of the wild, rearing the progeny, and releasing the progeny back into the natal stream from which the parents originated. The Department of Wildlife has sea-run cutthroat captive broodstock programs in Shelton and Aberdeen, which have been implemented in the last five years. Many stocks of sea-run cutthroat on coastal streams have been identified by the American Fisheries Society as being stocks of concern.

Summary of Bill:

The Departments of Fisheries and Wildlife are directed to establish a review and recovery team to recommend recovery methods for salmonid stocks outside of the Columbia River Basin. The review and recovery team is to develop a definition of the term "stock", determine the status of all wild salmonid stocks in Washington, set escapement objectives for these wild stocks, and where escapement objectives are not currently being met, develop a recovery plan for each subbasin containing the wild stock. Priorities for recovery are to be, in descending order, natural production, supplementation using hatcheries, and captive broodstock technology. The team shall evaluate the role of existing hatcheries in recovery, and shall evaluate methods of

harvest that have less impacts on wild stocks. The recovery plan shall be submitted to the appropriate legislative committees by June 30, 1993.

By January 1, 1993, the Department of Wildlife is directed to implement an experimental captive broodstock program on a coastal river to be selected by the Department for wild sea-run cutthroat trout.

The Department of Fisheries, by December 31, 1992, is to determine the cost of marking all hatchery fish at all Department operated hatchery facilities.

The director of the Department of Fisheries is directed to use authority granted under existing law to waive requirements for commercial fishing license renewal, in order to accomplish the goals of the license leaseback program of the Northwest Power Planning Council, described in the Council's Phase II Amendment.

*Prepared by Keithyn Watson, Research Analyst (786-7310)
House Fisheries and Wildlife Committee
Office of Program Research
January 23, 1992*

SECTION BY SECTION SUMMARY: H-2626
Conserving and enhancing wild stocks of salmonids

Section 1. Legislative findings.

Section 2. The Departments of Fisheries and Wildlife are directed to establish a review and recovery team to recommend recovery methods for salmonid stocks outside of the Columbia River Basin. The review and recovery team is to develop a definition of the term "stock", determine the status of all wild salmonid stocks in Washington, set escapement objectives for these wild stocks, and where escapement objectives are not currently being met, develop a recovery plan for each subbasin containing the wild stock. Priorities for recovery are to be, in descending order, natural production, supplementation using hatcheries, and captive broodstock technology. The team shall evaluate the role of existing hatcheries in recovery, and shall evaluate methods of harvest that have less impacts on wild stocks. The recovery plan shall be submitted to the appropriate legislative committees by June 30, 1993.

Section 3. By January 1, 1993, the Department of Wildlife is directed to implement an experimental captive broodstock program on a coastal river to be selected by the Department for wild sea-run cutthroat trout, using existing facilities where possible.

Section 4. The Department of Fisheries, by December 31, 1992, is to determine the cost of marking all hatchery fish at all Department operated hatchery facilities.

Section 5. Amends existing law to require the director of the Department of Fisheries to use authority granted under existing law to waive requirements for commercial fishing license renewal, in order to accomplish the goals of the license leaseback program of the Northwest Power Planning Council, described in the Council's Phase II Amendment.

HOUSE BILL 2626

State of Washington 52nd Legislature 1992 Regular Session

By Representatives R. King, May, Orr, Rust, Belcher, Fraser, Hochstatter, Horn, Morris, R. Meyers, Basich, Jones, Sheldon, Leonard, Franklin, Zellinsky, Valle, Pruitt, O'Brien, Nelson, Bowman, Brough, Jacobsen, Haugen, Rasmussen and J. Kohl

Read first time 01/22/92. Referred to Committee on Fisheries & Wildlife.

1 AN ACT Relating to wild stocks of salmonids; amending RCW
2 75.30.120; and creating new sections.

3 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

4 NEW SECTION. Sec. 1. The legislature finds that wild stocks
5 of salmonids in the state of Washington are in a state of decline.
6 Stocks of salmon on the Columbia river are proposed for listing as
7 threatened and endangered, the Snake river sockeye has been officially
8 listed as endangered, and the American fisheries society has indicated
9 that there are two hundred fourteen other stocks of salmonids in the
10 Pacific Northwest that are in decline or possibly extinct. Many of
11 these are within Puget Sound or the coast, and therefore are not within
12 the jurisdiction of the Northwest power planning council. The
13 legislature recognizes that to lose these wild stocks would be
14 detrimental to the genetic integrity of the fisheries resource and the

1 economy, and will represent the loss of a vital component of
2 Washington's aquatic ecosystems. The legislature further finds that
3 to postpone the recovery of stocks that are on the decline but that are
4 not yet listed as threatened or endangered is short-sighted, and that
5 it will be less costly to act now to save this important resource.

6 NEW SECTION. Sec. 2. (1) The departments of fisheries and
7 wildlife shall establish a wild salmonid review and recovery team
8 consisting of fisheries biologists and geneticists. The purpose of the
9 team shall be to review and recommend recovery methods for salmonid
10 stocks outside of the Columbia river basin. The departments shall
11 invite representatives of the Northwest Indian fisheries commission and
12 the national marine fisheries service to participate on the team.

13 (2) By June 30, 1993, the review and recovery team shall:

14 (a) Develop a meaningful definition of stock. The definition shall
15 be formulated to allow preservation of genetic integrity of the wild
16 fish resource and to avoid future federal listings under the endangered
17 species act. The team shall consider the national marine fisheries
18 service's species definition as well as the American fisheries society
19 definition of stock;

20 (b) Determine the status of all wild salmonid stocks in Washington;

21 (c) Set escapement objectives for all wild salmonid stocks in
22 Washington; and

23 (d) Where escapement objectives are not currently being met,
24 develop a recovery plan for each subbasin containing the wild stock,
25 attempting to achieve escapement objectives within two generations.
26 The recovery plan shall identify baseline conditions as well as
27 recommend actions. Priorities for recovery shall be, in descending
28 order, natural production, supplementation using hatcheries, and
29 captive broodstock technology. The recovery plan shall include an

1 evaluation of the role of existing hatcheries in wild salmonid
2 recovery, as well as of methods of harvest that have less impact on
3 wild stocks.

4 (3) By June 30, 1993, the review and recovery team shall provide
5 a recovery plan to the appropriate legislative committees. The plan
6 shall include:

7 (a) A definition of stock;

8 (b) A state-wide list of wild stocks, with status of and escapement
9 objectives for each;

10 (c) A summary of data management needs; and

11 (d) A range of recovery alternatives for wild stocks outside of the
12 Columbia river basin, with accompanying time frames for implementation,
13 time frames for expected recovery, costs, and risk assessments.
14 Alternatives shall consider actions in the areas of water quality and
15 quantity, flow management, hatchery management, captive broodstock
16 programs, harvest, and land management. Costs shall be developed in
17 consultation with an advisory committee of appropriate membership to
18 be appointed by the departments.

19 (4) This section shall expire January 1, 1994.

20 NEW SECTION. Sec. 3. By January 1, 1993, the department of
21 wildlife shall implement experimental captive broodstock programs on
22 a coastal river to be selected by the department, for wild sea-run
23 cutthroat trout. Existing facilities shall be used where possible.

24 NEW SECTION. Sec. 4. By December 31, 1992, the department of
25 fisheries shall determine the cost of marking all hatchery fish at all
26 department of fisheries operated hatchery facilities.

1 Sec. 5. RCW 75.30.120 and 1983 1st ex.s. c 46 s 146 are each
2 amended to read as follows:

3 (1) A commercial salmon fishing license issued under RCW 75.28.110
4 or salmon delivery permit issued under RCW 75.28.113 may be issued only
5 to a vessel:

6 (a) Which held a state commercial salmon fishing license or salmon
7 delivery permit during the previous year or had transferred to the
8 vessel such a license, and has not subsequently transferred the license
9 or permit to another vessel; and

10 (b) From which food fish were caught and landed in this state or
11 in another state during the previous year as documented by a valid fish
12 receiving document.

13 Where the failure to obtain the license or permit during the
14 previous year was the result of a license or permit suspension, the
15 vessel may qualify for a license or permit by establishing that the
16 vessel held such a license or permit during the last year in which the
17 license or permit was not suspended.

18 (2) The director may waive the landing requirement of subsection
19 (1)(b) of this section if:

20 (a) The vessel to which an otherwise valid license is transferred
21 has not had the opportunity to have caught and landed salmon; and

22 (b) The intent of the commercial salmon vessel limitation program
23 established under this section is not violated.

24 (3) The director shall exercise his or her authority under
25 subsection (2) of this section to accomplish the goals of the Northwest
26 power planning council's phase two amendment to its fish and wildlife
27 program, dated December 11, 1991, concerning a temporary commercial
28 salmon fishing license leasing program. The director may adopt rules
29 to accomplish the goals of the leasing program.

- 1 (4) Commercial salmon fishing licenses and salmon delivery permits
- 2 are transferable.

Draft

**The Scope, Importance and Economic Value of the Fishery
Enhancement Program to the Recreational Fishery in
Alaska**

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The Scope, Importance and Economic Value of the Fishery Enhancement Program to the Recreational Fishery in Alaska

Introduction.

The importance of enhancement program to the recreational fishery.

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

This chapter summarizes the size and distribution of enhanced harvests, type of economic effects that result from the harvests, other non-market values associated with tourism, and to the extent possible, magnitude of these effects on Alaska's economy. Additionally, a discussion of some of the issues and conflicts relevant to the enhancement of recreational fisheries are presented.

Sport fishing has been growing in Alaska since Statehood. This is evidenced by the increase in the growth in the number of licensed anglers fishing in Alaska from 1977 (200,000 total license sales) to 1990 (425,000 total license sales) (Mills 1991).

The explosive growth in sport fishing participation in Alaska can be attributed to many factors, including changes in Alaskan population, real per capita income of resident and non-resident visitors, and the opportunity to have a good quality fishing experience. A major component of a high quality fishing experience, particularly for resident anglers is the probability of catching a fish during an angling experience (called the harvest per angler day) (Jones and Stokes 1991). 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 catches in the presence of increasing fishing effort.

Magnitude of recreational fishing from the Enhancement Program.

The statewide salmon enhancement program has grown in recent years to the point of supporting a significant portion of the total Alaska fin fish harvest. Total finfish harvests in 1990 in the Alaska Recreational fishery were 1,995,360 (Mills 1991)¹. Total finfish harvest of trout, salmon, grayling, and arctic char and steelhead was 1,341,741. The enhancement program contributed over 28 percent of the harvest of salmon, trout, grayling, arctic char, and steelhead (Table 1.)(Fig. 1)(McKean 1991 and Mills 1991).

The state operated enhancement program produced 270,983 salmon, trout, grayling, char and steelhead in 1990, while PNP operators contributed 98,910 salmon to the recreational harvests for a Total of 369,893 fish (Table 1) (Fig. 2). The total recreational harvest from enhancement in 1991 is estimated to be 357,370 (Holland and McKean 1992).

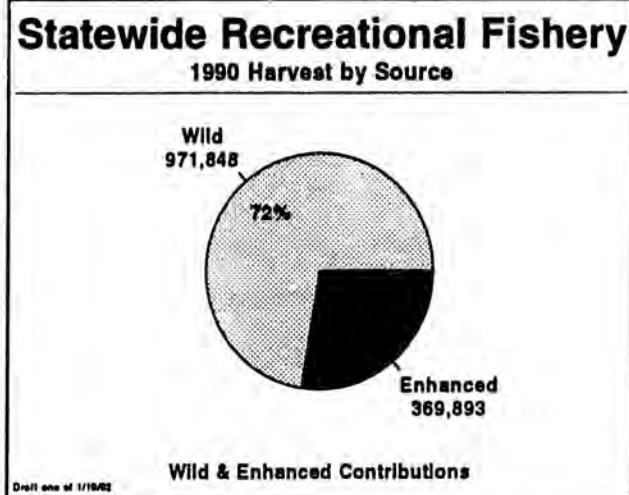


Figure 1

Table 1. Number and Percent of Enhanced Salmon, Trout, and other enhanced species harvested in 1990 in comparison with total harvest in the recreational fishery.

Species	king	searun coho	sockeye	pink	chum	landlocked coho/chin	rainbow	other	total
FRED harvest	16,100	33,447	3,550	3,900	0	37,831	170,283	5,872	270,983
PNP harvest	1,517	34,754	0	54,867	7,772	0	0	0	98,910
Enhance total	17,617	68,201	3,550	58,767	7,772	37,831	170,283	5,872	369,893
Wild totals	106,291	257,735	235,568	146,835	6,753	0	21,526	197,140	971,848
Grand Total	123,908	325,936	239,118	205,602	14,525	37,831	191,809	203,012	1,341,741
% harvest enhanc	14.22%	20.92%	1.48%	28.58%	53.51%	100.00%	88.78%	2.89%	27.57%

¹ Over 1 million razor clams were also harvested in 1990 in non-fisheries.

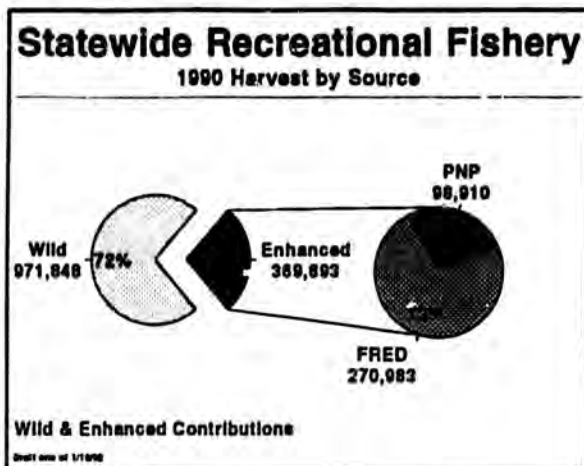


Figure 2

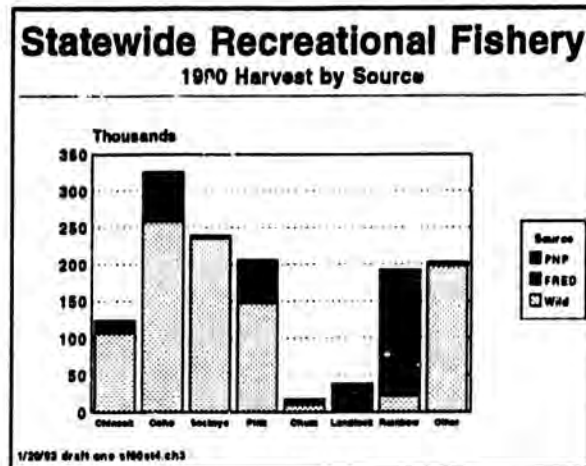


Figure 3

List of selected enhancement projects that have dramatically increased recreational catches.

- o Eighty nine percent of the 192,000 rainbow trout harvested by sport fishermen in Alaska in 1990 originated from state operated hatcheries (Fig. 3)(McKean 1991, and Mills 1991)².
- o Of 37,831 coho and chinook landlocked sport harvests, 100% were produced by state hatcheries in 1990 (McKean 1991, and Mills 1991).
- o Between 1987 and 1990, 47% of the coho salmon harvested in the popular Resurrection Bay sport fishery originated from enhancement projects at Elmendorf Hatchery, Trail Lakes Hatchery, and Bear Lake rearing Facility. The average sport harvest of enhanced fish was 9,910 (McKean 1991).
- o Harvests of coho salmon from enhancement projects in the Juneau area increased by 21 fold (2,166%) between 1990 and 1991 from 1,174 to 21,664 fish (McKean 1991). Most of the increased harvests in 1991 were estimated to originate from Gastineau Hatchery operated by Douglas Island Pink and Chum (Holland and McKean 1992).
- o In 1991 the Homer Spit recreational fishery produced 10,000 coho salmon, 3,500 chinook salmon, and 500 pink salmon entirely from enhancement releases from Crooked Creek Hatchery.

² While enhanced harvest statistics are available for recreational fisheries in 1991, statewide harvest statistics for wild and enhanced fish are produced on a one year lag, so 1990 is the most recent year that total and enhanced harvests may be contrasted.

- o Southeast chinook salmon production in 1991 totaled almost 38 thousand adult fish returning with another 5 thousand pan-sized fish harvested in stocked lake fisheries. Over six thousand adults and 5 thousand sub-adults were harvested in marine and freshwater sport fisheries.
- o The Elmendorf and Crooked Creek Hatchery increased the harvests of king salmon by 4,800 and coho salmon by 1,655 in the 1990 Kasilof River Recreational Fishery.

Contribution of enhancement program to community fishing derbies.

Dozens of fishing derbies are conducted each year in Alaska. Fishing interest groups and vendors, and municipalities are the major organizers of these events. Approximately one dozen of these derbies produce large harvests of fish into the recreational fishery (Table 2). The major reason that communities hold derbies is to increase the amount of economic activity in an area or to collect revenue for charity.

