

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILE 86/2
1823 SCOMM 74: SEN. SPEC. COMM. ON DOMESTIC & INTL. FISH., 1991-92.

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Amend:

Regarding quality of Neets Bay chinook: 200 were taken by the terminal troll fishery through June of 1985. The quality was reported to be good. SSRAA took 1,000 after July 1 for cost-recovery, and the quality then was poor.

McGee:

What would be the decision criteria to break off attempts at terminal-troll harvest and salvage remaining terminal harvest with nets before quality deteriorates?

Ingman:

Feeding pattern of fish during 1985 was abnormal.

Heard:

It is more important to consider patterns of contribution in the mixed-stock fishery.

Bachen:

How do the reduced exploitation rates anticipated because of curtailed seasons and areas factor into the 100,000 harvestable chinook mitigation goal? Should it be compensated for by increased production?

Leon:

Alaska hatchery stocks are a low proportion of outer-coast harvest at present because our programs are just beginning.

Seibel:

As facilities become fully operational, the proportion of Alaska tags on the outer coast should increase until 1995 when the other parties to the treaty will have rebuilt natural stocks. Then the proportion of Alaska tags will begin to be diluted again.

10:30 - 10:50 BREAK

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Eames:

Management's goal should be to force trollers to fish more in the terminal areas.

Krygier:

Two kinds of terminal fishery: Near terminal (i.e., Frederick Sound, central Chatham Strait), and terminal (i.e., Neets Bay, Snettisham).

George:

Wrangell Narrows near Crystal Lake is also a limited terminal area with good segregation from the Stikine River stocks.

McGee:

The technical team was not convinced that terminal-troll harvests would work.

Amend:

What was meant in the analysis by "Gear Group Conflicts"?

Seibel:

All gear groups were considered. A goal of the team was to avoid adverse impacts of a troll harvest on chinook returns to net or sport fisheries - otherwise, they would need to be mitigated next as a result of the chinook effort.

IV. DISCUSSION OF PROPOSALS

Medvejie

Cantillon:

Does the potential expansion of Medvejie come at the expense of other species at the facility or other gear group's harvest of those species?

Bachen:

The proposal uses the last of the potentially available water. During times of low water, this could pose a risk to chinook or the other

species there. Under normal conditions, the proposal will not preclude existing production. Zero-check program was not pursued because it is untested at this time.

Krygier:

Interested in why the large variances in cost estimates exist between the NSRAA and ADF&G estimates.

Bachen:

ADF&G used mobilization cost estimates for a remote site rather than a roadside site. Also, there are some differences in estimates for saltwater rearing. Comparatively, the differences were smaller than for some of the other proposals.

Bray:

How soon could you be on-line? Is brood stock available?

Bachen:

This next season.

Cantillon:

Did you assume the state would carry the operating costs or would these come from special harvest?

Baranof Lake

Jacobson:

Could costs be reduced by running the facility as a multiple-species operation?

Heard:

Commissioner's charge to the group was to only consider single species.

Pollard:

Last winter, prior to the mitigation question, the Baranof Lake concept was for a \$20 million capital expenditure for a combined chinook and

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chum facility. Operating costs under the old scenario increase by only \$100,000 from the mitigation proposal for chinook only.

Eames:

If this were a NSRAA project at a projected cost of thirty-nine dollars per fish, he would be against it.

McGee:

The present-worth costs-analysis technique makes Baranof Lake look unfavorable because it biases against projects with a large lag-time in operational status from initial start-up.

Amend:

Any of these proposals can be improved by fiddling with the assumptions. Recommend viewing the potentials rather than the costs. The costs are only estimates and not facts.

Wertheimer:

Considering the large facilities over a 50-year project life improves the cost-per-fish estimates.

Holland:

Could modify this proposal to bring Baranof Lake on-line sooner by using prerelease similar to Neets Bay or Esther Lake development. FRED did not consider these scenarios because of interpretation of Commissioner's charge. Regarding Baranof as a multi-species facility, the disease risk would be greater than if there were only a single species.

E. Johnson:

Would like to see what the cost figures would be for a prerelease scenario at Baranof Lake.

Bray:

Terminal harvest given too high of a weighting. What about risk?

Ingman:

Who laid out the boundaries of the terminal and near-terminal areas?

McGee:

They were the consensus of the team.

George:

Recommends prerelease before committing large investment. Remembers lots of boats and fish at Morris Reef and Hoggut Bay in the 1940s.

McGee:

Team considered the merits of getting production on-line as soon as possible. If we wait and study the issue of siting a couple more years, will Alaska still have a troll chinook fishery?

Eames:

We should look at doing both the immediate upgrade of existing facilities and start prerelease at Baranof Lake.

Pollard:

The Baranof Lake proposal assumed a lump-sum funding scenario. Under an incremental funding schedule, it would take an additional year to get Baranof Lake fully operational.

Eames:

What about the feasibility of doing a remote release at Hidden Falls?

McGee:

This is getting off on an entirely new and different proposal.

Leon:

If funding were to come in increments, it would be possible to take Crystal Lake brood, incubate at Hidden Falls, and prerelease to net pens at Baranof very rapidly.

Krygier:

It may be necessary to consider several different funding scenarios. The decision rules and risks will differ under different levels or schedules.

Heard:

The RPTs would be assisted if we knew the harvest distributions.

Orchard Lake

McGee:

What about Orchard Lake? (The RPTs bypassed this because it had been eliminated by the technical team).

Port Armstrong

Cantillon:

Are the water rights necessary to this proposal secured?

McGee:

Not entirely. A condition for this proposal even being considered is a demonstration of a binding water right.

Pollard:

The Habitat Division was concerned about drawing down the stream at this site.