Retail businesses in some communities depend upon the angler related spending that occurs during a derby to sustain a large portion of their annual gross receipts. The ability of a derby to attract the angling public depends largely on the ability of the fishery to supply a good fishing experience with acceptable catch levels.³ The enhancement program augments catch opportunities and in some cases is the primary source of fish harvested during the derby. In Alaska some derbies would not be able to exist without fishery enhancement (i.e. Valdez coho derby pers. comm. Paul McCollum) others would not attract nearly as many participants without the acceptable catch rates offered by fishery enhancement. Approximately 82% of the salmon harvested in Alaska's major fishing derbies have originated from the statewide enhancement program (Fig. 4).

List of major fishing derbies in Alaska, augmented by enhancement

1. Juneau sport fish Derby
2. Ketchikan sport fish Derby
3. Wrangell/Petersburg
4. Sitka Derby
5. Seward Coho derby.
6. Valdez Derby
7. Big Lake Derby
8. Seldovia
9. Community of Houston
10. Assorted Kodiak derbies

³ Weather conditions, income, and substitute recreational activities, and the opportunity to compete for prizes, are also known to affect participation in fishing derbies.

Statewide Recreational Fishery Fishing Derby Harvest

Enhanced
5013F

Wild
11655

Wild & Enhanced Contributions

Figure 4

Table 2. Fishing Derby Harvests, including numbers of enhanced fish by species, percent of enhanced fish by species for 1991 and other selected years.

Derby Name	Species	Location	Enhanced Harvest	Wild Harvest	% Enhanced
Golden North(1991) ^a	Chinook	Juneau	136	522	26.0%
^b	Coho	Juneau	173	2,567	15.8%
Petersburg(1991) ^a	Chinook	Petersburg	228	422	35.1%
Wrangell(1991) ^a	Chinook	Wrangell	48	173	21.7%
Sitka(1991) ^a	Chinook	Sitka	270	980	21.6%
Seward(1989) ^c	Coho	Seward	9,280	5,581	62.4%
Valdez(1991) ^d	Coho	Valdez	10,000	500	95.2%
Valdez(1991) ^d	Pink	Valdez	30,000	500	98.4%
Total			50,135	11,655	81.7%

^a Memo from Paul Suchanek to Fred Gaffney 12/05/91

^b Karen Crandall, Pers Comm. 1-15-91

^c Doug Vincent-Lang Sport Fish Division Anchorage, pers comm. 1-91

^d Paul McCollum, Valdez Fisheries Development Corporation, pers comm 1-91

Valuation and economic impacts of the recreational fishing that result from the statewide enhancement.

How are recreational benefits measured, and how does it differ from an expenditure and an economic impact?

The salmon, steelhead, trout, grayling, and Dolly Varden resource in Alaska provides at least two distinct forms of recreation. It provides an extensive saltwater and freshwater sport fishery, as well as non-consumptive recreation such as watching a run of salmon migrate and spawn. The same basic economic principles apply to determining the value of both forms of recreation in terms of how benefits are generated. However, the data bases differ for each kind of recreation and the methodologies developed for the sport fish evaluations will not be suitable for evaluating the non-consumptive forms of recreation.

Consumptive values from harvests and catches of fish could be likened to property values, in that they vary from location to location. Also, they vary in quality, just as a piece of property with a beautiful view or superior amenities may have a higher market value than an equal sized piece of property with a view of a city dump, and poor amenities.

In the context of a salmon or trout fishery, enhancement changes these consumptive values by increasing the abundance of fish available to anglers. This results in a larger catch which increases the harvest expectations of both current and prospective anglers. This will either cause a greater number of fishermen to go fishing, the current number of fishermen to spend more time fishing, or cause fishermen to receive a higher valued experience for the current amount of fishing effort. Since these angler decisions can occur simultaneously, economic models that estimate the value of these experiences may be quite complex. This chapter includes a short discussion of the methods used for valuing sport fishing benefits from enhancement projects and some analytical results of economic studies on enhancement.

When anglers expend more effort catching fish from an enhancement project they may spend a greater portion of their income in harvesting. For policy makers and fishing interest groups, expenditure data reported by anglers is frequently mistaken for the "value" of recreational fishing. The net economic value of a recreational fishing experience is what fisher's are willing to pay over and above their costs. These expenditures, however, are a "cost" to the consumer and must be subtracted from the total consumer surplus. While these expenditures are an unambiguous cost, they do produce economic activity in communities. This economic activity is referred to as "indirect effects" ⁴ in economics, and is further discussed in the impact section of this chapter.

Consumptive Values and economists use of the term "value".

Given the virtual free and open access to fisheries that are augmented by enhanced fish, the largest part of the incremental recreational benefits generated by FRED Division and the PNP program will accrue directly to recreationists in the form of consumer surplus. **Consumer surplus is a measure of the satisfaction people enjoy from their consumption of a commodity.** It is defined by what they would be willing to pay for it.

If charges could be levied for the rights to harvest enhanced fish, each individual would be willing to pay some maximum fee for the opportunity to participate in any particular type of fishing or other recreational opportunity. Further, the angler would choose to buy a certain number of units of that recreation at each unit price below that maximum. Of course recreationists do not buy angler days or days of salmon viewing as they do other commodities. None-the-less, this price quantity relationship does exist for each individual and forms his or her demand curve for fishing, viewing etc. The sum of all the individual demand curves forms the aggregate demand curve over all those willing to pay to participate in the recreation (Fig. 5).

⁴ Also, they are referred to as secondary effects, secondary impacts, and regional economic impacts.

In Fig. 5, the line D represents the aggregate demand curve for some particular recreational activity associated with the salmon, trout or other resource. The area under the curve is the total willingness to pay of all recreationists. It is a measure of the total satisfaction gained from consumption of the recreation if it is offered at no charge. This demand curve is influenced by many factors such as the price of complementary goods, by incomes and by the expectations and perceptions of those who participate. The availability of more fish as a result of the enhancement program causes the quality of the product to change, thus, shifting the demand for salmon and steelhead recreation from D to D1. The expectations of fishermen are raised over the prospect of improved catch success and this, in turn, improves what they are willing to pay for the experience. This increase in willingness to pay results in the consumption of more fish at each price. The shaded area between D and D1 is the increase in consumer surplus that results from an enhancement project.

The total willingness to pay differs from the net willingness to pay in that net WTP considers the additional cost of catching fish. In (Fig. 6), the net willingness to pay for a recreational experience is demonstrated by the difference between the total willingness to pay and the cost of fishing at a given price per fish. The consumer surplus is the shaded area above the price line and below the demand curve. This graph represents the net willingness to pay for a project that creates a new fishery, and does not represent an increment in catch for an existing fishery.

In addition to generating consumer surplus by increasing the abundance of fish in existing fisheries, the statewide enhancement program can generate consumer surplus by opening new sport fisheries. Enhancement projects which rehabilitate a diminished stock have been credited with re-opening sport fishing areas, and with expanding bag limits in a recreational fishery. The reopening of a sport

Total Willingness To Pay (WTP) For An Enhancement Project

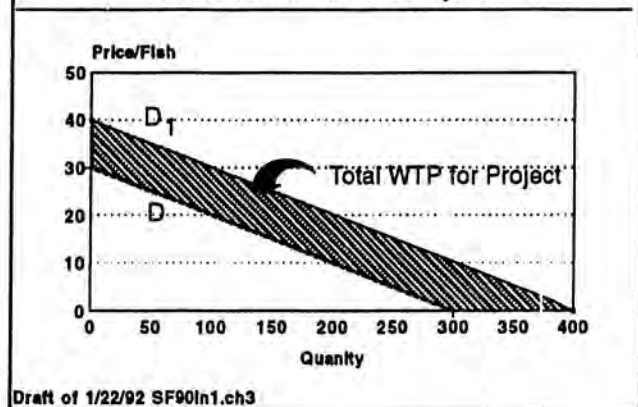


Figure 5

Net Willingness To Pay (WTP) For An Enhancement Project

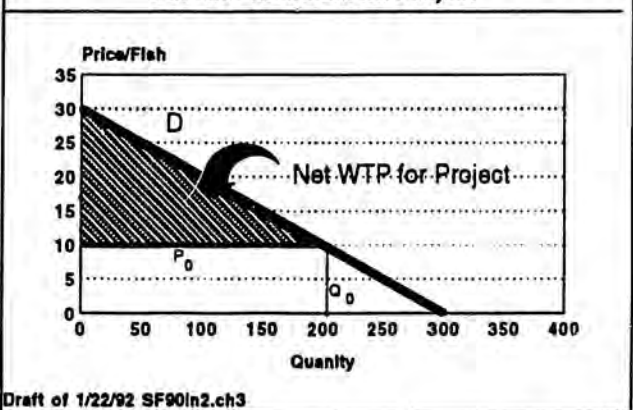


Figure 6

fishing statistical area, or relaxing of bag limits will often produce greater consumer surplus values than simply increasing catch rates during an existing opening.

Finally, there may be non-consumptive and nonuse values associated with the fishery. These values include existence, option or bequest values. People may gain satisfaction from the fishery not because they make use of it, but for other reasons. Viewing and education associated with fishery enhancement projects motivate tens of thousands of visits to state and PNP facilities each year. A discussion of some of the tourist visitation statistics are included in this chapter. Persons who never fish may still place a value on the continued existence of the fishery. Fishery rehabilitation projects have been applied to several streams with salmon populations that would be otherwise too small to sustain themselves in the future. Although nonuse values associated with fisheries in Alaska may be significant, they are not treated here.

Valuation Statistics on Enhancement of Recreational Fisheries

The State of Alaska is fortunate to have some of the finest economic models in the North America for valuation of recreational fishing. Three studies by the consulting firm of Jones and Stokes, have been carried out since 1986 (Jones and Stokes 1987, 1989, and 1991). The work, which clearly represent the state of the art in recreational demand modeling cover the regions of South Central Alaska, Juneau, and Southeast Alaska. Areas not covered by the analysis include the Arctic, Yukon, Kuskokwim regions, Alaska Peninsula, Kodiak, and Bristol Bay. The State of Alaska has expended over \$600,000 in the development of the current models. The two valuation techniques applied in these studies are (1) a modified travel cost model approach and (2) contingent valuation procedures. While the methods for these two techniques cannot be described in detail here, some of the major findings of the studies, as well as difficulties with the models are summarized.

While enough cannot be said about the analytical quality of the three Jones and Stokes studies, several obstacles exist in actually applying some of the models to policy questions related to the Statewide fishery Enhancement Program.

1. The report for the South Central studies, and Juneau area studies do not include an analysis of current enhancement projects. Some net willingness to pay values are cited in the reports that are unfortunately, not relevant to evaluation of enhancement projects. The economic models created for the studies must actually be operated on a computer program to precisely estimate sport fishing values for policy analysis (unless a relevant policy analysis simulation was carried out under the contract). In fact, the estimates of average value for a day of fishing effort will be overestimates of the marginal value of an enhanced fish by a few percent to more than an order of magnitude. This is demonstrated in the Southeast economic study where average angler willingness to pay per king salmon harvested of \$616 was nearly three times the marginal angler willingness to pay

per fish of \$210 from a king salmon enhancement project (Jones and Stokes 1991). Thus, use of the average willingness to pay figures from the reports, could produce grossly distorted and spurious results when applied to policy questions requiring marginal or incremental values.

2. The South Central Economic Study (Jones and Stokes 1987) is extremely complex, and the models created in this study required initial calibration on a Cray super computer, during their formulation. The cost of carrying out simulations on the mainframe computer is prohibitive for day to day policy analysis. Furthermore, only the staff at Jones and Stokes and a few other economists in the U.S. are capable of operating the South Central Region discrete choice models.

3. Even if the computer simulation models were operated in their current state, many of the site/species statistical areas, that are sampled in the studies are not the sites in which enhanced fish are produced. Enhanced sites must be matched with similar site/species combinations in the surveys to approximate the value of a project. This would require some ADF&G Sport Fish Division staff time to carry out the site/species matches.

4. Applied cost benefit analysis with the Jones and Stokes models require the projection of some fairly detailed catch and effort information from the Department of Fish and Game. The logit Travel Cost models and Contingent Valuation models require detailed information on probable harvests and fishing effort (angler days) for each proposed project. This information must be projected by specific statistical area and by week of harvest.

5. The Jones and Stokes models produce valuation estimates for years between 1986 and 1988. To run simulations on present day conditions requires some updating of the models. These updates would require ADF&G staff time and some contractual resources for economic analysis.

For the proceeding reasons (1-5), a comprehensive study to estimate net benefits of the statewide fishery enhancement program to the recreational fishery has not been carried out. Such a study would be of critical importance for investment and allocation purposes and would complement the economic modeling that the Legislature is now undertaking on the value of enhancement to the commercial fishery. The costs of creating the necessary software to evaluate all projects in South Central region, would require approximately \$20,000. Additional running of simulations would require approximately 1 full year of work in a cooperative effort with FRED Division and the Division of Sport Fish. The simulation of the net benefits for projects in Southeast Alaska could be undertaken with fewer resources, since the computer software was produced as part of the contract. Both the South Central and Southeast Region fishery enhancement could be evaluated with an additional \$30,000 in contractual services, and with the better part of

a year of staff time from the FRED Division economist and 1/3 year of staff time from the Biometrics section of the Division of Sport Fish.

Selected statistics for the enhancement produced Southeast Alaska king salmon fishery.

The Southeast Alaska Sport Fishing Economic Study (Jones and Stokes, 1991) does produce some analytical results that are applicable to estimating the value of proposed king salmon enhancement actions.

- They are:
- (1) An estimate of the net willingness to pay estimates for a proposed increase in hatchery operations for king salmon enhancement of 20%, and
 - (2) A policy analysis question involving the estimation of an increasing in the opening for the Juneau Statistical Area for Chinook salmon fishing.

In brief, the first analysis applies direct survey questions about what amount anglers would be willing to pay for a fishing stamp to charge for improved chinook salmon fishing from the hatcheries in Southeast Alaska. The survey relates these proposed access fees to a 20 increase in production costs from the enhancement facilities. This in turn, was estimated to yield approximately a 30% increase in the average sport harvest of Chinook salmon in Southeast Alaska. While the production costs are not exact estimates, a special simulation of the models revealed that the increase of 8,900 harvests would result in an annual net willingness to pay of approximately 1.9 million dollars annually (1988 dollars) (Table 3). The average value for a chinook salmon in this scenario is approximately \$210 per harvested adult.

Table (3) Total Annual Willingness to Pay of Resident Angler Households in Southeast Alaska for a 20% increase in the King Salmon Harvest from Hatcheries

Harvest Area	Hatchery Operations
Ketchikan	\$380,688
Prince of Wales	340,958
Kake/Petersburg/Wrangell/Stikine	352,287
Sitka	362,983
Juneau-Haines/Skagway	<u>439,104</u>
Total	\$1,876,020

The second economic statistic results from a proposed opening of the Juneau statistical area for King salmon fishing during the months of April, May and June. This policy question focuses on a recent decision to open a portion of the Juneau statistical area to early season king salmon fishing (from April 24 to June 18). During a previous opening of this statistical area over 1,130 king salmon were harvested, and a large increase in the number of days of effort were recorded. Angler net willingness to pay for this alteration was estimated using the travel cost, and contingent valuation methodologies. The change in the willingness to pay for the increased catch for this management action was between \$303,500 (from the results of the logit model) and \$398,000 (from results of the CV model) annually and from \$268 to \$352 per harvested fish respectively.

This simulation is similar to the approach that would be applied to computing the value of a Chinook enhancement project that increased the abundance of fish sufficiently to extend the length of the opening in a prime fishing area. For several reasons, the net willingness to pay for an identical increment in chinook harvests from a typical enhanced chinook fishery may be less than the WTP amounts cited in this example⁵, but they are probably within a similar magnitude.

While these valuation results must be offered with a note of caution, they probably provide an upper bracket for the marginal value of a Chinook salmon, produced by enhancement, and caught by recreational fishers in Southeast Alaska. The lack of updated computer software, designed to apply the Jones and Stokes models, is the major restraint to a comprehensive economic assessment of recreational net benefits for the statewide enhancement program.

Visitation Statistics for Hatcheries.

In aggregate, State and PNP hatcheries generate **nearly one half million visitor days from resident and non residents per year**. Visitation statistics have been compiled for the following hatcheries.

Table (4) Public and PNP facilities with visitor facilities and visitation records.

	Visits
Deer Mountain	150,000
Elmendorf	65,000
Ft. Richardson	1,200

⁵a. Most enhancement projects increase the catch per unit of effort in an established fishery opening, but do not result in outright extensions of area/time openings.

b. Harvests in this example consist of both enhanced and non-enhanced salmon. The Jones and Stokes models have demonstrated a small WTP premium for wild fish in the Southeast marine chinook salmon fishery.

Gastineau Hatchery (DIPAC)	100,000
Trail Lakes Hatchery (CIAA)	25,000 (20,000 to 30,000)
Bear Lake Rearing Facility (CIAA)	12,500 (10,000 to 15,000)
Crooked Creek Hatchery	80,000
Valdez Hatchery (VFDA)	8,541
Total	442,241

The tourism generated by hatchery visitation is one example of a non-consumptive value that is created by the statewide enhancement program. Non-consumptive recreational benefits generated by the enhancement program are in many ways more difficult to estimate than the benefits of sport fishing itself. Baseline information on the demand for such forms of recreation is scarce, but visitation itself is an indicator that people derive consumer surplus from these experiences. The value of a visit to a salmon enhancement facility can be compared with the value of visits to attractions such as Aquaria or a private zoo. The willingness to pay for entrance to the facility is a proxy for the minimum consumer surplus derived.

The visits vary in quality and time from facility to facility. Some facilities have extensive visitor amenities and visitation may consist of an hour or more in length. Other facilities have minimal visitor amenities and visitation may consist of a few minutes of viewing of migrating and rearing of salmon. The states largest and most extensive hatchery visitor center is at Gastineau Hatchery, in Juneau. In 1991 the facility charged \$2.25/visit (walk in fee) and recorded nearly 100,000 visits.

While a total value cannot be computed from the existing visitor information available from these facilities, total visitation suggests that benefits to Alaska are on the order of hundreds of thousands of dollars annually.

Indirect economic effects of the statewide enhancement program (employment and income effects from tourism and resident expenditures)

As previously explained, an enhancement project that increases non-market benefits of a fishery will often compel anglers to spend additional fishing effort and make additional expenditures to compete for improved fishing. Thus, fishery enhancement can compel anglers to pay more for boats, moorage, lodging, transportation, food and beverages, guiding, and other fishing related items. It is these out of pocket expenditures that lead to "economic impacts" and result in increased employment and income in the Alaska economy. Businesses that provide goods and services to anglers hire and pay employees and buy inventory from other businesses, which in turn hire and pay employees and buy from still other businesses. Multiplier effects turn these expenditures into gross business revenues in Alaska. The magnitude of these revenues can be projected with economic impact models.

Two economic impact models exist in Alaska that are suitable for computing changes in changes in expenditures and employment resulting from fishery enhancement of recreation. One is an input-output model developed for Jones and Stokes 1987, 1989, and 1991). The second is a model called SALMOD, developed by the Institute of Social and Economic Research. In the Jones and Stokes, I-O models angling expenditures are computed for anticipated change in fishing effort (angler days), and in turn, the direct, indirect, and induced economic impact for a fishery may be estimated. A major advantage of this model is that short run expenditures for a given project are empirically estimated in the behavioral models. Thus, the expenditure estimates conform more closely to the amount of additional spending resulting from a management, or enhancement action. Many impact models must use average expenditure data which can produce greatly overstated estimates of marginal expenditures.

As in the case of the Jones and Stokes non-market models, economic impacts for the statewide enhancement program could not be estimated without the creation of practical computer software, and additional fishery effort projections for enhanced sites (for South Central Alaska). Impact assessments would be possible for enhancement projects in Southeast Alaska with the soon to be completed computer software, and with additional ADF&G staff projections on fishing effort estimates for all enhancement projects. An example of an employment and personal income estimate is provided in Jones and Stokes (1991) for an expansion of recreational fishing opportunities for chinook salmon fishing in the Juneau area. An additional catch of 1,130 harvested adults is estimated to produce approximately \$13,000 in personal income and less than 1 full time job (Jones and Stokes 1991).

Results of Economic impact Assessment of Statewide Enhancement program with ISER Model.

Estimates of employment in the Alaska economy can also be made with SALMOD, an economic impact model created by the Institute of Social and Economic Research (ISER). This model was created specifically for the evaluation of the state wide enhancement program. Several revisions of the economic base model have been completed between 1986 and 1990. The model produces estimates of the expenditures of recreational fishing created by the enhancement program. Employment is expressed in full and part time jobs. The documentation for this model is in progress through a contract with Scott Goldsmith of ISER (pers comm Jeff Hartman FRED Division 1991).

The preliminary results of the FRED recreational impacts, from SALMOD, project personal income to Alaska residents of \$2.0 million to \$7.0 million annually, with a point estimate of \$4.3 million⁶. The full time employment that would result from this

⁶ Income and employment impacts vary greatly depending on what assumptions are used in this model for the expenditures that would occur in the absence of the recreational fishing

increased personal income is approximately 150 jobs. The PNP hatchery personal income impacts from recreational fishing are estimated to be approximately \$400,000. These impacts result from the eggs taken in broodyear 1988, that were projected to return between the years 1990 and 1997 (Hartman, 1988) Memo of July, 20, 1988, to Distribution. These employment and income impacts occur primarily in the Cook Inlet region, Southeast, and Kodiak regions (Table 5) (Fig. 7).

Table 5 Personal Income and Employment Impacts from 1988 simulation of SALMOD impact model for FRED Division enhancement projects by region of impact.

	Total Statewide Impacts	South east	Prince Willia Sound	Cook Inlet Mat/Su	Kodiak AK. Pen.	Interior
Personal Income (\$ 1,000'S)	\$4,309	\$731	\$59	\$2,786	\$37	\$696
Employment	148	25	2	96	1	24

Issues and Conflicts relating to Enhancement of Salmon, Trout, and other species.

1. Allocation between competing users.

Intense competition between users exists for most of the salmon fishery in Alaska as is the case in most of the salmon fisheries in North America. This competition is observed by the Alaska Board of Fisheries, and ADF&G fisheries managers who are under constant pressure to deliver more fish to each of the various interest groups in the state. Within the commercial fishery, sport fishery, personal use and subsistence fisheries of Alaska, there are a multitude of insistent claims to enhanced fish, all asserting equal validity but in total, exceeding the available supply.

Statewide Recreational Fishery Full Time Jobs From Enhanced Sport Fish

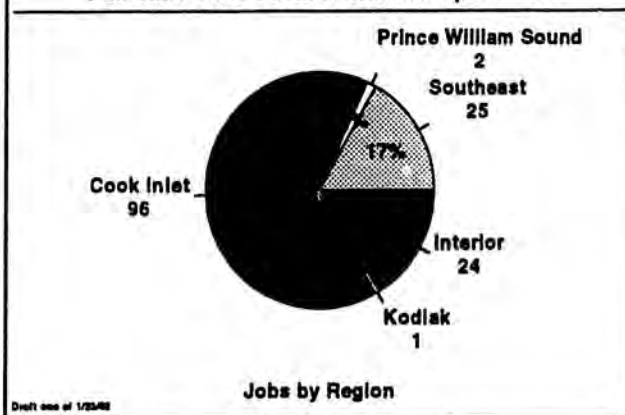


Figure 7

opportunity. Net expenditures in this simulation are equal to 1/2 of the average expenditures for an angler day, as approximated from Jones and Stokes (1987) and Mike Mills pers comm 1988.

The source of the conflict and divisiveness over allocation of enhanced fish is often misunderstood. The primary reason for the competition for these resources lies in the large economic value of the salmon resource that has been created in Alaska. If the resource created by enhancement were of little economic value, fishers would not spend so much of their time trying to seek out larger shares of the available harvest.

Since enhanced fish are often harvested along with wild stocks, allocation conflicts involving recreational fish are complex and intertwined. In Southeast Alaska, the allocation conflicts are additionally complicated by U.S./Canada treaty constraints. This treaty sets strict limits on harvests of non-enhanced chinook salmon in the region. Reduced quota's for chinook salmon, along with increased harvests in the recreational fishery, have generated a recent Board of Fish decision to hold special hearings that consider a range of restraints on the sport harvest of chinook salmon.

Examples of the types of fishing restraints that managers have applied in recreational fisheries include, bag limits, reduced area/time closures, gear restraints, increased user fees, and limited access for charter fishing operations. Most of these techniques reduce fishing effort, and may also reduce the quality of a recreational fishing experience, which in turn can actually decrease the economic value of fishing. The economic costs of some types of restraints to the recreational fishery can be greater than the economic costs of producing additional chinook salmon to targeted commercial or recreational fisheries through enhancement. While there is no substitute for careful management of salmon stocks, the fishery enhancement program may be a tool to help reduce conflict in these types of allocation disputes.

2. Funding of enhancement for recreational fisheries.

While anglers in Alaska have clearly become dependent on the statewide fishery enhancement program for sustaining a valuable fishing experience, the prognosis for sustained financing of fishery enhancement in the state is much less certain.

The existing funding for statewide fishery enhancement program is highly dependent on the continuation of Federal funding through an excise tax and distribution program called Wallop-Breaux. This amendment in the federal Register, represents somewhat of a windfall for Alaska. Alaska fishers contribute a trivial amount the tax receipts to the total fund in comparison with other states. The current funding formula provides an amount to the State of Alaska which is not commensurate with population or the number of licensed fishermen in Alaska. Should the funding formula for distributing tax receipts to Alaska change, most of the states enhancement production would be affected.

Additionally, in the FY 93 Governor's Budget, two state owned hatcheries that produce important recreational fisheries, are not funded. They are Deer Mountain Hatchery in Ketchikan, and Big Lake Hatchery in Wasilla. Deer Mountain Hatchery produces several hundred chinook salmon harvests in the recreational fishery, and over 1,000 chinook harvests annually in the commercial fishery. It also produces a significant harvest of coho salmon in the recreational fishery. Big

Lake Hatchery plants coho salmon into lakes and streams in the Sustina drainage that are harvested in the sport fishery. While the economic value of the permanent loss of the production from these hatcheries has not been computed, it would be possible to produce an estimate by creating a simulation from the newly completed Southeast Economic Study.

3. Management Implications and Issues related to Enhancement of Recreational Fisheries

It is a statutory obligation of ADF&G to manage fisheries populations in order to maintain a "sustained yield" in the common property fisheries.⁷ Other references to wild stock protection and maintenance of healthy wild stocks are also important parts of the title 16 statutes. There is, however, no specific formula in the statutes for determining the exact population size for a stock of wild fish that is "sustainable". Fisheries managers determine escapement goals for stocks and populations of fish and corresponding catch levels that can be sustained, with a variety of techniques. These sustainable catch levels may vary from year to year based on the expectation of run strength prior to and during the fishing season. Often, there is a great deal of uncertainty over the escapement level that must be maintained to sustain a healthy population of salmon.

What a sustainable wild stock is, and what population size it corresponds to, is of importance for the State and PNP enhancement program. Enhancement projects targeted to commercial, recreational, or subsistence fisheries may increase or decrease populations of wild fish.

In so called "mixed stock" fisheries, an enhancement project may increase the probability of harvesting wild stocks. The probability of wild stock interception increases where information on the temporal and spacial mixing of the enhanced and wild population of salmonids is poor. This potential is generally thought to be of greater concern in commercial salmon fisheries where a great deal of intense fishing power may occur during an opening. Most recreational fisheries, in Alaska represent a small portion of the total salmon harvest, and as such do not contribute as acutely to unwanted interceptions. Possible exceptions to this general rule in anadromos fisheries include (1) Kenai River chinook salmon, where a conservative approach to enhancement has been applied, and (2) Southeast region recreational chinook fisheries where the resident and charter fishing fleet is catching an increasing portion of the allowable chinook harvest. There is no empirical evidence that larger catches of enhanced fish in the recreational fisheries would reduce escapements of wild stocks even in these fisheries.

Enhancement projects may also decrease the probability of over-harvesting wild stocks by drawing fishing pressure to an opening which is composed entirely of enhanced fish. Some evidence exists that demonstrates the ability of an enhancement project to reduce pressure on wild stocks in fresh and salt water fisheries.

⁷ Maintenance of a sustained yield for fish and wildlife resources also has a basis in the Alaska Constitution.

An example of this approach has occurred on the Kenai River, where fishery managers have occasionally restrained sport fisheries in an effort to control excess fishing pressure on chinook salmon. These actions have been taken to reduce the probability of over-harvesting a unique stock of large chinook salmon, that are highly valued by anglers (Jones and Stokes 1987). This stock of salmon, however, is also subjected to fishing pressure in commercial fisheries, which incidentally harvest the large fish while seeking sockeye salmon in Cook Inlet. In 1991, an adjacent chinook salmon enhancement project, in the Kasilof River provided an alternative fishing opportunity that removed fishing pressure from the Kenai (Harrington, 1991, Homer News, July 25, 1991, "Enhancement is favored way to protect sport fisheries"). Catches of enhanced chinook salmon from this project have dramatically increased in recent years (Holland and McKean 1992).

A second example of stock protection through enhancement exists in the urban rainbow trout fishery that is maintained by FRED Division in the Anchorage and Matnauska and Susitna areas. In 1990 89% of the rainbow trout harvests resulted from enhancement projects in road access fisheries. Many of these projects, which produce high catches per angler day, occur in close proximity to wild populations of trout, which are not able to sustain heavy fishing pressure. The opportunity for a higher catch per angler day of effort, undoubtedly draws fishing pressure away from alternative wild fish stocks.

SCOMM

74:34

RESEARCH AND BACKGROUND



Alaska State Legislature

SENATOR RICHARD I. ELIASON

President of the Senate

P.O. Box V
Juneau, Alaska 99811
(907) 465-3755

June 28, 1991

^F1^

Dear ^F2^:

I am writing to you because of your involvement and interest in the State's hatchery and enhancement program. The Legislature is currently undertaking a thorough review of this program. Our intensified efforts have been underway for nearly two decades now, and we believe it is time to look back to where we started, see where we are today, and determine where we want to go with the program in the future, ranging from fine-tuning to possible redirection.

The work on this project is primarily being done by legislative staff, with the assistance of the Legislative Research Agency and the Department of Fish and Game. The project's chief coordinator is Molly McCammon. She is on loan from Senator Lyman Hoffman for this project, and can be reached at 465-4453 or P. O. Box V, Juneau, AK 99811. If you have any questions, comments or concerns, be sure to contact her directly.

I am enclosing for your information a copy of the project work plan, a list of all the persons involved in the research and a tentative time schedule.

Some people have expressed concern about what the intent of this group might be. I want to put your fears at rest. The first stage of this process is to gather information about the program and identify the various

June 28, 1991

Page Two

issues, concerns and conflicts. We're counting on your help with this process. Once we get a draft report of this information, we'll be looking to all of you to help us develop possible options for strengthening, improving, and possibly redirecting the program. I cannot emphasize enough how strongly we believe that your participation in this process is vital. At this point, you can be involved by reviewing the enclosed work plan, and contacting Molly or the individual team leaders with specific comments. We're also looking at holding an intensive workshop to discuss the future of the hatchery program sometime in the Fall. Once a final report is issued, I plan to hold extensive formal hearings on it before the Senate Special Committee on International and Domestic Fisheries next legislative session.

I hope you are as excited about this program as I am. There is a lot of support for the hatchery program. I think a review of this nature can only make it better.

Sincerely,

Senator Dick Eliason

HATCHERY RESEARCH PROJECT WORK PLAN

I. History & Development of Hatcheries in Alaska and worldwide

- A. Research legislative history and intent of hatchery program, including fisheries enhancement loan program, with focus on legislative intent.
- B. Develop chronology of key appropriations, bond authorizations and substantive legislative enactments.
- C. Acquire data for 10-15 year period of total salmon production (natural, hatchery, and farm) worldwide, by country, and in Alaska.
- D. Summarize current national policies and trends regarding salmon production in other nations.
- E. Analyze role of hatcheries in international treaties (i.e., U.S.-Canada, Yukon, INPFC)

Team leader: Molly McCammon, c/o Senator Hoffman, P.O. Box V, Juneau, AK 99811, 465-4453.

II. Economics and Marketing

Purpose: to provide information on impact of salmon hatchery production on price, fishing revenues, processing revenues and the total value (benefits minus costs) of salmon fisheries in order to determine if 1) the current levels of Alaska salmon harvests are oversupplied or undersupplied from a supply market perspective and 2) increased production of salmon will lower prices, fishing revenues, processing revenues, and total value of salmon fisheries.

- A. Conduct review of current economic and marketing studies and write a summary of these.
- B. Assess need for additional information or research.
- C. Compile relevant Alaska production and price information, and international production and price information.
- D. Develop request for proposals for additional research, economic assessments, etc. if needed.

Team Leader: Ginny Fay, c/o Senator Cotten, P.O. Box V, Juneau, AK 99811, 465-3711.

III. Fisheries Management

A. Review current management policies as expressed in Alaska Constitution and statutes, ADF&G and Board of Fisheries policies and regulations, regional planning process.