Inqman:

What about the large cost discrepancies?

Pollard:

The major variances were the cost of developing the water supply. ADF&G used a design comparable to that at Hidden Falls in order to avoid the potential danger of losing siphon. Another variance was labor costs during construction; ADF&G assumed union pay-scales while Armstrong-Keta proposed to use nonunion labor to save capital costs.

Osprey Lake

Cantillon:

What about past incidences of *Diphyllbothrium* infestation on fry planted there?

Wertheimer:

If the fry are fed fish food they won't graze on worm larvae.

Krygier:

Why are the costs greater than NMFS' previous proposal?

Wertheimer:

Remote operation costs not considered previously, also the capacity was scaled-up to rival Baranof Lake.

Pollard:

The ADF&G estimate incorporates modified costs based on past experiences of remote construction at Hidden Falls and Snettisham and adjusted for future inflation at time of proposed construction.

Snyder:

The NMFS proposal is only for capital construction. Operational costs would have to come from state and/or private funding. If NMFS built the Osprey facility, they could provide additional design and engineering work at no cost.

Heinkel:

Since this is a federal mitigation project, could the same design and engineering work be provided gratis to a state or PNP project if it were selected?

McGee:

The State Department of Transportation uses this method of federal support for other projects.

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Pollard:

20% of total capital costs are normally used in the design, engineering and construction categories. Federal engineering and construction would improve the other proposals as well as the Osprey Lake option.

Jacobson:

What strings are attached if a project is federally designed and built?

Heard:

NMFS could help in the design, construction, and start-up costs. The federal government is not into production or operation. They would want to see joint operation by the state and the PNP sector.

Ingman:

Could Osprey be operated as a multi-species facility?

Krygier:

Concerned about added risk of disease if it were a multi-species facility, and about the potential for gear-group conflicts caused by multi-species harvests.

Burnett Inlet

McGee:

What about Burnett Inlet? The team determined it had an inadequate near-terminal harvest area. (The RPTs decided not to discuss.)

Whitman Lake

Cantillon:

Does this proposal use the last of the available water? Does it detract from existing production for other species or other gear groups?

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Amend:

It would change the potential for Nakat Inlet chum releases from a Whitman Lake CIF.

George:

Would there be a problem with interception at Annette Island?

Freitag:

So far only three percent of Whitman Lake fish have been taken by the fish trap.

Ingman:

Why was it rated poorly under the Canadian interception criterion?

Seibel:

Because it was the most southerly of the proposals.

Krygier:

Are there any inferences from the Cape Muzon and Cape Chacon troll harvests of Deer Mountain returns that could be applied to evaluation of this proposal?

Heinkel:

This proposal rated poorly in terms of natural stock interactions with pink and chum fry. This could apply to any site. No effort has ever been expended to resolve this question anywhere in southeast Alaska.

Amend:

This same claim has curtailed Neets Bay production and release of coho and chinook. There have been large releases into Behm Canal and around Ketchikan, and, yet, in spite of this, there have been record harvests of pink and chum in the same areas. Is this problem only unique to Ketchikan or does it in fact exist all over?

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Cantillon:

In this case, the proposal calls for release in the mouth of a major river.

Jacobson:

If there is no data, then questions the use of multi-species interaction as a negative criterion.

Leon:

Cannot quantify what the potential Whitman Lake interaction could be. Studies in Fraser River and Hood Canal have shown a direct correlation between release of coho and declines in pink and chum returns.

Amend:

It is a very complex issue. Pollock are major predators of pink and chum, and yet coho and chinook eat juvenile pollock as well as pink and chum. It is hard to detect a net gain or loss to the prey species because of this compensatory interaction.

Jacobson:

What about gear-group conflicts?

Seibel:

Might be primarily between troll and sport. Conflicts occur if more than one gear group is trying to operate in the same area at the same time.

Wertheimer:

The team rated the conflicts through default. If no other gear groups were projected to be present when trollers were there for a near-terminal or terminal harvest, then the proposal got a high rating.

Ingman:

What about discrepancies in cost-estimates?

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Amend:

Mobilization costs should be lower because this is on the road system.

Pollard:

The department's estimate was based on the most-probable cost. ADF&G included a portion (25%) of the existing debt for Whitman Lake into the proposal. Without this the association would technically be subsidizing a large portion of the proposed costs and it would be impossible to compare costs on a fair basis between agencies.

Meyers Chuck and Santa Anna Inlet

McGee:

Meyers Chuck and Santa Anna? (The RPTs did not want to discuss).

1:00 p.m. - 2:15 p.m. LUNCH BREAK

IV. Determinations and Recommendations: RPTs to Commissioner of ADF&G.

Seibel and Kissner:

Presented a summary of 1985 CWT recoveries for chinook from U.S. and Canadian fisheries.

Pennoyer:

A conclusion would be: the farther south and farther inside a release occurs, the greater the contribution to the Alaskan fishery.

McGee:

Is there a breakdown of troll catch in the experimental terminal fisheries?

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Seibel:

Cannot break out into subareas except on ATA logbook or observer program vessels.

Pennoyer:

Ideally, we would like to get the mitigation chinook taken by existing troll fisheries. If that is not possible due to treaty commission constraints, then does it make sense to site south and inside for the directed fisheries?

Kissner:

Under the old management regime, yes; under the new regime, no conclusion yet.

Heard:

Central Chatham may be a good area to minimize catch of Stikine stocks but maximize catch of new hatchery stocks.

Pennoyer:

So, if we continue to fish everywhere (all areas) under the old regime, the best strategy would be to locate projects in the more southerly and inside areas. If we have to rely more on directed harvests, the central, intermediate area would be more desirable from a management standpoint.