B. Identify issues and conflicts

1. Hatchery stock and wild stock harvest
2. PNP broodstock
3. Cost recovery fisheries
4. Allocation conflicts (between gear groups and user groups)
5. Goals of state hatcheries, PNP's and regional associations
6. Use of hatcheries as mitigation tools
7. Conflicts and coordination with federal policies
8. Challenges of in-season management: interaction of economics, wild stock protection, terminal fisheries, and fish quality concerns
9. Hatcheries that are exempt from state process

C. Biological information

1. Review carrying capacity for salmon by species and area
2. Review state genetics policy
3. Review diseases screening and policy
4. Monitor Genetics Policy Review Team headed by FRED geneticist Jim Seeb

D. Review legal issues regarding state & private hatcheries

1. Review legal opinions of AG, Legislative Legal Services, and private attorneys
2. Review Board of Fish letter for legal issues.

E. Identify and review current tagging techniques

1. Use by PNPs or state for tracking and counting
2. Review of technological and economic feasibility
3. Evaluation of hatchery contribution and who pays for it

F. Review salmon hatchery production and harvest

1. Current versus planned
2. Impact on management

G. Review role of regional aquaculture associations

1. Financing
2. Determining production
3. Interaction with state and PNPs
4. Deciding on allocations

**Team leaders: Frank Homan (465-3818) and Dale Staley (465-4766),
P.O. Box V, Juneau, AK 99811.**

IV. Roles and Responsibilities in Statewide Enhancement Program

A. State role in hatcheries

1. FRED Division
2. Private nonprofit sector
3. Review FRED's strategic plan for the 90s
4. Identify issues of concern

B. Review state planning process (regional planning)

1. Purpose and function overall and in relation to:
 - a) Location of hatcheries
 - b) Assessing viability of new & existing hatcheries
 - c) Determining changes in techniques, species, & production levels
 - d) Providing development in economically depressed areas
 - e) Providing for development of non-salmon species
 - f) Participation in regional planning team process
2. Statutory limitations
3. Original goals and objectives
4. Identify problem areas

C. Review hatchery funding

1. Revolving loan fund
 - a) Review loan policies
 - b) Determining project viability
2. Legislative appropriation
3. Aquaculture associations and gear group participation
4. Private financing
5. Federal funding
6. State agency involvement in financing - ADF&G and DCED
7. Funding of sport fish, subsistence and commercial fish hatcheries
8. Identify problem areas

D. Review environmental regulations

1. Scope of current regulations
2. Identify problem areas

Team Leader: Barnaby Dow, P.O. Box V, Juneau, AK 99811, 465-4947.

V. Recommendations and options for the Statewide Enhancement Program

Develop options and possibly recommendations of potential actions by legislature, state agencies, Board of Fisheries, regional aquaculture associations and others.

Note: No work plan has been developed for this section, pending completion of the initial phase of the project which is primarily information gathering and issue identification. This section will be developed following input from all the affected user and interest groups and further direction from legislators.

Overall Hatchery Project Coordinator: Molly McCammon
P.O. Box V
Juneau, AK 99811
465-4453

HATCHERY RESEARCH PROJECT

- | | |
|---------------------|--|
| June 15 | Study groups work plans developed and submitted to coordinator |
| Sept. 1 | Status report on study group work to coordinator |
| Oct. 1 | Entire research group meeting to review status of project and information gathered to date, draft report |
| Oct-Nov | Tentative - intensive hatchery issue workshop |
| Nov. 1 | Research group meet with legislators to brief and review group's direction |
| Dec. 1 | Rough draft of report with issues, options and possible recommendations due |
| Jan. 15, '92 | Final report to Senate Special Committee on Domestic and International Commercial Fisheries |

HATCHERY RESEARCH PROJECT STUDY GROUPS

HISTORY & DEVELOPMENT OF HATCHERIES in Alaska and world-wide

- * Molly McCammon
- * Gordon Harrison, Leg Research
- Barnaby Dow
- Kate Tesar
- Karl Ohls

MARKETING & ECONOMICS

* Ginny Fay	Tom Van Brocklin
Kate Tesar	Sharon Clark
Landa Holtan/Lori Oliver	
Leg. Research	

FISHERIES MANAGEMENT

* Frank Homan	Johanna Munson
*Dale Staley	Paula Terrel
Joe Ambrose	Karl Ohls
Molly McCammon	

STATE ROLE IN HATCHERIES

* Barnaby Dow	Karl Ohls
Molly McCammon	Karan Dersham
Ginny Fay	Sharon Clark
Kate Tesar	Brad Pierce - OMB

HATCHERY RESEARCH PROJECT

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Frank Homan (Sturgulewski)	Capitol, Rm 427 P.O. Box V Juneau, AK 99811 465-3818
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Barnaby Dow (Ulmer)	Capitol, Rm 421 P.O. Box V Juneau, AK 99811 465-4947
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Jay Nelson (Davidson)

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?

OUT of CONTROL

Quality, quantity woes plague fishery

By HAL BERNTON Daily News business reporter

ESTHER ISLAND HATCHERY, Prince William Sound — Rene Pellissier looked out of the window of his second-floor office and surveyed a scene that represented a hatchery man's hell.

The hatchery bay was filled with more than 2 million pink salmon, fish that frothed the water into whitecaps with their frenetic jumping and milled in dark schools in front of the hatchery docks. These fish represented one of the world's greatest man-made runs of salmon, a run that Pellissier had worked the past half-decade to help create.

But no one wanted to buy these pinks, nor another million en

route to the bay. Instead of food for the world, Pellissier had helped create a nightmare return of rapidly aging fish prized only by scavenging seagulls and island bears.

"When I was a kid I used to read the headlines — 'dairy farmers dump milk down the gutter', and I could never understand how that could happen," Pellissier said. "Now, I think I understand."

The hatchery fish, in the final phase of a two-year life cycle, eventually would have rotted and sunk to foul the bottom of the hatchery bay. To prevent such pollution, fishermen this week scooped

up more than 2.2 million fish from Esther and two other Sound hatcheries and loaded them on tender boats for high-seas dumping. Almost 9 percent of the more than 25 million pinks caught this year were deep-sea dumped.

This huge waste of the region's salmon harvest represented a grim finish to one of the most turbulent year's in the history of the state salmon industry. It resulted from a combination of glutted markets, some very strange fish behavior and the difficulties in managing a Sound harvest now dominated by hatchery fish.

The dumping fiasco marks
Please see Page F-5, SALMON



Above, David
hose as the
pounds of p
in Prince W
shows fishi
Juan hatch
processor v

Photos
by
BILL ROTH
Anchorage
Daily News

Moldova	3,750
Azerbaijan	3,750
Kazakhstan	3,720
Turkmenia	3,370
Kirghizia	3,030
Uzbekistan	2,750
Tadzhikistan	2,340

Sources: Plancon, Washington

*Latest available.

The New York Times

SALMON: Where to now?

Continued from Page F-1

a brutal rite of passage for Prince William Sound Aquaculture Corp., the fishermen-dominated hatchery association that until recently has had a single-minded focus on increasing production. And it underscores the difficulties of producing quality seafood in a Sound where most of the salmon are hatchery-reared fish that stampede back to a few bays, then quickly start to deteriorate as they ripen in a final spawning phase.

"What is important is changing the entire system because the system doesn't work," said Floyd Hutchens,

a Sound fishermen.

Aquaculture corporation officials believe many of their problems result from a lack of marketing, and next year they may launch an aggressive new sales effort that would bypass traditional processors and find new buyers for the fish.

This new push is setting off a bitter confrontation with Sound processors, who think the hatcheries should stick to raising fish. "PSWAC is out of control," said Ray Cesarini, president of Sea Hawk Seafoods in Valdez.

Successful marketing.

Please see Page F-6, SALMON

who was empowered to award the huge contract to the Dallas-based producer of oilfield equipment. One of the ministries Dresser was dealing with was almost dissolved. And Dresser's Soviet partners, ministries responsible for chemicals and heavy machinery, were struggling to find the hard currency to finance the project.

Although last week's kaleidoscopic twists and turns leave many daunting uncertainties about the Soviet Union's future, Dresser's chairman, John J. Murphy, is confident that August's rush of events will help end the logjam on Dresser's project and the stalled projects of dozens of other Western companies.

"Within the Russian republic I think things will accelerate very quickly, and that should also be true for the Ukraine," said Murphy. "The people who were blocking reform are gone."

Westerners are reassured by two developments: Not since 1917 have the Soviet Union and its republics been so committed to building a market economy, and not since that time has the coun-

The coup's failure has galvanized a rapidly growing desire to get on with the conversion to a market economy," said Ronald Freeman, first vice president of the European Bank for Reconstruction and Development, the new London-based bank formed to help Eastern Europe. "Everyone, at every level of government, seems to be pointing in that direction."

Many companies have shunned investing in the So-

and rule of the game, you're taking five or 10 years," said Jeffrey Hertzfeld, a Paris-based American lawyer who works with Western investors in the Soviet Union. "But if you wait five years, you might find that a lot of the most attractive partners have already made commitments to other companies."

Western executives making their first visits to Moscow may be shocked by the difficulties of living and do-

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MON.	SEP. 2	N.Y. GIANTS	5:00 p.m.

SALMO

Continued from Page F-5

for both the corporation and processors — depends on a quality product that can compete in today's crowded markets. But in recent years, quality has taken a back seat to the difficult task of managing a harvest in which hatchery fish vastly outnumber the wild stocks.

Corporation officials say top quality fish can be taken hatcheries, as long as the fish are harvested as soon as they enter the hatchery bays.

But the easiest way to ensure quality fish — the silver-bright, firm-fleshed pinks prized by consumers — is to net the salmon in the straits where they first enter the southwest Sound from the sea. These straits are like salmon highways, filled with both hatchery and wild fish that later move into more than 100 small creeks to spawn. Both processors and fishermen have lobbied for a series of short openings in these areas spaced throughout the season.

But state Department of Fish and Game officials believe that fishing these salmon highways early in the season could jeopardize weak wild runs that they are under orders to protect. Such fishing also cuts off the flow of fish moving into hatcheries. Those fish, which total up to a third of the harvest, are caught and put up for bid by the aquaculture association to meet operating expenses.

To protect the wild stocks and the aquaculture corporation, state fishery managers in recent years — much to the dismay of fishermen — have often concentrated the fleets in small areas around the hatcheries.

In such zones, state managers can be sure that hatcheries get a share of the catch, and that few wild stocks are swept up in the nets. But quality can easily suffer. This year, the hatchery fish entered the special zones 10 days later than normal. By that time, their skin was already darkening and their flesh softening into a second-rate product that processors said weren't worth canning.

"ASMI (the Alaska Seafood Marketing Institute) goes around bragging about what nice silver fish this state has, then we end up with this stuff," said Jim Poor, the frustrated plant manager of Peter Pan Seafoods in Valdez.

IN IT TOGETHER

In 1975, Prince William Sound fishermen, processors, sportsmen and communities banded together to create the state's first non-profit hatchery association to boost weak runs of wild pinks.

In the beginning, the corporation embraced a simple formula that kept everybody happy. Hatcheries would make the fish. Fishermen would catch most of the fish. And processors would can and freeze the final products.

"Everybody was in it together," said Poor of Peter Pan Seafoods.

The aquaculture corporation prospered and developed one of the most successful salmon-rearing programs in the world. By the late 1980s, as hatchery production began to peak, annual pink harvests climbed to more than 30 million fish. That was more than six times the catch in the lean years of the early '70s.

To accommodate all this new fish, processors expanded capacity, and some major players — such as Peter Pan — moved into the Sound and built new facilities.

Fishermen's gross earnings soared, reflected in the value of limited entry permits that jumped from less than \$50,000 to more than \$300,000.

The aquaculture corporation meets most of its expenses by catching hatchery fish, and its budgets kept expanding.

One of the biggest budget items was the construction of its third major pink hatchery, an \$8 million project that would transform a flank of the Sound's Esther Island into North America's largest salmon producer. With the development of Esther Island, the corporation anticipated hatchery fish would provide 70 percent of a roughly 40 million annual pink harvest.

For state Department of Fish and Game biologists, the job of managing these hatchery harvests has become complicated.

"Our initial fear was that we would end up with hatchery stocks vastly outnumbering wild stocks and subject the wild stocks to much higher exploitation rates," said James Brady, a state Department of Fish and Game biologist who helps manage the harvest.

Wild stocks remained strong through the mid-'80s, and state managers were able to allow wide-ranging harvests over much of the Sound. Then in the late '80s, as hatchery stocks began to dominate the returns, wild runs — for still undetermined reasons — began to sharply diminish.

But harvests — thanks to hatchery returns — remained strong. And until recently, aquaculture corporation didn't seriously question whether there would be markets for all these fish.

"We worked on the biology, on getting the production system on line for a stable supply of fish," said Brian Ailes, who served in the early '80s as president of the aquaculture corp. "The basic strategy was that the market would then come along."

"It's never been a problem of too many fish. It never entered anyone's mind," said E.J. Cheslier, current chairman of the aquaculture's board.

THE CRACKS SHOW

By the winter of 1991, aquaculture corporation officials realized they had a marketing program.

The past three years had seen some of the biggest pink runs in Sound history, and most of the fish had gone into cans that many consumers had no desire to buy. The cans were stacking up by the millions in processor warehouses, and state Department of Fish and Game biologists were predicting a record 1991 pink return of more than 120 million fish.

The corporation sold its fish in big lots put out to bid. In 1990, about 100,000 fish had received no bids and rotted in bays. And hatchery officials feared there would be no bidders in 1991 for any of the fish.

"There is a very real possibility that the processors may refuse to buy as many as one-third of the pink salmon projected to return to Prince William Sound," said Heather McCarty, a spokeswoman for the corporation in a January 1991 interview.

State Commerce Department officials surveyed processors and as late as the third week in July thought there would be enough capacity to handle the fish.

They based their assessment on predictions by state fishery biologists that the Sound harvest would fall far short of expectations. Wild runs, which generally return in the early part of the summer, appeared to be a bust. And the hatchery runs appeared to be either way late or weak, biologists said.

But fishermen had hired pilots to survey the Sound, and those salmon spotters had a different opinion.

The pilots said there were a lot of pinks milling in the Sound and Gulf of Alaska. The fish were darkening and showing a peculiar reluctance to head for the bays. "It was strange. The fish were kind of lost, just circling around," said Dennis Thacker, one of the spotter pilots.

In late July, fishermen met with state fishery managers and asked for a small opening or test fishery to try and determine the strength of the run. "We pleaded with them and told them if they didn't give us an opening the run would get away from us," said Hutchens, a Sound seine fishermen for the past 23 years.

But state biologists felt they couldn't risk an opening that might sweep up wild stocks and hatchery fish that the aquaculture corporation, according to a Board of Fish regulation, had first claim on to harvest for operating expenses.

"No one had ever seen a run this late before," said Brady. "The fish going back to the PSWAC hatcheries didn't amount to hardly any."

the crash: Where to from here?

Day is a member of the aquaculture corporation but he was becoming increasingly unwilling to sacrifice some of his catch to help the hatchery.

"I blame the hatchery program as much as anyone. They were screaming don't open, don't open. We want to get our hatchery sales first. Hold off. Hold off. Hold off. Hold off," said Bob Day, a seine fisherman.

"I blame the hatchery program as much as anyone. They were screaming don't open, don't open. We want to get our hatchery sales first. Hold off. Hold off. Hold off. Hold off," said Bob Day, a seine fisherman.

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Please see Page F-7 SALMON

eries survive. Even though the corporation is controlled by fishermen, Day and some other fishermen have begun to perceive the hatchery group as a hostile force.

"I get guys on my (corporation) board who say 'you guys are taking our fish.' That's how bad it's gotten," said Cheshier, the seine fishermen who chairs the board. "They got it all wrong. If it wasn't for PSWAC, you wouldn't see any of these \$500,000 to \$1 million seine boats that you see out in the harbor." During the second week in August, state biologists finally opened the Sound to fishing, and the fleet responded with a record one-day harvest of 3 million pink salmon.

Processors were quickly overloaded with salmon and placed fishermen on strict catch limits.

As the darkening fish began to rush back into hatchery bays, the processors declined to bid on any of the hatchery fish.

SO MANY FISH . . .

Jim Poor opened up two cans of canned salmon at the \$15 million plant Peter Pan has built at Valdez. One held the kind of pink meat that the plant strives to produce for world markets. The other was a mass of bitter-tasting, pale-white meat wrapped around big pieces of bone. This was the kind of canned product that made up much of the late August pack.

The large number of bones resulted from the small size of this year's fish, which continues a trend of the past few years as hatcheries have increased production, Poor said. Poor then displayed logbooks submitted to the National Processors Association that detailed the dark-skinned, low-grade product — a log book available to any buyers seeking to purchase this fish. "We got to have top quality product to compete, and we just can't do it with this stuff," Poor said.

Next door to the Peter Pan plant, Cesarini of Sea Hawk Seafoods was struggling to produce headed-and-gutted pinks for frozen markets. The quality of one of the loads brought back to the plant was so bad that he ended up having to destroy the fish.

Some processors would like to see a new system develop that would allow fishermen to catch all the salmon, then pay out a portion of their earnings to finance hatchery operations. Under that system, state biologists would still have to protect wild stocks but wouldn't have to worry about allowing large numbers of salmon to build up in front of the hatcheries.

"Let's get PSWAC out of sales," Cesarini said.

The aquaculture corporation, however, isn't about to stop catching fish. The corporation's leaders feel betrayed by processors who set prices at the lowest point in more than a decade, then refused to even buy the hatchery fish.

This year, the aquaculture corporation will finish deep in the red. If that happens again, the corporation might not be able to survive. And neither corporate leaders nor fishermen want to trust the future to processors. "We're going to have to bypass processors because they have fallen down on their responsibilities," Hutchens said.

PSWAC officials believe the problem isn't hatchery overproduction but rather a lack of marketing.

They are trying to make deals with major food processors to find new uses for pink salmon. Perhaps microwave packets of pink for low-cal dinners, kippered snacks, or nuggets of deep-fried pinks. There are also efforts to develop a surimi fish paste from pink salmon that could be used to make simulated crab and other seafood products.

"Canned salmon is over the hump and going the other way. The people who eat

canned salmon are dying," said Howard Johnson, a seafood consultant who works for the corporation. "We've got to think in terms of Yuppies who grew up with microwaves."

In fall and winter board meetings, the corporation may consider making long-term sales of hatchery fish at a fixed price to companies that want to develop new products. Such tactics used to be opposed by fishermen, who feared such sales would dictate the price.

"It used to be seen as some sort of Communist-type notion," said Tom Copeland, a Sound fishermen and corporation member.

But Copeland and other fishermen say it's now time to move ahead.

'NEVER AGAIN'

On a blue-sky August day that would have been perfect for fishing, Hutchens, Copeland and a half-dozen other fishermen were tied up

off the Port San Juan hatchery. It was a prime day for fishing, but all of the processors were plugged with salmon.

There was nothing to do but waste away the day. Hutchens stood on the hatchery dock, watching the huge school of unwanted salmon build up in the bay. A big dark storm cloud of a school.

"Never again," Hutchens said.

The next day, he went to work dumping fish.

HATCHERY FORUM

Alaska Department of Fish and Game
Commissioner's Conference Room
Juneau, Alaska

March 20, 1991

Sponsored by:

The Alaska Department of Fish and Game (ADF&G)

Division of Fisheries Rehabilitation, Enhancement and
Development (FRED)
Division of Commercial Fisheries
Division of Sport Fish

The Alaska Department of Commerce and Economic Development (DCED)

Division of Investments

Attendance:

Bart Watson, Armstrong-Keta
Ladd Macaulay, Douglas Island Pink and Chum (DIPAC)
Steve Andison, Gunnuk Creek Hatchery
Brock K. Meredith, Gunnuk Creek Hatchery
Paul McCollum, Valdez Fisheries Development Association (VFDA)
Bob Kellar, VFDA
Larry Malloy, Kodiak Regional Aquaculture Association (KRAA)
Bruce Bachen, Northern Southeast Regional Aquaculture Association
(NSRAA)
Pete Esquiro, NSRAA
Howard Ferren, Prince William Sound Aquaculture (PWSAC)
Jeff Olsen, PWSAC
Bruce Suzumoto, PWSAC
Donald Amend, Southern Southeast Regional Aquaculture Association
(SSRAA)
Dick Eliason, Senator
Dan Austin, Senator Fahrenkamp
Ted Beilman, Senator Kerttula
Barnaby Dow, Representative Fran Ulmer
Sharrol McCarthy, Senator Sharrp
✓ Molly McCammon, Senator Hoffman
Jay Nelson, Representative Davidson
Karl Ohls, Senator Zharoff
John Walsh, Representative Walsh
Susan McGregor, Alaska Trollers Association
Jeff Pfundt, Petersburg Vessel Owners

Scott McAllister
 Jim Bacon, South East Alaska Seiners
 Geron Bruce, United Southeast Alaska Gillnetters Assoc. (USAG)
 Charlie Polk, USAG
 Bruce Weyhrauch, Faulkner, Banfield, Doogan and Holmes Law Offices
 Bob T Kacz, Alaska Commercial Fishermen Magazine
 Bob Clasby, ADF&G, Division of Commercial Fisheries (CF), Juneau
 Ken Florey, ADF&G, CF, Anchorage
 Scott Marshall, ADF&G, CF, Douglas
 Kristen Munk, ADF&G, CF, Douglas
 Brian Allee, ADF&G, Fisheries Rehabilitation, Enhancement and
 Development (FRED), Juneau
 John Burke, ADF&G, FRED, Douglas
 Bob Burkett, ADF&G, FRED, Juneau
 Karen Crandall, ADF&G, FRED, Juneau
 Kevin Duffy, ADF&G, FRED, Juneau
 Jeff Hartman, ADF&G, FRED, Juneau
 Ron Josephson, ADF&G, FRED, Douglas
 Steve McGee, ADF&G, FRED--PNP, Juneau
 Jeri Museth, ADF&G, FRED--PNP, Juneau
 Keith Pratt, ADF&G, FRED, Douglas
 Dave Gadet, ADF&G, Sport Fish Division (SF), Douglas
 Fred Gaffney, ADF&G, SF, Douglas
 Dave Benton, ADF&G, Commissioners Office
 David Massey, DCED, Division of Investments
 Martin Richard, DCED, Investments
 Steve White, Alaska Department of Law
 Kevin O'Sullivan, Alaska Seafood Marketing Institute (ASMI)
 Deena Henkins, Alaska Department of Environmental Conservation,
 Wastewater and Water Treatment Section

SYNOPSIS OF MEETING

CALL TO ORDER: Brian Allee, Director, FRED Division, called the meeting to order at 8:15 A.M. He stated that the forum was developed to talk about joint issues involving hatcheries and state. The agenda items were issues that were requested by and of interest to the participants. He asked that participants review the agenda to see if other topics should be added. He then introduced Carl Rosier, ADF&G Commissioner.

Commissioner Rosier welcomed the forum participants. He said he would like to spend the day at the forum, but would be unable to do that. He stated that he had a career with the Alaska Department of Fish and Game before working with the federal government. He was pleased to be back with the department. He believes we have an agency that can manage the fish and wildlife resources in the state, and that is it the best agency in the USA.

Commissioner Rosier stated that the hatcheries make contributions to all the user groups. He pointed out that issues on the agenda indicate the success of the program. The Commercial

Fisheries Division is doing an excellent job of management, but they need more information. With the decline in revenue, there is going to be a greater need for cooperation. The department is going to have to work in partnership with the PNPs. The issue of common property fisheries is escalating. Commissioner Rosier said he believes the solution is out there somewhere. He hopes this forum have positive results.

Brian Allee requested that all participants introduce themselves. After introductions, he welcomed Larry Malloy, Executive Director, Kodiak Regional Aquaculture Association, as a new participant. He also noted that Alaska Peninsula/Aleutian Islands/Area M, Chignik and the Yukon areas are discussing the formation of new associations.

Agenda Item 1.a. Hatchery transfer/contracting -- Brian Allee.

The user pays concept is sweeping the state. The people who benefit from state government, will have to pay for it. Commercial fishermen are viewed by the general public as the primary beneficiaries of public hatcheries. For that reason, contracting of these facilities to aquaculture associations is being done.

There are two contracting models:

1. The Kitoi model involves a contract with the association for operation of the facility by ADF&G, FRED Division. The association does cost recovery and pays ADF&G to operate the hatchery.
2. The second model involves 100 percent operation of the facility by the regional aquaculture association (RAA). The RAA operates and funds the hatchery 100 percent such as PWSAC contracting Cannery Creek Hatchery or NSRAA contracting Hidden Falls Hatchery.

When no general funds are available to go into hatchery operations, contracting is the only way to maintain the production. The RAAs can take out loans for capital improvements. Capital improvements to the facilities that belong to the state also belong to the state. The users pay. Another example of user pays is the federally funded program for trout benefit the sport fisheries. Dingle-Johnson (D-J) monies pay the cost of trout enhancement.

Brian Allee stated he believes it is better to contract facilities to RAAs and keep them open, than to have to close them. Right now the department is looking at six unfunded hatcheries (Main Bay, Beaver Falls, Gulkana, Tutka, Russel Creek and Sikusuilaq) which it doesn't want to close before contracting out operations. The department did not get an adequate maintenance budget for these public facilities. Director Allee talked about capital budget requests. He pointed out that RAAs were set-up to allow a

mechanism for financing--cost recovery. But public facilities have no financing mechanisms.

The department has been requested to turn its rehabilitation and enhancement expertise to the north-northwestern area of the state. Allee pointed out that there are no hatchery facilities in that area. The department will also focus on the production of fish for subsistence and sport fisheries and some research, such as with king crab.

There was discussion following the presentation. Participants wanted to know about budget break-outs and the user pays concepts. Allee explained that the facilities are publicly owned and must be upgraded in order to contract. The cost of the upgrades is estimated at \$13 million. The public perceives the facilities to benefit primarily commercial fishermen. Contracts must be negotiated prior to July 1, 1991. The RAAs will have to imprint fish to return to the facilities for broodstock and cost recovery. Don Amend stated that the request is for a capital improvement, a one-time infusion, which will save money in the long run. The monies are coming from the general fund and will not affect the loan program.

Molly McCammon stated she did not know if ADF&G was going to get the funds. Despite the fact that commercial fisheries were one of the driving forces behind statehood, they are now losing status. People in the state no longer recognize the commercial fisheries contributions. There is a need for good public relations work.

Agenda Item 1.b. Enhancement on inland river systems -- Brian Allee.

Legislators requested Yukon River enhancement as a means of economic development. There is interest in the area in forming a RAA and in self taxation. They are interested in management of the fisheries and enhancement opportunities. A special request has been made for funds to develop a plan and to organize the RAA. There is also US/Canada Treaty mitigation interest. Clear Hatchery will be expanded to handle fall chum and chinook salmon. When the forming RAA is organized, it is the department's understanding that it will provide funding for operation of the hatchery. The area is asking for funds and plan to get their share. They believe enough funding has already gone into other parts of the state.

Ken Florey talked about site selection and the problems associated with the area from the management aspects. He wanted to know if the department was being realistic about what its telling the residents. Jeff Pfundt thought that CWT tagging fish from that area would be advantageous when considering the high seas trawl by-catch. When asked, Brian Allee told the group that \$13.1 has been requested for the Yukon River region, including funding for expansion of Clear Hatchery.

Agenda Item 1.c. Salmon price forecasting -- Jeff Hartman.

Jeff Hartman talked about an economic study he co-authored entitled "A Comparison of Demand Models for Alaska Salmon." The study was funded by Prince William Sound Aquaculture Corporation. There have been refinements to the model since the original study was done.

The slide presentation included information about the study's objectives, variables, observed and average price models, and major conclusions. The economic models developed in this study predict prices more accurately than averages of historical prices or price trends. Models for coho, chum, and chinook salmon predict prices with acceptable precision and suggest that prices of these species are not responsive to increases in catch of the respective species. Pink salmon models showed conflicting results on the price responsiveness, and further modeling work is needed with pink salmon and sockeye salmon. Some of the improvements to the models that could occur with minimal modeling costs are: (1) combining of import and export based models with the models developed by Boyce, (2) developing regional models capable of estimating changes in price in SE Alaska with a given change in catch in PWS (or any other combination), and (3) incorporating the effects of other substitutes such as farmed salmon harvests. Jeff asked for ideas that might be helpful to improve the models.

Agenda Item 1.d. Sale of hatchery broodstock -- Paul McCollum.

This issue arose because Valdez Fisheries Development Association (VFDA) has been selling hatchery broodstock carcasses. They were told by the Department of Environmental Conservation (DEC) that they needed a processor license to continue sales of fish that were cut open. VFDA was receiving very little benefit from the sales, but disposal of carcasses can be expensive. Paul said that VFDA understood the problems of putting dark fish out on the market. They got the processor license. Now they are being told that they may not be able to sell carcasses at all. There is a question of "wholesomeness". VFDA wants a decision. Why should the sale of carcasses be restricted? Is this a decision that is health-related or is it the sale of dark fish? VFDA gave away carcasses last year for dog food. Apparently, the federal FDA has identified a lack of protein in dark fish. It was pointed out that there is a need to proceed with care on this issue as this is a new class of product and we don't want a perception that hatchery fish are inferior.

Steve McGee stated that he was unable to get federal regulators to attend today's meeting. We are discussing this issue because it will need a solution.

The group discussed dumping and the legality of dumping carcasses, and the non-human consumption of the carcasses, such as their use for fish food. This topic has long-term ramification for fishermen and everyone and it will be necessary to watch the regulation

development carefully. Steve McGee pointed out that this topic is not going to be going away. He stated that he had the state and federal addresses for the regulating agencies and agreed to provide a list to the PNPs. It was suggested that Senator Stevens be kept informed.

Agenda Item 1.e. NPDES discharge permits -- Keith Pratt.

Steve McGee introduced Deena Henkins, Chief of Alaska Department of Environmental Conservation, Wastewater and Water Treatment Section. He pointed out that she was here to provide what information she could, but she was not in charge of the federal permit program. He was unable to contact the federal representatives. He then introduced Keith Pratt, FRED Division, SE Hatchery Manager.

Keith Pratt talked about his background and the background of NPDES discharge permits. They began in the lower 48 where they were needed. He discussed the Idaho state standards that are used for the model. FRED Division monitored the water quality at Big Lake Hatchery to demonstrate the water quality in Alaska. There are three hatcheries (Elmendorf, Fort Richardson, and Big Lake) that might exceed Idaho standards briefly for parts of the year. The regulations are clear, we are required to have waste water discharge permits and it is probably reasonable to do so. However, carcasses are another matter. He pointed out the Kitoi Bay carcass problem where "a desert was created."

Pete Esquiro said that NSRAA is going to grind their carcasses. They have acquired and are installing equipment at Hidden Falls Hatchery. He discussed some of the costs associated with grinding and NSRAA decision to start grinding.

Don Amend discussed SSRAA's decision not to sell carcasses and the problem of carcass disposal. They paid a contractor \$25,000 last year to remove carcasses, and the contractor lost money. The cost of contracting is going up. They delivered the fish in totes to the contractor. SSRAA estimated it would cost \$52,000 to set up grinding equipment, plus other associated expenses. They have investigated selling the carcasses for pet food and fish food. Transportation is expensive. SSRAA investigated doing the fish food processing themselves. It does pay if you make your own fish food, but that is a science in itself. In response to comments about hydrolyzed products, he stated that the technology is not there yet. Amend would like an agreement about where the hatcheries are headed in carcass disposal and a unified approach developed.

Ken Florey asked about the liability of a large die-off from too many carcasses in a bay, such as happened at Kitoi. Who is responsible? In the discussion that followed, no one had a legal answer for that question.

Ladd Macaulay said he understood that hatchery operators were going to have to obtain a discharge permit for every net pen site.

Steve McGee summarized the discussion to this point, that we have three issues: (1) water quality, (2) carcass disposal, and (3) net pens.

Deena Henkins stated that EPA may not be able to issue a permit to dispose of whole carcasses. The current requirements are that you must grind. EPA could write the hatcheries into a general permit, they have one for seafood processing now. EPA can fine you if you don't have a permit. You can be sued by others if you don't have a permit. Ladd Macaulay requested a written dialogue about how EPA arrived at agreements. Deena explained that EPA decisions are based on a national technology policy. This state will have to follow those national guidelines.

Don Amend said that he was told that EPA will not monitor, but if they receive a complaint you could be subject to \$2,500 fine per day that you out-of-compliance.

There was a consensus to unify a strategy. FRED Division would begin to coordinate hatchery effluent and carcass disposal permitting with the EPA, and Keith Pratt, ADF&G Regional Hatchery Manager, will be the coordinator.

Agenda Item 1.g. Thermal otolith marking programs -- Kris Munk/Ladd Macaulay/ Paul McCollum/Karen Crandall.

Paul McCollum began the discussion by talking about the costs of operation and that hatcheries are expected to pay more of management expenses. Coded wire tagging (cwt) is expensive. Thermal otolith marking makes mass marking possible, and that possibility is exciting. But he doesn't want to lose CWT data.

Kris Munk discussed the technology, pointing out that there is 100 percent marking of fish with this procedure. With 100 percent marking less sampling will be required. For example 200 samples per day, using two people to sample may be all that is needed. Although, actual numbers that need to be sampled have not yet been determined. The Commercial Fisheries Division has federal funding to develop a laboratory for US/Canada transboundary river enhancement work. Samplers will have to go to a specific sampling area and handle sampling in much the same manner as for electrophoresis sampling program.

Don Amend asked about tetracycline marking as a new way to go. He wanted to know if it was cheaper or better. Brian Allee told him that it was introduced as a complimentary method and the department is still looking for input.

Bruce Suzumoto wanted to know if anyone has done any cost studies.

Ken Leon said that analysis for U.S.-Canada indicates that otolith marking is a cheaper method. That only a few hundred samples are required. U.S.-Canada recommends forming an otolith mark team.