Krvgier:

Is there a difference in the exploitation rates of Deer Mountain versus Crystal Lake fish?

Pennoyer:

Apparently, there is not enough data yet to conclusively establish a difference.

What would we need to know to manage on a directed basis for Alaska fish and, therefore, maximize exploitation rates on our own fish?

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Wertheimer:

We would need additional test fisheries in the spring adjacent to the terminal areas in order to develop information to allow future management decisions.

Heard:

The differences in catch distribution of Deer Mountain and LPW fish, both of which came from the same parent natural stock, must be attributable to hatchery release location.

Bachen:

Location decisions should also consider the equity of distributional effects, i.e., the equity of moving harvest from one community or gear group to another.

How do harvest rates change in relation to the radius from the release site? There could be locations on the outer coast that may be considered discreet depending on the distance from and the magnitude of, the release and the dilution factor.

Cantillon:

There is a spatial and temporal window that exists around the LPW fish that allows for their harvest without impacting the Stikine stock or outer-coastal, non-Alaskan stocks.

Holland:

We need to resolve the question of how many smolt we need to release if we need a certain number of adults produced in order to allow for mitigation harvest.

Wertheimer:

We need to resolve this plus determine the geographic area where we can harvest the adults with the least deleterious impacts. When we determine these two things, then we define the critical path in our analysis concerning optimal projects and what they will cost, project priorities, and trade-offs.

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Pennoyer:

During treaty discussions, a number for chinook enhancement was required. 100,000 chinook was arbitrarily determined as a most-likely estimate of mitigation need. \$22 million was determined as commensurate with a most-likely estimate of a one-time appropriation to fund a world-class facility to achieve this mitigation.

The people who will make these funding decisions need to know what could be achieved with different levels of funding. Our first proposal to the federal government was for \$22 million for mitigation funding. The technical team used this value to test out one scenario (i.e., do we have a proposal(s) that achieve mitigation for this amount)?

If not, or if the funding scenario changes, as it apparently has, then do we need a strategy(ies) to consider alternative funding scenarios (i.e., \$7 million over two years)?

Holland:

Should we try to ensure the 100,000 fish mitigation to the trollers?

Madden:

Should we consider adjusting the mitigation goal upwards to compensate for conservative survival, most-likely costs, low-exploitation rates, risk adjustments, etc?

Wertheimer:

We would leave ourselves a buffer by utilizing such conservative assumptions concomitantly with conservative management.

McGee:

The consensus is to retain the 100,000 annual harvest goal of chinook primarily for trollers, but to adjust the number of smolt releases upwards in order to remain conservative.

Amend:

If assumptions regarding funding are conservative too, then we should bias towards funding on-line or rapidly developing facilities.

Lium:

(Elaborated on Armstrong-Keta proposal) We would purchase property and water rights. Disagreed with ADF&G cost-estimate.

Heinkel:

None of the costs are technically or legally valid - that is why they are estimates.

Wertheimer:

Realities of funding indicate need for immediate development.

Eames:

Decision options limited by funding. Suggested looking at immediate production start-up of Medvejie and Whitman Lake.

Leon:

Will the state have to submit a detailed funding proposal to the federal government detailing project location?

Pennoyer:

Yes. Around the first of the year, presuming the funding bill is passed, we will negotiate a contract with NMFS for the year.

Leon:

If we ask low, aren't we assuming we'll receive a low amount?

Eames:

I make a motion that joint RPTs are in favor of: Stage I - expansion of Medvejie and Whitman Lake for immediate production; Stage II - use of additional funds for long-term production at desired harvest level.

Jacobson:

Seconded the motion.

(Discussion)

Pennoyer:

The team's report only looked at one funding level. Are there other proposals under consideration for production of major increments of chinook?

McGee:

Most facilities are now at capacity in relation to their water supply with other programs or species.

Madden:

The team only considered proposals received under the request for proposals.

George:

What about remote releases of Crystal Lake smolt in Thorne Bay or Vixen Inlet?

Wertheimer:

That is already considered under existing production. The team considered either new production, or expansion and upgrade of existing facilities without displacing previous programs, species, or users.

Pennoyer:

A problem with stocking projects is that the fish have to be tagged and recovered in order to count as an add-on or "new enhancement."

Are there other proposals the team could look at that could go on-line quickly?

Holland:

It is possible to take excess eggs from Crystal Lake, incubate at Hidden Falls, and prerelease at Baranof. This would require use of the \$3.5 million first-year appropriation in order to start the yearling smolt release.

Cantillon:

With regard to the motion, the real window of opportunity seems to be Chatham Strait. No data available on tag recovery that could be applied to Whitman Lake or Medvejie yet. Concerned about total commitment of all the first-year funds implied by the motion. Under management regime similar to 1985, it could result in only 30% exploitation rate.

Bachen:

What impact would increased, inside-troll effort have on the natural stock rebuilding schedules for the Stikine, Taku, or Chickamin?

Kissner:

Would probably occur at the expense of natural-stock escapements. That is why central-upper Chatham appears to be so promising because apparently there are none of these natural stocks present there. Will know better when 1985 CWT data is worked up.

E. Johnson:

That is because there is very little feed in the area.

Holland:

What is the latest start date for Medvejie and Whitman Lake expansions?

Amend:

Could start next June, 1986.

Madden:

Has the teams charter been broadened to look at the optimal mix of multiple sites under different funding levels?

Pennoyer:

Are there other things we should consider, given the delay and uncertainty in funding?

Madden:

The team has not done a mix-and-match of proposals because the Commissioner's Office charge did not designate them to do so.

Heinkel:

We should not accept the prospect of quickly compromising the full-funding potential of the mitigation obligation - should not sell out for \$3.5 million.