Karen Crandall said that the cost depends upon your site. Heating water will add an expense. There may be more cost for personnel to be attentive to the process, although less expensive than CWT. There are report expenses. And the recovery laboratory will be expensive. The sampling needs biometrics input.

Ladd Macauley stated they had spent about \$6,000. He considers it as just another tool. It's research. DIPAC is also putting in CWTs. But he likes the idea of 100 percent marking considering the high seas squid fleet. DIPAC is planning to do submarks now that they know they can get seven distinct marks. The otolith banding pattern will not be duplicated in natural stocks.

Paul McCollum stated they had marked one small group originally. They found the marks were accurate. They will probably have to start recording water temperature and keeping better records.

Ken Florey discussed different management scenarios that these marked fish could assist. It too early to determine whether inseason discussions could be made. He stated that the marking costs could be picked up by the hatcheries cheaply. But analysis is expensive and there can't be more than one laboratory. Also there's the cost of seasonal technicians and work force. Perhaps this is another case where the user group pays.

Karen Crandall discussed a stock separation workshop and traditional tools for marking fish. She said the new tool is otolith marking. There is a need to coordinate this effort to the focus funds, talents, information, etc. She gave suggestions about how the data might be used inseason for management and reports that could be made available. Karen said she doesn't know where the funds will come from. Kris' laboratory is for Southeastern only. She believes the money should come to one laboratory only. Samples for one place can be processed in one week or less than two days.

Scott McAllister made a comment about being asked to fund everyone's science project. Brian Allee said this meeting is to confront reality. When there is no one to recover and sample, the user pays. As Ken Leon mentioned earlier, the oil spill has the CWT money now. Ken Florey pointed out that the average person in this state believes that commercial fishermen are making big money. The average person doesn't want to pay to help commercial fishermen make this big money from the resource.

BREAK AT 12:30 P.M. FOR LUNCH. RECONVENE AT 1:35 P.M.

Agenda Item 1.f. Small-scale enhancement projects--Ron Josephson.

Ron Josephson showed slides of different small-scale projects and provided a hand-out. He mentioned that one of the advantages of the small-scale projects is there is not a risk. Some work well and others don't. FRED Division has no numbers on the one's that work. Each individual project has to be evaluated separately. There is now a full-time person in FRED Division doing these projects.

Agenda Item 2.a. Management of hatchery fish in common-property fisheries. Panel: John Burke, Jim Bacon, Geron Bruce, Fred Gaffney, Scott Marshall, Bruce Suzumoto, Bart Watson, and Steve White.

Scott Marshall began by explaining that the fragmented way the department is or is not managing the fisheries causes problems with the Board of Fisheries. It seems like you should be able to start at the hatcheries and work outward, but it's not that simple. You may or may not have fishing adjacent to the hatchery release site. Then once the fishery has moved out of the terminal area, who pays for evaluation and who benefits. He has found no policy guidelines. It requires data to get the information to the Board of Fisheries to make a decision. Commercial Fisheries Division has not managed outside the hatchery harvest area for cost recovery unless that is provided for by Board of Fisheries direction. He wonders what the goals are for the hatchery programs?

Steve White has analyzed the current law. There are two kinds of fish: broodstock and cost recovery. He believes that there is not a lot of legislative direction so he has simply done a factual analysis. Under the constitution and statutes, the department must provide broodstock. There is no requirement for cost recovery. Whether the department can be required to manage fisheries for cost recovery is questionable. He compared broodstock to wildstock escapements for reproductive purposes.

Ken Florey asked about Eklutna and who is responsible for determining if broodstock is caught in a common property fishery before reaching the hatchery. Steve White said you can only be sued on the information you have.

Jim Bacon said goals are set for natural systems. He wondered what is "sufficient broodstock"? He pointed out that Article 8 was written before hatchery fish. Scott Marshall said that in reviewing statutes, you should review the intent. The statutes say segregate from wildstocks and provide for common property fisheries.

Brian Allee pointed out that when hatchery statutes were developed, fish returns were low. Hatchery fish needed to contribute to the common property fisheries. Why should hatcheries exist if they

are not contributing? Bruce Suzumoto wanted to know how a PNP could be expected to survive without cost recovery fish, especially when they are not getting enhancement tax monies.

Dave Massey asked for a definition of "sustained yield." Then said that you can't "sustain" a hatchery yield on broodstock alone, you need a cost recovery too. Massey said that DCED is not directly involved, but thought this issue would have been worked out by now. Solving the sustained yield question for hatcheries will eliminate most long-term financial problems. He believes that in order to gain fishermen's confidence, there is a need for acceptable controls on permit holders budgets. He pointed out that only RAAs who chose not to borrow will be okay under the current management system. Steve White responded that the Legislature did not tie loans to the statutes and regulations for permits. Perhaps they should have.

Jeff Pfundt said that he views the PNPs as another user group. There is no limit on what they need for cost recovery. Dave Massey said that is the attitude of some fishermen, they will catch the broodstock and let the hatchery borrow more money. The Division of Investment guideline is a minimum 50 percent contribution. Paul McCollum said PNPs must be given broodstock and cost recovery. The debt service goes up. He suggested a financial review by the RPT every five years.

Bart Watson said that his corporation did not know where their fish were being caught. They need to mark their fish. They want to contribute to the common property fisheries, not compete with fishermen. They don't want fisheries closed when the natural run levels will still support a fishery. On the other hand, they don't want harvest increased so the hatchery doesn't get a return. He said they don't mind marking if they can afford it, pointing out that they are not-for-profit.

Geron Bruce stated that fishermen are at cross roads with the hatchery program, and the user pays. All the state stocks are not healthy. Fishermen need these hatchery programs and need to sustain them. He favors working out management problems.

John Burke pointed out that purpose of hatcheries was to raise the valleys in natural fish production. At the last Board of Fisheries meeting the Board voted 6 to 1 against cost recovery. Ken Florey added that he believes Southeast was caught in the aftermath of Prince William Sound. No one wants to be the guy to say "that is a reasonable expense".

Scott McAllister said there is an assumption that hatcheries are going to work. They don't always work. He asked Dave Massey about when the Division of Investments will foreclose. Massey said that like other issues with nonprofit corporations, it is complex. The Department of Commerce stays out of the fisheries policies and

regulations. McAllister said that it is getting worse in Southeast. Massey said that when something goes bad, you review the loan again. He maintains that basically it is good investment for the state. When the percentage becomes 50 percent, the picture changes. Often whole communities are involved. The state closed Sandy Bay. NSRRA closed themselves. Now there is a need for more operational cost. He considers it a state experiment that is going to fail unless the issues about cost recovery are addressed.

Bob Burkett said he sat down with three area management biologists to try to figure out how to not forego the harvesting of wildstock opportunities. It keeps coming back to adequate marking. He believes it is solvable if you put the money on the problem.

Paul McCollum believes that the state has liabilities because they issue the permit. That PNP hatcheries need cost recovery. Dave Massey said that in Southeast, the hatcheries will get their first big return, then the department will open an area that hasn't been open for twenty years. Scott Marshall said that is not what happened. He said the decade of the 80's has been one of high returns.

Bruce Suzumoto asked about remote release sites for broodstocks. Ladd Macaulay responded that Southeast is still two to five years behind Prince William Sound. He said without cost recovery it is not going to happen.

SHORT BREAK AT 3:35 P.M.

Agenda Item 2.c. Allocation of hatchery fish among user groups: the Prince William Sound management/allocation/production model. Panel Ken Florey, Howard Ferren, and Bruce Suzumoto.

Ken Florey began the introduction. He believes that Southeast is more complex than Prince William Sound. In general, wildstocks are still healthy. Florey introduced Howard Ferren.

Howard Ferren said he had been the PWSAC corporate planner since 1989. Although he lived in Alaska 18 years he had no idea of the complexity of fisheries issues. He showed slides of the PWS allocation planning process.

The Board of Fisheries directed PWSAC to develop an allocation plan for the enhancement program. They had two years to accomplish this. Howard discussed the procedures used to establish goals, priorities, the procedural steps, the issues, the findings, and the decisions. The Allocation Policy had three parts: Intent, Objective, Policy. It required researching fisheries history from statehood. They decided to focus on returning salmon, not "enhanced" fish.

Don Amend asked about the level of dissention. Ferren said they

went to the Board of Fisheries prepared. That there was more dissention over spotter planes than this policy. Ferren explained that the PWSAC Board of Directors Chairman appointed a task force. The task force members were carefully selected, then Bill Wood was added as a moderator, and then Ferren. They had many long meetings.

Florey said that former Board of Fisheries Chairman, Gary Slaven, had made it very clear. You do it or else. Florey added that in southeastern Alaska the two RAAs makes the issues more complex and it will require good leadership. In PWS Solomon Gulch Hatchery had joined the efforts. Public participation is most important.

Amend said that the RAAs decided that a policy was necessary. They have already selected representatives. He wanted to know how important was Bill Wood. Very important according to Bruce Suzumoto, who added that you also need a Howard. Suzumoto said that it is the people who need to agree to participate. He claimed that they were "dead in the water" as an organization. Bill was very important in setting up things. It helps to have an impartial person for oversight. Florey agreed. He said that person told you what people were hearing, not what you thought you said. He added that trust is important, and you need data.

Agenda Item 2.d. The economics of hatchery operation: economic development vs common-property contribution. Panel: Don Amend, Geron Bruce, Jeff Hartman, Dave Massey, and Bruce Suzumoto.

Geron Bruce began with a historical sketch. In the early 70's the Legislature set-up PNPs to provide an alternative to the private-for-profit ocean ranching programs down South and to provide fish to Alaska fisheries. PNPs are now contributing to common property fisheries. The public expects an efficiently run program.

Jeff Hartman compared Alaska's program to Canada's where we chose not to select social goals. It was a Canadian goal to augment economics. Their program must create employment, native employment. We don't need to demonstrate need with a cost/benefit ratio. We do have multiple goals, although they may not be formally stated.

Bruce Suzumoto talked about the need for the development of new markets. PWSAC has received comments about too many pinks driving down prices. There are no new markets and production is increasing world-wide. Most are canned or frozen fish. He said we must look at world demands and/or markets. He made a trip to Norway, where they are totally integrated. He said we act like large fishermen. This year the processors don't want the fish. They are looking for processors to invite into the Sound.

Bob Keller said our fish never get past Seattle. We need to bypass that bottleneck and get our fish to Kansas and Japan.

Suzumoto pointed out that we are over-dependent on a few markets. That we have always sold to the highest bidder. He said we are not doing our homework on designer products.

Don Amend said we are here to help fishermen and benefit them. If the program cannot survive the 70-75 percent exploitation rate, you are out. He believes the program must focus on commercial fish.

Bruce Bachen said we have two issues: new products and new markets. He suggested that we need more help from ASMI. Suzumoto responded that ASMI promotes generically and educationally, not markets. He said that it takes money to promote. Bart Watson asked if PNPs could benefit from coordinated efforts. Suzumoto suggested that one approach is to increase the quality.

To end the meeting, Brian Allee gave a brief summation. FRED Division will continue with CWT and other evaluation programs. FRED Division will coordinate hatchery effluent and carcass disposal permitting with the Environmental Protection Agency.

In regards to cost recovery, two Attorney General opinions have been issued which basically say the same thing, that it can be done. However, certain procedures need to be followed if an operator is to be successful. His observation is the various regions of the state are so different, and that there is no management consistency between them.

At this meeting we did not get to the bottom line of who pays. That will have to be resolved at the commissioner's level.

Some of the issues discussed today are not at the resolution point. Brian wanted to know if the participants want to hold another forum. Several participants suggest they would like to continue having the meetings.

MEETING ADJOURNED AT 6:00 P.M.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF BOARDS

WALTER J. HICKEL, GOVERNOR

P.O. BOX 3-2000
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September 11, 1991

Molly McCammon,
Senator Hoffman's Office
Capitol, Room 510
P.O. Box V
Juneau, AK 99811

Dear Ms. McCammon:

The chairman of the Alaska Board of Fisheries, Mike Martin has requested your attendance at the board work session in Anchorage at the Best Western Barratt Inn on September 20 from 10:00 a.m. - 2:00 p.m. The board is interested in an update and discussion on the Legislature's Hatchery Research Project started this last spring.

Please advise me at your earliest convenience. If you have any additional question, feel free to call.

Sincerely,



Laird A. Jones
Director

cc: Mike Martin
Nancy Gaudet

MEMORANDUM

STATE OF ALASKA DEPARTMENT OF FISH AND GAME

TO: Members of the Alaska
Board of Fisheries

DATE: September 13, 1991

FILE NO:

THRU:

TELEPHONE NO: 465-4160

SUBJECT: Information for the September
Work Session

FROM: Jeffery P. Koenings 
Director
Division of Fisheries Rehabilitation,
Enhancement and Development
Department of Fish and Game

Please find enclosed a summary of the statutory and regulatory requirements in the application process for a Private Nonprofit (PNP) Hatchery Permit. The complete statutes and regulations described in the summary are included in the enclosed booklet entitled, **Alaska Statutes and Regulations for Private Nonprofit Salmon Hatcheries**. Among other things, the Alaska Board of Fisheries is responsible for the regulations in 5 AAC 33, 5 AAC 40, and 5 AAC 41 that address harvest management, harvesting, and transportation and release of fish at PNP hatcheries.

I am looking forward to discussing these issues with you at the Board of Fisheries work session on the Legislative Hatchery Research Project scheduled for 10:00 a.m. on September 20 in Anchorage. If you have any questions before the meeting, please contact me at your convenience.

Enclosures

cc: Laird Jones
Molly McCammon
Steve White

Existing statutory and regulatory requirements associated with a private nonprofit (PNP) hatchery permit in the State of Alaska.

Alaska Statutes (AS) 16.10.400-16.10.475 address this permit process. The PNP hatchery permitting process is identified in detail in regulations 5 AAC 40.100-40.990. The following description identifies the statutes and regulations and briefly explains their content in a paraphrased format.

AS 16.10.400 instructs that the commissioner may issue a permit, subject to restrictions imposed by statute or regulation, to a nonprofit corporation organized under AS 10.20 after the permit application has been reviewed by the regional planning team (RPT) for the construction and operation of a salmon hatchery. The RPT usually consists of six voting members (three from various user groups and three departmental staff representing the fisheries divisions) that review proposals and make recommendations to the commissioner. A hatchery permit is nontransferable.

AS 16.10.410 requires a public hearing at least 30 days before the issuance of a permit. The hearing shall be held in a central location in the vicinity of the proposed hatchery facility.

AS 16.10.420 provides for conditions on a PNP permit. This includes a provision that donor stock eggs must be from the department or a source approved by the department. This statute is supported by regulations 5 AAC 41.001-41.100 that identify a fish transport permit process. 5 AAC 41.005 states that no person may transport, possess, export from the state, or release into the waters of the state, any live fish unless the person holds a fish transport permit (FTP) issued by the commissioner and the person is in compliance with all conditions of the permit and the provisions of this chapter. 5 AAC 41.030 states that the commissioner will issue an FTP if it is the department's determination that the proposed transport, possession or release of fish will not adversely affect the continued health and perpetuation of native, wild, or hatchery stocks of fish. All FTP applications are reviewed and signed off on (recommending either approval or denial) by the ADF&G Principal Pathologist and the ADF&G Principal Geneticist, as well regional supervisors for the fisheries divisions, the Chief of Technology and Development, the FRED division director, and the commissioner. The potential pathological and genetic impacts are the primary considerations in this review process.

Additional conditions provided for in AS 16.10.420 include: no

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

AS 16.10.430 allows the commissioner to alter, suspend, or revoke a PNP permit if the operator fails to comply with the terms and conditions of the permit within a reasonable period after notification of noncompliance by the department. The commissioner may also alter the permit or initiate a termination of the operation, if it is found that the hatchery is not in the best interest of the public.

As 16.10.440 reinforces that fish released by hatchery operators are available to the people for common use in the same way as natural stocks until they return to the location for hatchery harvest that has been established by the department. The Board of Fisheries may, after a permit has been issued, amend by regulation the terms of the permit relating to the source and number of eggs, the harvest by hatchery operators, and the locations designated by the department for harvest by the operator.

AS 16.10.443 states that the department shall provide assistance before and after permit issuance, within the limits of time and resources.

AS 16.10.445 reinforces that the department shall approve the source and number of salmon eggs for hatchery operators. Salmon eggs shall first be taken from stocks native to the area in which the hatchery is located.

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

AS 16.10.460 provides for a department inspection of the hatchery facility at any time the facility is operating.

AS 16.10.470 requires that an annual report be filed with the department by December 15 of each year on a form provided by the department.