Pennoyer:

When the team was charged, we did not know that it would be incremental funding. We need to design a plan to ensure future funding scenarios up to the full \$22 million commitment.

E. Johnson:

Concerned that money should go into fish production as soon as possible and not into research or a savings account.

K. Johnson:

Does not want the motion on the floor to be the end of the mitigation effort.

Ingman:

Call for the question.

(Motion #1 6 yes, 3 no. Motion #1 passes. All association representatives were in favor; all department representatives were opposed).

Pennoyer:

Of those who were opposed to the motion, were you against the motion itself, or the process?

Van Hulle:

Other opportunities have not been elaborated. We are looking at different assumptions now, specifically funding, than we were at the start last spring.

Cantillon:

Acknowledges that it would be a mistake to bankroll funds and not do something. Favors additional time to make an informed decision.

Heinkel:

Favors starting production in 1986 but opposed to proposal that would be self-defeating to actual mitigation.

Pennoyer:

Interprets RPT's recommendation as in favor of starting as much production as possible in 1986, in favor of the 1986 funding as a phased increment of a total \$22 million funding package, but uncertain whether these two should be the only specific project recommendations. Are the two proposals good regardless of the 1985 season data?

Eames:

Not locked in tight to only two proposals.

E. Johnson:

Willing to look at additional proposals, but feels most confident that the association's proposals could be implemented given the recent alteration in funding.

Bray:

Prefer conservatism. Stay with two proposals.

Pennoyer:

Would the PNPs be able to carry the operational costs of the expanded facilities?

My analysis of the consensus of the motion is:

1. Produce chinook (not research or bankrolling)
2. Start in 1986.
3. Seek full mitigation funding to completion.

When could alternative project mix for different funding schedules be developed? How long would it take for tag data and modified proposals to be available?

LaRiviere:

Are you implying sending out a new request for proposals? If the team needs to do additional analysis then suggest a strong, explicit charge that outlines the new scenarios, assumptions, time constraints.

Pennover:

There is no time for a new request between now and the time we sit down with NMFS to negotiate a contract in January.

Madden:

Estimate it would take the team until the end of March to develop the alternative mix given other demands and commitments.

(Meeting adjourned at 5:30 p.m. on 11/18/85 and reconvened at 8:40 a.m. on 11/19/85).

November 19, 1985

Pennover:

Summarizing the team's report - they recommended that certain things be considered to achieve 100,000 harvestable chinook given a funding constraint of \$22 million.

They now realize that the total funding will still be sought after, but that it will come in increments.

The RPT recommendation is consistent with the report in that:

1. Recommends that money be used for production in 1986 (no studies, delay, put production on-line).
2. Will not accept the \$3.5 million for 1986 as the only increment or phase of mitigation funding. We expect there will be continuation of incremental funding up to the federal commitment of \$22 million. Contract proposals should reflect this incremental approach.
3. For the present, the team's data and analysis is the best available to use in guiding implementation of projects. No time remains for a proposal request prior to contract negotiations with the federal government. Instead will request modification of proposals to incorporate new funding assumptions. Before the Board of Fisheries meeting we will get the 1985 CWT recovery analysis. After the board meetings, we will know the seasons, areas, and the gear groups' desires.
4. Given the funding alteration, and based on additional input (above), may require modification of existing proposals.

We need to put a cover on the team's document. We will develop a contract with the federal government in January for one year with the implication of full funding through to completion. We do not want to cease consideration of our options until time of negotiations. If CWT data, seasons, areas, or modified proposals are available and imply significant modification in our strategy, then the joint RPT will need to convene again prior to January.

Chinook pose a real problem for all gear groups with regard to the quota and the transboundary rivers. In order to mitigate treaty hardships, we need to get production started this year. Remain optimistic about the long-term picture in terms of coastwide rebuilding program.

Leave the report in draft. Append a record of this discussion in the front of the report. Will need the draft report, and our future

hatchery projections for the Board of Fisheries meetings. Regarding Phase II, will keep the technical team functional. Will need a conceptual idea of Phases II, III, IV, and so on, prior to negotiating the 1986 contract with the federal government.

Bray:

Objects to the report. The technical team should not make the decisions, the RPT should. The report favors the Baranof Lake proposal.

Pennoyer:

Both teams make recommendations. They decide about data, quality, etc., but not the final decision. That occurs at the level of the Commissioner and the Board of Fisheries. The RPTs, association Board of Directors, advisory committees, etc., all have input. The RPT is not to make a decision that could have an allocative impact. Disagrees that the team's preference for one project is implicit in the report.

Madden:

The technical team stated that they did not want to make a recommendation.

E. Johnson:

The team needs the RPTs concerning single or projects. Reco

McGee:

Motion #1 de facto implied RPT favor for the multiple concept.

Pennoyer:

A 6 to 3 vote on a complex motion is meaningless. Will need to present the reasons for the vote and the split in votes to the Commissioner.

Eames:

Given the constraint of time and funding, the RPTs made the only choice available to them. Doubt anything will change that would cause them to

reconsider the motion or the concept of multiple projects to spread the risk.

Leon:

RPT has never formally considered risk analysis. (Presented a probability tree that illustrated that the risks of lost investment or opportunity are equal for multiple projects or a single, large project). Also, more risk with multi-species than single-species facility due to disease transmission between species.

Holland:

In terms of lost earnings to commercial fishermen, loss of production from a single facility, at worst, would represent a 5% annual loss in revenue to fishermen. The impact is diluted by the additional fish from the quota and the other new enhancement projects that would be available at the time any of the mitigation projects came up to full production.

Ingman:

How would this analysis apply to Snettisham?

Leon:

Snettisham has never had a chance to come to full production until now, because it was never completed.

E. Johnson:

Motion #2. Support concept of multiple over single sites.