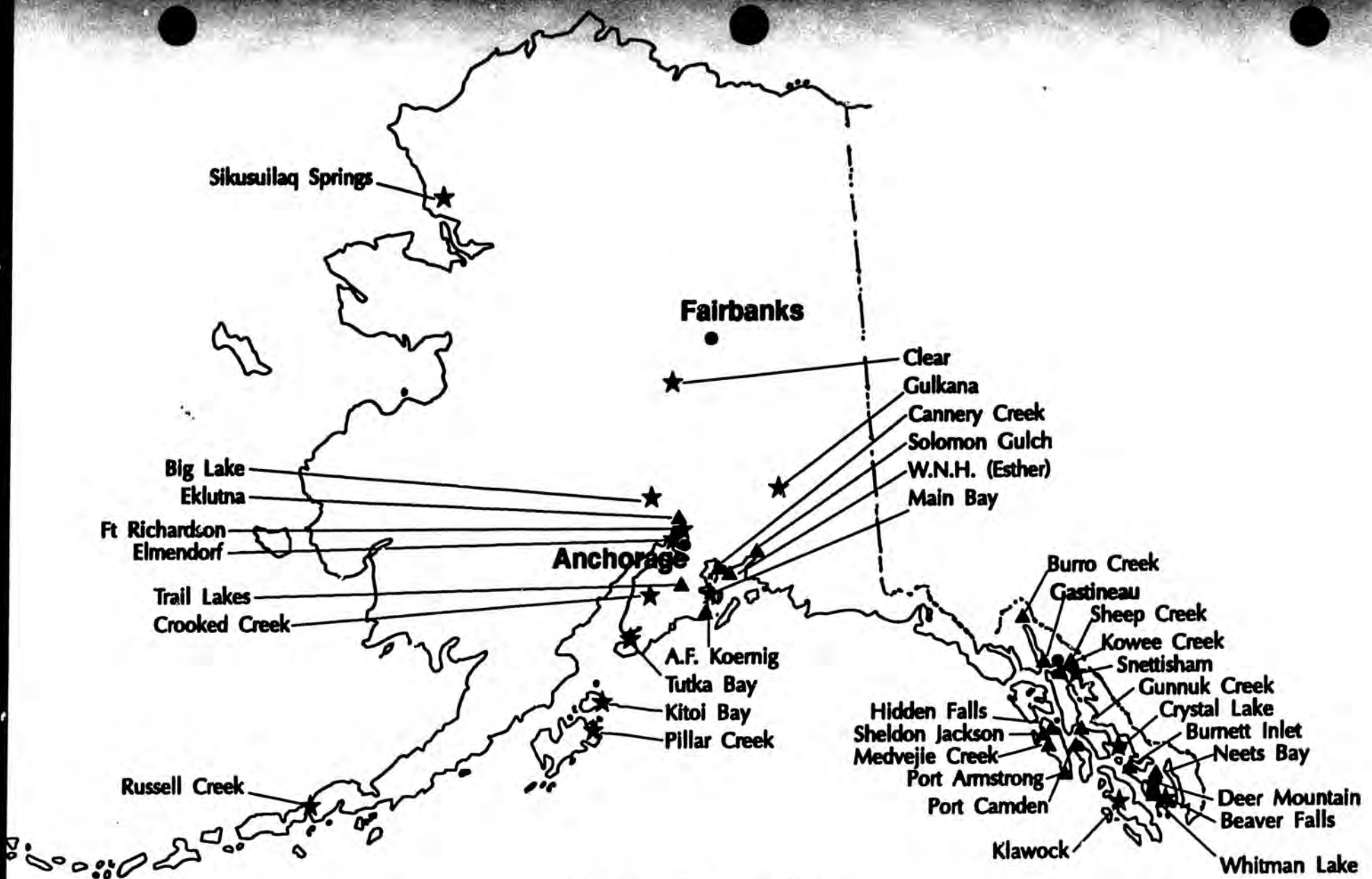
Regulations 5 AAC 40.100-40.990 detail the permit application

procedures for a PNP hatchery permit, the regional comprehensive salmon planning process, and general provisions on the permitting and operation of PNP hatcheries.

5 AAC 40.100-230 detail permit application procedures in a chronological order, and include: pre-application assistance, a management feasibility analysis, the permit application and fees, determination of acceptance by the department for formal review, regional planning team review, a provision for requesting additional information, completeness determination by the department, the public hearing process, review and determination by the commissioner, (this includes six major criteria), and a provision for reconsideration. The departmental review of all PNP hatchery permit applications includes review and comment by all fisheries divisions and the Habitat Division in the affected region, the Principal Geneticist, and the Principal Pathologist.

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

The PNP permit system is very rigorous, and in a best-case scenario, the review and approval process takes a minimum of four to five months.



Alaskan Fish Hatcheries

- ★ FRED FY92 Budget
- ▲ Private Nonprofit hatcheries

MEMORANDUM

TO: Legislative Hatchery Research Group members
FROM: Molly McCammon
DATE: September 12, 1991
RE: Update for today's meeting

I. History & Development of Hatcheries

Report on legislative history and intent of hatchery program completed by Legislative Research. Everyone should have copies.

Report on production policies and trends world-wide has been delayed, and won't be completed until late September. —

Any comments on Leg Research report?

II. Economics and Marketing

Review of existing economic studies is completed, and proposal for further research has been developed. Funding is being sought from Leg Council.

met w/ economists go that public policy questions —

Governor's Salmon Strategy Task Force is at work. We are involved and providing information to this group. Next meeting scheduled for October 7. Molly will give further details.

Comments on cost-benefit study proposal?

Review Rep. Kubina draft marketing legislation. —

*money on production
ways to shift to marketing
analysis of ASMI
product development - as long term goal.
short-term*

III. Fisheries Management

Dale is on his honeymoon for 3 weeks, and Frank Homan took a new job with the administration.

Legal Services is doing a review of relevant constitutional references, statutes and regulations. Due Sept. 20.

Fish Board and ASMI are both meeting on this issue in next few weeks.

Leg Research will soon have report on biological impacts of hatchery production on wild stocks. Ole Mathisen at University is organizing conference in Cordova Nov. 10-15 on same topic.

Joe Ambrose has conducted survey of aquaculture associations. Will be completed this week. - Monday.

*Issues + conflicts -
John - debate the issues.*

IV. Roles & Responsibilities in Statewide Enhancement Program

We're still waiting for FRED Division strategic plan to review.

Section A+B.
Barnaby will have report on state planning process by late Sept.

• **Kate Tesar** will have completed report on hatchery funding by late Sept.

• Molly will have report on environmental regulations by late Sept.

V. Recommendations & options - forum, hearings, etc.

*Sept 20 -
Cordova
Business
Lectures.*

III. Fisheries Management *DALE*

*MOLLY
DALE*

Review current management policies as expressed in Alaska Constitution and statutes, ADF&G and Board of Fisheries policies and regulations, regional planning process.

B. Identify issues and conflicts *Mike Martin Deborah Lyne*

- ① Hatchery stock and wild stock harvest
- ② PNP broodstock
- ③ Cost recovery fisheries
- ④ Allocation conflicts (between gear groups and user groups)
- ⑤ Goals of state hatcheries, PNP's and regional associations
- ⑥ Use of hatcheries as mitigation tools
- ⑦ Conflicts and coordination with federal policies
- ⑧ Challenges of in-season management: interaction of economics, wild stock protection, terminal fisheries, and fish quality concerns
- ⑨ Hatcheries that are exempt from state process *Mutlakatta*

*St. George -
want to start
a hatchery.*

C. Biological information

1. Review carrying capacity for salmon by species and area
2. Review state genetics policy
3. Review diseases screening and policy
4. Monitor Genetics Policy Review Team headed by FRED geneticist Jim Seeb

leg research.

D. Review legal issues regarding state & private hatcheries

1. Review legal opinions of AG, Legislative Legal Services, and private attorneys
2. Review Board of Fish letter for legal issues.

Johanna

E. Identify and review current tagging techniques

1. Use by PNPs or state for tracking and counting
2. Review of technological and economic feasibility
3. Evaluation of hatchery contribution and who pays for it

DALE

F. Review salmon hatchery production and harvest

1. Current versus planned
2. Impact on management

*leg. research
Sept. 1*

G. Review role of regional aquaculture associations

1. Financing
2. Determining production
3. Interaction with state and PNPs
4. Deciding on allocations

*Don Amend - SSR AA
letter to RAA*

*response from all of them.
seeing patterns on how they
operate.*

8-4.

JOE



Official Business

Alaska State Legislature

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

MEMORANDUM

TO: Senator Dick Eliason

FROM: Molly McCammon, Coordinator *Molly*
Legislative Hatchery Research Project

DATE: August 30, 1991

RE: Status report on research project

Work on the Legislative Hatchery Research Project has been proceeding all summer. The following is the status of each of the four work groups:

I. History & Development of Hatcheries. Legislative Research has completed a legislative history of the hatchery program. I'll be sending you a copy separately. A second report summarizing salmon production trends and policies worldwide, by country, and in Alaska should be done next week.

II. Economics & Marketing. This group decided to leave the marketing issues to the Governor's Salmon Strategy Task Force. Instead we have been focusing on economic issues to determine what impact hatchery production has on prices and revenues and what effect increased hatchery production will have. We are in the process of developing a proposal for some additional research, and once Ginny Fay returns from vacation, we need to discuss this with you in further detail.

III. Fisheries Management. Reports are due next week on biological and genetics issues (Leg Research) and on the role of regional aquaculture associations (Joe Ambrose in Rep. Taylor's office). We have been waiting until the season is over before focusing on the management issues and conflicts section. The Fish Board has scheduled a two day workshop in mid-September and has our group on their agenda.

IV. Roles and Responsibilities in Statewide

Enhancement Program. Barnaby Dow and I have been interviewing a lot of people regarding the planning process and will have an initial report done in about two weeks. Kate Tesar will have a draft report on hatchery funding completed before she leaves for her new career as a lobbyist.

Conclusion: We are slightly behind schedule, with our original goal of a draft report in early September now postponed to early October. The two big issues that need further discussion and your input are the economic studies and a possible forum or workshop in order to get more public involvement. I've asked Sheila if we could set up a telephone call mid to late next week if your time and schedule permit.

ECONOMICS

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF FISHERIES REHABILITATION,
ENHANCEMENT & DEVELOPMENT (FRED)

WALTER J. HICKEL, GOVERNOR

P.O. BOX 3-2000
JUNEAU, ALASKA 99802-2000
PHONE: (907) 465-4160
FAX: (907) 465-4168

September 10, 1991

The Honorable Lyman Hoffman
Alaska State Legislature
P.O. Box V
Juneau, AK 99811

ATTN: Molly McCammon

Dear Ms. McCammon:

Thank you for the opportunity to comment on the *Proposal to Conduct a Benefit-Cost Analysis of the Fishery Enhancement Program: Emphasis on the Price Responsiveness of Alaska Salmon to Enhancement Production*. To provide a thorough review of the proposal, I have summarized comments made by the Divisions of Commercial Fisheries, Sport Fish, and Fisheries Rehabilitation, Enhancement and Development (FRED) Division.

The cost-benefit analysis (CBA) described in the proposal is a mainstream economic method frequently applied to fisheries. The Alaska Department of Fish and Game (ADF&G) is supportive of the use and application of these types of tools. This economic study appears to adhere to the same standards of economic modeling that the National Marine Fisheries Service uses under the Magnuson Act. It also appears to be similar to the CBA applied by the Canadian Department of Fisheries and Oceans for their fisheries enhancement program. A model of this type could certainly be used by ADF&G to estimate the benefits and costs of specific enhancement projects, as well as allocation and management issues.

We also are aware that there are some limits to the types of economic questions that can be addressed with a CBA. While it is a logical first step in evaluating a fishery policy or investment, it does not usually provide much detail on how benefits and costs are distributed between users, nor does it provide the type of regional and community employment information also used by policymakers. This type of distributional and impact information may hold a place in evaluating fisheries issues relevant to the State of Alaska. The Alaska Board of Fisheries, regional planning teams, and regional aquaculture associations are forced into debates over the distribution and magnitude of the benefits to fisheries. By focusing, in detail, on the magnitude of costs and magnitude of benefits to various users, it would be possible to also provide information to other debates focusing on enhancement within the state.

It is our impression that the proposal is intended as a briefing document for the Legislature that summarizes contracting arrangements, costs, and possible principal investigators to carry out the work. As such, the document provides a general idea of what you wish to accomplish and how the formal contracting portion of the work would be carried out. As the proposal is a brief description of the work and products, it, understandably, does not answer all questions of interest to the fisheries divisions, particularly those relevant to determining the additional data and workload that might be placed on ADF&G staff while carrying out your requests. Some of our comments revolve around the question of further work products and reviews you anticipate coming to ADF&G.

The following are ADF&G's specific comments:

1. As far as we are aware, there are no other reasonable alternatives for carrying out this study that would ensure completing the work on time. For the economic portions of the studies, e.g., the cost model, demand model, and software-combining model, there are not enough economists in the department to do the work, and much of the econometric work would be farmed out anyway. ADF&G staff might be able to carry out the population/exploitation-modeling work; however, ADF&G may not have adequate experience in applying salmon population models to bioeconomic analysis, which is different from the intent and modeling procedures applied to preseason forecasts.
2. We are not able to determine from the proposal exactly what information, work products, and staff time would be requested from ADF&G. This is a proposal seeking funding, but we understand there will be several additional steps, including (1) a request for proposals from each potential principal investigator, (2) submission and review of proposals, (3) award of contract, (4) specific information requests from ADF&G, (5) completion of individual study products, (6) combining models, and (7) reporting results. It would be helpful to ADF&G staff to know where staff would participate in this process.
3. If the work of the Interim Study Group is to be a public process, we wonder whether the affected parties should be allowed to comment on the proposed modeling effort. It seems that a review during the early stages of the process would most likely produce a user-accepted product when released.
4. Some portions of the narrative refer to production from salmon enhancement and others refer to production from hatcheries. It is not clear which would be focused on in the study. It would be difficult to just focus on hatcheries because so many projects are intertwined with fishpasses and lake fertilization. We suggest a more comprehensive frame of reference than just salmon production arising from artificial propagation.
5. The description of how the production estimates from the survey will be made and how the population/exploitation model will be linked to these estimates is a bit too brief for us to provide detailed comments. Also, it is not clear how ADF&G would be involved in the hatchery production survey design, administration of the survey, review of survey results, model formation, and model review.

6. The proposal did not address the issue of uncertainty in any of the model components. A single forecast of best-guess economic outcomes may not be a very useful tool for evaluating the hatchery program. The Legislature could consider including an analysis of the sensitivity of the assumptions and alternate outcomes as a major feature of the study.
7. We did not see any discussion of how the economics of the management of these fisheries are going to be considered? For example, tradeoffs may exist between enforcement, management, and enhancement.
8. The statement, "Salmon produced by hatcheries are exposed to the same biological conditions and fisheries as wild stocks," did not seem to be totally accurate. Many enhanced as well as wild stocks of fish develop in discrete, separate environments and may have little, if any, interaction at various times during their life cycles. The assumption of identical environments under all conditions may negatively bias the CBA.

We continue to be very interested in providing support to the Legislature in the Hatchery Research Project. Some of the models created in this study could help the FRED Division in understanding the economic consequences of specific rehabilitation and enhancement projects once the software is made available to us. Your clarification and guidance on some of these comments will help us to more efficiently assist in the completion of this important study.

Sincerely,



J. P. Koenings *for*
Director

cc: Carl L. Rosier
Bob Burkett
McKie Campbell
Bob Clasby
Jeff Hartman
Rocky Holmes
Denby Lloyd
Norval Netsch

ALASKA STATE LEGISLATURE SENATE

SENATOR RICHARD I. ELIASON

PRESIDENT OF THE SENATE
LABOR & COMMERCE COMMITTEE
RESOURCES COMMITTEE
RULES COMMITTEE
CHAIRMAN, SPECIAL COMMITTEE ON
DOMESTIC & INTERNATIONAL
COMMERCIAL FISHERIES



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September 11, 1991

Representative Cliff Davidson, Acting Chair
Legislative Council
112 Mill Bay Road
Kodiak, Alaska 99615

Dear Representative Davidson:

As you are probably aware, legislative staff, under the auspices of the Senate Special Committee on International and Domestic Fisheries, have been conducting an intensive review of the state's fish enhancement program. This review was initiated at the end of last session as a result of an increasing number of issues raised regarding the management of hatchery production, and the best options for spending declining state dollars. Certainly this past fishing season has made such a review even more timely and pertinent.

A major element of the research group's work plan (Attachment A) is to determine the economic impacts of the salmon enhancement program. Staff have thoroughly reviewed existing economic studies and have determined that further research is needed in order to help us determine the net benefits and costs of the salmon enhancement program. Five principal research components (Attachment B) have been identified for a total cost of \$58,000:

1) Hatchery Cost and Production Model to be conducted in-house, \$0.

2) Biological Population Model to be conducted by Dr. Jeremy Collie, University of Alaska Southeast, \$10,000.

Sept. 11, 1991
page two

3) Salmon Demand Model to be conducted by Dr. John Boyce,
University of Alaska Fairbanks, \$18,000.