Jacobson:

Seconded.

Pennover:

What is meant by multiple projects? We already have five major chinook production facilities in Southeast and several more research or minor facilities. If we add one more major facility, we have six. Don't we already have multiple projects?

From the start, we did not want to be dependent on only one site. That is why the program already has multiple sites. However, the intermediate and outer-coastal areas do not yet have production from the existing multiple system. Would we like to develop a new, directed fishery in that window of opportunity? If it is not possible to develop terminal or near-terminal fisheries, then the Medvejie proposal will not be viable due to the low exploitation rate probable in the mixed stock, quota-controlled, outside area of the fishery. C

Heinkel:

Suggest we consider amending the motion on the floor to limit the production increment at any single site to only thirty to forty thousand fish.

Pennoyer:

The department's aim is to produce fish where they will alleviate economic and allocative problems. That is why there are already multiple sites.

K. Johnson:

Acknowledge multiple sites. Given the source of the funding, it would be safer to spread it out.

Cantillon:

Consider the risk of no future common property fishery for the trawlers.

Van Hulle:

Like the present multiple system. Want to reserve option to secure a major opportunity in a single action.

Amend:

Clarify motion #2. Do you mean spread out 100,000 harvestable fish for mitigation to multiple sites?

E. Johnson:

Yes.

Ingman:

Question?

(9 yes, 0 no; Motion #2 passes unanimously).

10:00 a.m. - 10:20 a.m. BREAK

(General discussion of central Chatham area)

K. Johnson:

Noticed less feed in Stephens Passage north of Cape Fanshaw.

Wertheimer:

Chatham had a harvest of over 300,000 chinook in 1920s. It was one of the largest concentrations of trollers on the entire northeast Pacific Coast. The condition now is related to the loss of the strait's herring population to the reduction fisheries and to the construction of upriver dams on the Columbia.

Heard:

The whale predation studies show the largest concentrations of euphids in Frederick Sound and at Port Malmsbury. There is room for additional production.

Eames:

Desirable to put a production facility in Chatham area.

E. Johnson:

Recommend full funding be allocated in the following schedule:

Phase

- I Medvejie, Whitman Lake expansions
- II Operational costs for Medvejie and Whitman. Start prereleases in intermediate area.
- III Enlarge prereleases.
- IV Continue to enlarge, or go to chum, sockeye mitigation.

Heard:

NMFS is directed not to get involved in production but to stay with research. NMFS could help with the design and construction at Osprey. Proposed both the associations assume the operating costs and staffing in conjunction with FRED.

Amend:

Our (northern and southern) association Boards of Directors are in favor of joint projects.

Jacobson:

Who would have the final say on operation?

Heard:

At discretion of state or PNP corporations, NMFS would stay out of management.

Madden:

Under law, NMFS could contract with the associations for operations. Otherwise, it would require the associations have a PNP permit.

Eames:

What about cost-recovery (at Osprey). Expect opposition from community of Port Alexander if large net fishery initiated there. How would Osprey work as a multi-species facility? How much do you estimate the operating costs would be?

Heard:

It is the site of an old herring reduction plant that had its own water and hydro systems.

Bray:

Like Osprey proposal but uncertain whether associations could afford to operate.

Heard:

Would take a couple of months to get an independent cost-estimate. Preliminary design and cost-estimate would be separate from mitigation funds.

Pollard:

Could you do a similar independent cost-estimate for Port Armstrong also?

K. Johnson:

Baranof Lake, Osprey Lake, Port Armstrong are all recommendations for Phase II.

E. Johnson and Bray:

Opposed to Port Armstrong because it has a private Board of Directors.

Ingman:

Move the Hidden Falls chinook release to get it out of jeopardy of seine chum harvest there.

Holland:

The fast-track development of Baranof Lake would be via Hidden Falls. Propose the following modified development schedule:

Phase

I Net pens in place with minimal incubation at Hidden Falls and prerelease on site.

- II Scale-up production and release at Baranof by expansion of Hidden Falls capacity and solidifying Baranof facility on shore.
- III Pipeline and incubation facility installed at Baranof.
- IV Remaining construction and support facility at Baranof.

Krygier:

A problem for the state is the necessity to work through the extra layer of DOTPF. Could NMFS build Baranof and turn over to the state to operate?

Wertheimer:

Could the contract for independent cost-estimates of Baranof also be done by the same firm as the one that does Osprey?

Heard:

Can't answer whether NMFS could assume that for Baranof. Use of NMFS subsidies will be given a high priority. Would require a request from the state or the RPT.

Madden:

Believe we have enough direction to start on Phase II and commence Phase I.

Ingman:

Wants report labeled as a working document.

Van Hulle:

Motion #3. RPT is on the record as accepting the team's report while reserving the right to future revision. Further, the RPT recommends the multi-hatchery concept, and specifically, Medvejie and Whitman Lake.

Cantillon:

RPT needs to give the report some status to ensure NMFS' contracting and funding decision in Washington, D.C.

Ingman:

Wants technical team dismissed. RPT to give direction for future phases.

Heinkel:

Need to accept report to demonstrate that the process is in place. Without it, the message is clear that we do not agree on the need for mitigation.

Jacobson:

Report is only a tool. RPT uses it and then discards it when it is done. Does not want report to go to Washington, D.C.

Madden:

How can the team go on to Phase II if RPT does not accept the report that determined Phase I?

Ingman:

Team did as instructed by RPT. Report should include Pennoyer's four points.

E. Johnson:

Seconded Motion #3.

Wertheimer:

RPT is confusing an informational document with their own recommendation.

(Question: 9 yes, 0 no. Motion #3 passes).