4) Fishing Cost Model to be conducted by Dr. Matthew Berman,
University of Alaska Anchorage, Institute For Social and Economic
Research, \$20,000.

5) Model Synthesis to be conducted by Dr. Terry Smith,
University of Alaska Anchorage, Institute for Social and Economic
Research, \$10,000.

We are working with the University administration to reduce the overhead component of these contracts and thereby reduce the total cost of this project. However, we are anxious to get started and would like your support to go ahead with funding. If tentative approval of funding can be obtained from Legislative Council members by about September 20, then work could begin by October 1, the first four components would be completed by mid-December, and we would have an overall report by February 1, 1992. Formal action to approve the expenditure of Senate leadership funds on these contracts would be slated for the Legislative Council's next meeting.

I would like your support as a member of the Legislative Council in approving the transfer of the funds needed for this project to the Special Fisheries Committee in order to contract for this work. If you have further questions on the actual project, please contact either the overall project coordinator Molly McCammon at 465-4453, or the Economics Working Group leader Ginny Fay at 465-3711.

I would appreciate hearing from you as soon as possible.

Sincerely,



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

**Proposal to Conduct a Benefit-Cost Analysis of the Fishery
Enhancement Program:
Emphasis on the Price Responsiveness of Alaska
Salmon to Enhancement Production**

Introduction

In May 1991, the Senate Special Committee on International and Domestic Fisheries initiated an extensive review of the Alaska salmon hatchery and enhancement program. As a result of considerable interest in the project, participation in the Hatchery Research Project includes representatives from both the Senate and the House of Representatives. The purpose of the study is to 1) review the history and legislative intent of the enhancement program, 2) analyze the current status of the program, and 3) consider future options for the program--ranging from fine tuning to possible redirection.

As part of the Hatchery Research Project, an Economics and Marketing study group was developed to provide information to the legislature on the economic impacts of salmon hatchery production. The group is to help determine

- if the current levels of Alaska salmon harvests are over-or under-supplied from a world-market perspective and
- if increased hatchery production of salmon will lower prices, fishing and processing revenues, and the total net value of Alaska's salmon fisheries.

To address these public policy questions requires a benefit-cost analysis. This type of analysis measures the level and cost of hatchery salmon production, the cost of harvesting and processing salmon, and the impact or "price responsiveness" of world salmon markets to various levels of Alaska salmon production. The costs are then subtracted from the benefits to estimate the net benefits of the salmon enhancement program and the incremental net benefits of different levels of salmon hatchery production to commercial fisheries. To analyze only the impact of different levels of salmon production on world salmon markets and prices paid to fishermen is insufficient for thorough policy analysis because it does not measure the net benefits (benefits minus costs) of the commercial salmon fisheries to fishermen or all Alaskans.

An example of some of the policy questions a benefit-cost analysis would help to address are as follows:

- Is increased Alaska salmon hatchery production the cause of this year's lower salmon prices? What is the significance of other factors, such as increased farmed-salmon production, exchange rates, economic recessions, and prices of food substitutes?
- What is the most profitable salmon species mix and level of production for the statewide enhancement program? Should the emphasis shift from pink salmon to king and coho salmon, for example, or even to other non-salmon species?

emphasis on management costs here.

- If Alaska curtailed hatchery salmon production, would Alaska salmon (both wild and hatchery) prices increase or would the resulting market share be filled by farmed salmon from other countries? Ultimately, what would be the net effect or benefits to Alaskans from these changes?
- How are the estimated benefits and/or costs of the existing hatchery production distributed to fishermen and processors in each region of the state? If changes in production occurred, how would these benefits and/or costs be distributed?
- What would be the economic benefits of changes in policy or additional legislative oversight regarding the production capacity and releases of hatchery salmon?

Rather than initiating a new benefit-cost analysis, the Senate Special Fisheries Committee requested the Hatchery Research Group to first identify the specific issues that need additional economic research. In response, the economics group developed a study plan with the initial tasks of reviewing economic and marketing studies completed to date and assessing the need for additional research.

After reviewing current research, the group determined that insufficient economic information currently exists to accurately address salmon hatchery public policy questions. The research that has been completed is either out-of-date, or additional research needs to be done to improve the reliability of existing economic models. As a result of the significant investment by private parties and the state of Alaska in both hatcheries and commercial fishing, a rigorous analysis using accepted bioeconomic techniques is warranted to fill these information gaps.

Based on our review, the economics group is proposing a set of contracts for additional research. The group worked closely with staff from the Alaska Department of Fish and Game (ADF&G), F.R.E.D. Division to develop this proposal because F.R.E.D. Division staff have considerable experience in these areas of research and have contracted for previous studies. As the committee requested, this proposal builds on previous research to close information gaps. It should be noted that the cost estimates are preliminary and more specific contract language will be developed if the legislature pursues the research.

Proposed Research

The five principal research components are:

- 1) a hatchery production and cost model,
- 2) a fish population model linked to fishing effort and harvests,
- 3) a demand model for Alaska salmon in world markets,
- 4) a fishing cost model, and
- 5) a computer software system to combine the four models.

The five research components are described below including potential researchers and the estimated cost of the research. Based on prior research conducted for the F.R.E.D. Division and expertise, the identified researchers are most likely to work on the projects. However, the economics group plans to write and circulate contract specifications to ensure that other qualified and potentially interested persons with the University of Alaska have the opportunity to work on the project.

As a result of the short time period available to complete the research, it is anticipated that the research will be funded through RSAs. Therefore, interested parties will not formally bid on the projects, but instead will provide information on proposed research methodology, pertinent research experience and qualifications, and the ability to complete the contract in the time available.

Hatchery Cost and Production Model

Principal Investigators: Economics Group and the F.R.E.D. Division staff

Anticipated Cost: \$0

This research component would consist of a survey of hatchery operators to determine the cost of hatchery production. In economics jargon, survey information would be used to develop a hatchery "production function" to estimate the incremental cost of changes in the number of salmon produced by hatcheries. The survey will be developed by the economics group and F.R.E.D. division staff and administered by the Legislative Research Agency and F.R.E.D. division. This portion of the research will also solicit information from the ADF&G, Divisions of Commercial Fisheries and F.R.E.D. regarding the costs of fisheries management of hatchery- and enhancement-program stocks.

Biological Population Model

Principal Investigator: Dr. Jeremy Collie, University of Alaska Southeast

Anticipated Cost: \$10,000

The purpose of the biological population model of hatchery fish is to estimate the number of fish returning to hatcheries and enhancement projects that are available for commercial harvesting. Salmon produced by hatcheries are exposed to similar biological and environmental conditions and fisheries as wild stocks (as opposed to farmed salmon). As a result, this research would estimate the interdependence of wild and enhanced stocks.

Salmon Demand Model

Principal Investigator: Dr. John Boyce, University of Alaska Fairbanks

Anticipated Cost: \$18,000

This contract would extend and improve research on the salmon enhancement program completed to date by Dr. Boyce for the F.R.E.D. division. To more fully

understand world salmon markets, improvements to existing demand models are needed. Relatively little research has been conducted to date on the demand for Alaska salmon, and models that do exist are insufficient to reliably answer the Legislature's policy questions. The additional work has not been contracted by the F.R.E.D. because of insufficient funding. There are two major improvements needed. The first is in the ability to forecast salmon prices and the amount of price responsiveness to changes in hatchery production and harvest levels. The second improvement is incorporating the impact of changes in world salmon-farming production levels on Alaska salmon markets and prices.

Fishing Cost Model

Principal Investigator: Dr. Matthew Berman, University of Alaska Anchorage, Institute for Social and Economic Research

Anticipated Cost: \$20,000

This portion of this study would estimate the cost to fishermen of harvesting salmon to determine the incremental cost of harvesting different levels of hatchery/enhancement project produced fish. This information can address questions such as--if hatchery production results in a 10 percent increase in harvest levels and a 2 percent decrease in the price of pink salmon, are the additional revenues minus the additional costs of harvesting the fish sufficient to increase fishermen's net revenues. Little extensive or reliable research has been completed on this topic which accounts for the relatively higher cost of this study component.

Combining of Models

Principal Investigator: Dr. Terry Smith, Institute for Social and Economic Research, University of Alaska Anchorage

Anticipated Cost: \$10,000

When completed, the four models described above will be combined into a single, complete software system for the analysis of specific policy questions. This contract will test specific future enhancement program options--such as maintaining, decreasing, or increasing current fish production levels, changing the current species mix, and maintaining or changing the location of enhancement projects--on the net economic benefits to fishermen and Alaskans. The results of this analysis will be a written report for the committee that will facilitate the development of public policy decisions. The final computer software product will be an interactive model housed and run by the Alaska Department of Fish and Game to address specific policy questions related to the salmon enhancement program. In addition, the model could be used to forecast salmon prices based on expected run sizes forecasted by the ADF&G, Division of Commercial Fisheries.

Conclusion

In addition to providing information on Alaska's salmon enhancement programs, the models developed by the study could be used for evaluating other salmon management policy questions.

The total estimated cost of the research is \$56,000 which is approximately \$18,000 less than the UAA, Institute of Economic and Social Research proposal provided in May 1991. The reasons for the estimated lower costs are that the hatchery cost model work would be done with current legislative and ADF&G staff and the economics modelling work would be a continuation of research conducted by Dr. Boyce for the F.R.E.D. Division.

The research proposed does not include studies to develop new markets or products for Alaska salmon for a number of reasons. The time available is insufficient, the cost of reliable marketing studies is usually quite high, and the Alaska Department of Commerce and Economic Development (DCED), Division of Economic Development and the Alaska Seafood Marketing Institute (ASMI) are both initiating salmon marketing studies in response to this summer's lower salmon prices. Therefore, the legislative economics and marketing group plans to provide information to the legislature on the success of past state efforts to market Alaska salmon and coordinate with the DCED efforts to avoid research duplication and encourage the best possible information. A copy of the DCED proposal is attached.

The proposed research also does not include studies to estimate the net benefits of the salmon enhancement program to sport or subsistence users. Including these additional uses would significantly expand the scope and cost of the studies.

September 6, 1991

(8)

**Some Preliminary Thoughts
on
The Salmon Strategy Task Force**

I. PURPOSE:

The purpose of the Task Force is to identify a production, harvesting, processing, and marketing strategy for Alaska's salmon industry which will maximize economic return to Alaska while also providing for responsible resource management.

II. SCOPE:

Shifts in production, harvesting and marketing of salmon in recent years have radically altered Alaska's role. The state must have a clear response to these changes. The economic future of fishermen and fishing communities is at stake and the State of Alaska also has at risk substantial loans regarding limited entry permits, fishing vessels, and nonprofit hatcheries.

III. ISSUES:

- A. What are likely future world salmon production and pricing levels?
- B. What should Alaska's hatchery and natural run production levels be to match the world market? Should Alaska attempt to compete in lower priced mass production with other producers or focus on higher priced specialty markets?
- C. If prices are expected to remain low, what are the options for reducing the cost of harvesting and processing Alaska salmon?
- D. What are the potential alternative markets for Alaska salmon?
- E. What are the potential product forms for Alaska salmon?
- F. Is illegal price setting taking place to artificially keep prices low?
- G. What programs can be established to improve the quality of Alaska salmon?
- H. What are the infrastructure developments necessary to improve transportation and warehousing/cold storage capability?
- I. What practical steps may be taken to Alaskanize the industry?

IV. TIME FRAME:

- A. Early appointment of members, identification of issues, and agreement on agenda by August 15.
- B. Assignments, research, enlisting of resource analysis and help, and first report by September 15.
- C. Report to the Governor and appropriate publics, and preliminary preparation for any legislative or executive action by November 1.

V. TASK FORCE COMPOSITION:

The Task Force should be kept small enough to facilitate timely identification of options for action, yet representative enough to enlist appropriate constituencies. They should be able to draw on government and private experts to help identify the options.

VI. RESOURCES:

- A. "Salmon 2000" report -- just released
- B. "Alaska Salmon: from a Natural State" -- just released

DRAFT

**DATA REQUEST FOR THE ALASKA DEPARTMENT OF FISH AND GAME
FOR THE LEGISLATIVE REVIEW OF THE SALMON ENHANCEMENT PROGRAM**

Population and Exploitation Model

The contractor will receive the following information from the Alaska Department of Fish and Game (ADF&G) and the Commercial Fisheries Entry Commission (CFEC):

- Copies of the FRED Division Annual Reports which list the major salmon enhancement projects in Alaska, and current enhancement numbers by species, and historical harvests by species - available by October 1
- A list and map of state and PNP salmon hatcheries in Alaska - available by October 1 from the FRED Division
- An address file for state and PNP hatcheries in Alaska - available by October 1 from the FRED Division
- An computer file which matches the 1990 Annual Report production numbers to harvests by an aggregation of fishing districts in each region - available by October 15 from the FRED Division for state hatcheries only, contact PNP's for this info.
- List of the primary fisheries harvesting state and PNP hatchery-produced fish - available by October 1 from the FRED Division
- Survey results from enhancement project operators providing a time series of production of juveniles by hatchery and by species - available by early November from the FRED Division
- Estimates of average historical harvests for 10-, 15-, and 20-year periods by species and subareas - available by mid-October from the Legislative Research Agency; the data for these estimates will be provided to the Legislative Research Agency by ADF&G by mid-September
- Survey results from enhancement project operators providing a time series of the returns and harvests of adult fish by region, district or aggregate of districts, and species - available by early November from the FRED Division
- Annual escapement and harvesting data by species and district from annual Area Management Reports and other databases - available by mid-October from the Division of Commercial Fisheries
- Comments on fishery manageability of the surveyed enhancement projects - available by mid-November from the Division of Commercial Fisheries

more areas
important.

how similar
are?
distinct subregions.

Access to coded wire tag data used to determine survival rates and differentiate wild and enhanced salmon stocks relevant to annual escapement and harvest by species and district - available by October 1 from the FRED Division

Demand Model

- Alaska Commercial Fisheries Entry Commission (CFEC) aggregated annual gross earnings and harvest data by salmon species (king, coho, sockeye, chum, and pink) by region and by fishery (purse seine, gill net, and troll) from 1974 through 1990.
- CFEC annual ex-vessel prices by species, region, and fishery from 1975 through 1990.
- CFEC annual aggregate of salmon processors gross earnings by species and region from 1984 through 1990.
- Completed work of Dr. Boyce, *A Comparison of Demand Models for Alaska Salmon*, University of Alaska Fairbanks, 1990.
- Survey results from enhancement project operators providing a time series of projected adult salmon harvests by hatchery, species, and fishing district (or combination of districts) - available by early November from the FRED Division.
- Estimates of average historical harvests for 10-, 15-, and 20-year periods by species and subareas - available by early October from the Legislative Research Agency; the data for these estimates will be provided to the Legislative Research Agency by ADF&G by mid-September.

Fishing Cost Model

- During a fishing season, there are approximately 650,000 fish tickets generated to track landings in the state's commercial fisheries. For each fish ticket, one observation is created for each species harvested and delivered to a process. These observations are collected into a single SAS dataset for each year that encompasses all landings for all of the regulated fisheries. A large portion of the fish ticket file consists of salmon landings. However, only a portion of the landings are relevant to fisheries affected by the fishery enhancement program. These include salmon fisheries in Kodiak, the Alaska Peninsula, Prince William Sound, Cook Inlet, and Southeast Alaska. The fish ticket computer file is available back to 1975. In addition, a computerized vessel license

file goes back to 1978. This file provides information on the fisheries in which a particular fisherman participates. This file also includes detailed information on fishing vessel characteristics. It is updated each week through out the fishing season.

The contractor will receive a listing of SAS library names and SAS file names from CFEC for the fish ticket file, and the vessel license file that corresponds to the relevant salmon fisheries.

- The contractor will receive a password for a hard drive accessible through the CFEC computer (available off the state mainframe) that will house the computer files. These data bases are confidential and modeling exercises as well as published simulations must be designed around these constraints.
- Information on the operation of the fisheries is to be made available to the contractor by providing recent management reports. Some ADF&G management biologists will be available to confer on the operation of the fisheries.
- FRED Division will supply information on the location of state and PNP enhancement projects, production from the hatcheries and historical harvests, by region and species from FRED Division annual reports.
- A list and map of state and PNP salmon hatcheries in Alaska - available by late-September from the FRED Division
- A computer file that matches the 1990 Annual Report production numbers to catches by an aggregation of fishing districts in each region - available by October 1 from the FRED Division for state hatcheries only.
- List of the primary fisheries harvesting state and PNP hatchery-produced fish - available from the FRED Division
- Survey results from enhancement project operators providing a time series of production of juveniles by hatchery and by species - available by early November from the FRED Division
- Estimates of average historical harvests for 10-, 15-, and 20-year periods by species and subareas
- Survey results from enhancement project operators providing a time series of the returns and harvests of adult fish by region, district, and species - available by early November from the FRED Division

September 16, 1991