Madden:

Summarizing:

1. Next couple of weeks information from CWT and Board of Fisheries regarding season and management.
2. Team has direction to consider Medvejie and Whitman Lake.

3. We will receive more information on funding and contract.
4. Should begin to consider Phase II.

The proposals could still be modified. The RPTs would reconvene if new events made it necessary.

Jacobson:

Southern RPT has to go back to its Board of Directors to discuss Phase II projects.

Heinkel:

FRED will start to modify the Baranof/Hidden Falls proposal.

Bachen:

Understood Pennoyer to imply that options remain open to reevaluate Medvejie and Whitman pending tag recoveries and Board of Fisheries action. NSRAA not ready to commit to Medvejie expansion until clear signals come out of Commissioner's Office. Will need this soon in order to get necessary Army Corps permit in time for 1986 season.

Cantillon:

Should know for certain by January..

Ingman:

How far can the associations go without a funding commitment?

Eames:

Cannot proceed without guaranteed funding.

Bachen:

Believes Pennoyer views this as an interim recommendation.

Madden:

The joint RPTs should transmit a letter to the Commissioner that informs him of their recommendations.

If data or board action poses a conflict, then Pennoyer indicated the RPTs would be called again for reconsideration.

If interim funding poses a problem for associations in order to stay on development schedule, the PNP office could contact DCED regarding finance for planning and design costs from the loan fund.

E. Johnson:

What about cost-recovery at FRED facilities?

Heinkel:

Do not know anything about it.

Eames:

Motion to adjourn.

Bray:

Seconded.

McGee:

What about instruction for modifying the report? Earle Johnson had some specific changes he asked to have made. Should the RPT take action to direct these changes? What if they entail major revisions?

(Question: 9 yes, 0 no).

Meeting adjourned.

(Minutes recorded by Christopher Pace).

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BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF FISH AND GAME
OFFICE OF THE COMMISSIONER

P.O. BOX 3-2000
JUNEAU, ALASKA 99802
PHONE: 907 / 465-4100

April 8, 1985

Southeast Alaska Chinook
Technical Team

Dear Team Members:

This letter is to outline the Southeast Alaska Chinook Technical Team's charge between now and September 1985. I appointed the team on March 12, 1985, following a joint meeting of the Southern and Northern Southeast Regional Planning Teams (RPT). The stated purpose of that meeting was to bring together groups and parties concerned with enhancement issues related to the recently-ratified U.S./Canada Salmon Treaty and to define an approach to dealing with those issues.

The primary charge of the team, of which you are a member, is to prepare a plan to produce 100,000 additional chinook salmon to offset fishery reductions required under the treaty to rebuild coastwide chinook natural stocks. The plan should be in final draft by September 1985, and should consider, region-wide, all aspects of chinook enhancement in Southeast Alaska. In September, the RPTs will meet again jointly to review the draft.

To accomplish this charge will require a multi-disciplinary effort. For that reason, we included on the team members of the current southeast chinook planning and harvest teams previously established by the Commissioner's Office. We also added representation from the private nonprofit (PNP) sector.

The two teams and the PNP sector have been working independently to accomplish specific tasks on chinook enhancement objectives. The Southeast Chinook Plan 1985 Draft Annex speaks to enhancement opportunity and fish culture technology, and technical personnel have met to discuss harvest and mark/tag methodology and recovery. Products of these efforts constitute the groundwork for further consideration of the management and fish culture aspects of new chinook mitigation enhancement related to the treaty. The PNP representation should provide the private sector perspective and expertise in chinook production technology.

The team should consider in its planning all aspects of chinook salmon production, including enhancement technology, fish culture, management, and harvest.

Specific discussion topics should include:

1. Enhancement strategies which minimize adverse impacts on natural stocks.
2. The 15-year chinook stock rebuilding program and its relationship to chinook enhancement as defined in the 1985 Draft Chinook Plan Annex and the Southeast Regional Comprehensive Salmon Plan;
3. Numbers of fish to mark (production lot marking must be mandatory);
4. Return forecast procedures on a hatchery-by-hatchery basis;
5. Establishment of revised harvest reporting sub-areas for enhancement return evaluation;
6. Enhancement strategies which provide maximum opportunity to selectively harvest Alaskan-enhanced fish separate from treaty-limited stocks;
7. Different techniques for chinook production and current success in identifying enhancement fish resulting from these techniques;
8. Opportunities identified in 1985 Draft Annex and consider new opportunities;
9. Project recommendations that go beyond the 1985 Annex. These recommendations should be based upon management considerations as well as enhancement technology, fish culture, and site analysis;
10. Site-specific recommendations on new facility construction or existing facility expansion.

In consideration of items 9 and 10, the team should concentrate on new opportunities before considering any changes in the mission or reductions in other species at existing facilities and should consider use of both proven as well as more experimental or unproven fish culture techniques. An important aspect of the planning will be demonstrating enhancement contributions through time and area segregation of returns. This will require examination of methods to identify hatchery fish and to more efficiently harvest them.

I do not yet know what level of funding may be provided from the federal government for mitigation of chinook and other species

affected by the treaty. I will inform the team when more fiscal information becomes available.

Whatever resources are available, the team's plan should yield the most "bang for the buck" in terms of numbers of harvestable chinook salmon. The team should establish a series of criteria and a process for prioritizing and selecting the best opportunities based on management and technology consideration, such as accessibility of the fish to fishermen and flexibility of sites for different fish cultural practices. The team should also provide sufficient documentation on each project to permit an objective evaluation. The matrix presented by Mel Seibel at the joint regional planning team meeting will serve as a starting point for developing this process.

When necessary, I expect the assistance and full cooperation of all departmental staff in addressing the tasks necessary to complete this assignment by the beginning of September.

Jerry Madden, team chairman, will be contacting you in the near future to arrange a meeting of the team in order to make more specific work assignments. If you have any questions regarding this matter, please contact Jerry at FRED Division headquarters.

Sincerely,



Steven Pennoyer
Deputy Commissioner

cc: NSRPT
SSRPT
Gear Groups
Division Directors

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

P.O. BOX 3-2000
JUNEAU, ALASKA 99802-2000
PHONE: (907) 465-4100

February 6, 1987

Dear Alaskan Fisherman:

The U.S./Canada Pacific Salmon Treaty ratified in 1985 contains provisions which limit or reduce certain southeast Alaskan fisheries. While in the long run the cooperative management and enhancement measures between the two countries envisioned in the treaty will, it is hoped, result in more salmon for both parties, short-term disruption of some fisheries is a reality. Accordingly, Congress authorized the expenditure of federal funds for enhancement projects to mitigate harvest losses in southeast Alaska. Funds have been allocated through the National Marine Fisheries Service (NMFS) to the Alaska Department of Fish and Game (ADF&G) on a one-to-one matching basis to fund this enhancement.

Originally, a sum of \$20 million had been discussed as an appropriate total to design and construct enhancement projects to produce 100,000 chinook, 1 million chum, and 20,000 sockeye salmon on an annual basis. Funding of this magnitude was not available at one time, and the federal government has been providing funding in annual increments. In FY 86 \$3,173,500 was passed through to ADF, and in FY 87 \$3.9 - \$4.0 million is being provided.

In 1986, after discussion with gear groups, aquaculture associations, and other concerned Alaskans, the department funded a mix of projects in Southeast totaling \$1,968,119. This leaves an unexpended balance of \$1,205,381 which, combined with the FY 87 funding, gives a total of \$5,105,381 for funding projects in 1987. We have requested continued federal funding of annual increments up to the full \$20 million, but, given federal budget problems, have no assurance they will be forthcoming. Another consideration is that state revenues have been declining and funding for additional facility operational costs will be a problem.

The Commissioner is seeking the advice of Alaskans concerned with the Southeastern commercial fishing industry on the proper mix of projects to conduct with this mitigation funding. Our staff has compiled lists of projects which were funded in 1986 or are

February 6, 1987

options for 1987 and beyond. These lists give the project description, status, cost, some comments on feasibility, and estimated adult production that would result from these projects. These projects are ones suggested by staff, gear groups, aquaculture associations, and others.

We would appreciate hearing the fishing industries' views on these projects. This request has gone to U.S./Canada delegates, organized gear groups, aquaculture associations, private nonprofit hatchery operators, and regional planning teams in southeast Alaska.

When we have had a chance to review responses, the department will schedule meetings where necessary to discuss the results. Based on the recommendations received and consideration of U.S./Canada Pacific Salmon Treaty implications, the Commissioner will decide on the mix of projects to be undertaken in 1987.

While we have not actually received the funding transfer from NMFS for 1987, we expect this will be accomplished within the next month. Time for preparation for the 1987 construction season is short and we would like to finalize the decision process in as short a time as possible. We would appreciate receiving your comments by the end of February. Comments should be sent to Jerry L. Madden, Salmon Rehabilitation and Enhancement Coordinator, PNP Program, Alaska Department of Fish and Game, P. O. Box 3-2000, Juneau, Alaska 99802.

Sincerely,



Steven Pennoyer
Deputy Commissioner

Enclosure

cc: Don Cellinsworth
Tom Kron
Ken Parker

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

May 6, 1987

P.O. BOX 3-2000
JUNEAU, ALASKA 99802
PHONE: 907 / 465-4100

Mr. Earl Krygier
Executive Director
Alaska Trollers Association
130 Seward Street, #213
Juneau, AK 99801

Dear Mr. ^{Earl}Krygier:

I am well aware of the concerns expressed in your letter of April 6. The allocation of funds between gear group targeted enhancement programs gets into a discussion arena that the Board of Fisheries is only beginning to address and for which there are no established criteria. At this stage we do not even have any way to evaluate what the ultimate federal program level will be and what will be available for project implementation. There are even other ways to evaluate the use of the mitigation funds such as benefit/cost that would further complicate the picture.

In my view, our best approach on chinook salmon is to commit to a major expanded effort in the north involving at least some combination of releases in Chatham Strait and Sitka Sound. Such an effort would require the commitment of a significant portion of the remaining available funds. Further major efforts on chinook salmon, such as a Hobart Bay release, should be held off until some of the current questions on the harvest of these fish can be resolved.

The funding of sockeye salmon projects will, to some degree, be guided by the funding availability after the technical reviews lay out options for incremental funding over several years for both species. Even the sockeye salmon project selection and funding has allocative aspects between net fishermen depending on the lakes or release sites that are chosen to work with.

Hopefully, by spreading costs out over time and by receiving additional installments of funding, we can accomplish all of the worthwhile proposals that have been suggested to date. By the time additional increments of funding become available, perhaps the Board of Fisheries will have been able to deal with the allocation criteria question.

Thank you for your input.

Sincerely,


Steven Pennoyer
Deputy Commissioner



STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

FEB 4 1985

DEPARTMENT OF FISH AND GAME

January 28, 1985

The Honorable Ted Stevens
United States Senate
147, Russell Senate Office Bldg.
Washington, DC 20510

Dear Senator Stevens:

The U.S./Canada Pacific salmon treaty which is scheduled for ratification in March, will have significant ramifications to southeastern Alaska commercial and recreational fisheries. Alaska's support of the treaty recognizes that only through coastwide and international management of certain stocks can the affected fishermen ultimately realize the maximum potential from our fisheries resources. For some stocks, basic conservation can only be assured through such cooperation in management.

Nevertheless, this long term benefit will not be attained without significant costs, particularly in the short term. These costs will fall unequally on certain fisheries subject to the fishing regimes agreed to in the treaty either through domestic fisheries adjustments or increases in the Canadian catch. In the near future, the United States may have to propose a plan to Canada to balance U.S. interceptions of Canadian origin fish with Canadian interceptions of U.S. origin fish either through modifying fishery regimes or enhancing into Canadian fisheries. In either case, we expect economic disruption due to a loss of fish available for U.S. harvest and for the cost of enhancement. These issues should be addressed at the earliest possible time.

It is our view that mitigation for economic impacts of the treaty is a federal responsibility. Accordingly, we are submitting the enclosed enhancement proposal which would: 1) facilitate the production of 100,000 adult chinook salmon and 1,000,000 chum salmon annually for harvest; 2) provide for sockeye enhancement in transboundary rivers, and; 3) provide for required research, and management to support treaty obligations.

Additional chinook salmon production is essential to compensate Alaskan fleets for the long-term reduced harvest

January 28, 1985

that will be required to rebuild key natural stocks coastwide. For the next fifteen years, to protect certain stocks, our fisheries are to be managed in part by a harvest ceilings well below their historic average harvest levels. Other jurisdictions will be realizing greatly expanded harvests on stocks not needing conservation. The only increases in harvest available to Alaskan fishermen during the rebuilding period will be from proven enhancement production. Anticipating this, the state has already made a considerable investment in southeastern chinook production during the last three years. However, an additional increment is needed to keep these fleets economically viable and at a par with the coastwide harvest trends.

In the Dixon Entrance boundary area, the treaty allows increased interceptions of Alaskan pink salmon by Canada. It also requires a reduction in sockeye harvest from recent average catches in our Noyes Island seine fishery. In the transboundary rivers (Taku and Stikine) harvests of sockeye and coho salmon are provided to Canadian fisheries. While these catch levels are reduced from recent average Canadian harvest, they will continue to impact traditional Alaskan net fisheries targeting on these stocks. Consequently, chum salmon and transboundary river enhancement are requested as mitigation for our net fisheries.

The proposal to address these disruptions resulting from implementation of the treaty has a capital cost of \$20,400,000. Operational costs are \$1,720,000 in the first year.

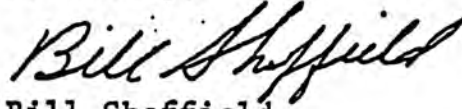
The attached proposal Part B addresses the research obligations the United States will incur under the treaty. These numbers were developed jointly by my staff and that of the National Marine Fisheries Service (NMFS). I understand that NMFS, Juneau, has already submitted an identical proposal to their Washington office. Over the past two years, the research described in the proposal has been performed cooperatively by NMFS and the department. I would assume that this arrangement would continue. Please note that the initial four years include major stock separation (mostly tagging) studies required under the treaty in order that the commission can begin its deliberations on questions of equity between the countries. After that time, research costs are expected to decrease by approximately half. Periodic reassessments of stock contributions to various fisheries will be ongoing. First year cost is \$3,126,000.

The final part of the funding packet (Attachment C) addresses management and administrative costs to be incurred by the Department of Fish and Game to fulfill the requirements of the treaty's fishing regimes. I believe these are self-explanatory. Annual cost is estimated to be \$474,000.

January 28, 1985

I appreciate your assistance in obtaining this funding support. I believe that the proposed treaty and commission are a major step towards improved management and enhancement of Pacific salmon coastwide. The structure itself, however, provides only the outline for success and must be supported by adequate funding. I believe the enclosed package for southeastern Alaska will give us the necessary tools to achieve our objectives.

Sincerely,



Bill Sheffield
Governor

Enclosures

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This does not mean that the States and the tribes will be absolved from financial responsibility in restoring the salmon stocks. The States will be the ultimate beneficiaries of a vibrant fishery, and they must shoulder some of the cost. A joint effort by the Federal Government and the States will be necessary to ensure that the effectiveness of this management regime.

There being no objection, the letter was ordered to be printed in the Record, as follows:

THE SECRETARY OF STATE,
Washington, March 7, 1935.

Hon. TED STEVENS,
U.S. Senate.

DEAR SENATOR STEVENS: I would like to thank you for your firm support of the U.S.-Canada Pacific Salmon Treaty. I know you have long had special concern for the Treaty's impact on the state of Alaska, and your efforts have been indispensable to our success in bringing this treaty into force.

Your letter to me of February 13, 1935, enclosing a letter from Governor Sheffield, raised fundamental concerns regarding fair and effective implementation of the treaty. Specifically, you and the Governor emphasized the importance of salmon enhancement, both to restore salmon harvests necessarily limited by the Treaty and to compensate Canada for any imbalances that might occur with respect to Article III of the Treaty, the so-called equity provisions.

I fully appreciate the crucial role of enhancement in both these regards. Once the Treaty is in effect, its obligations and the concomitant requirement to enhance salmon stocks are national obligations. Accordingly, they will require support from the several states, the treaty Indian tribes and the Federal government. U.S. negotiators, including representatives of the Department of State, deemed Federal support of local enhancement programs to be one of the key elements in enabling the states to agree to harvest cutbacks, both to reach agreement with Canada and to resolve differences within the U.S. Delegation.

State and tribal interests already have taken the lead in formulating enhancement proposals. They have indicated that where Federal support is needed to buttress local contributions, they will submit such proposals to you and the other members of Congress directly. This conforms with the approach embodied in the Treaty's implementing legislation, which confers primary responsibility for policy and management issues on the states and treaty Indian tribes.

Counselor Ed Derwinski, who is overseeing initial implementation of the treaty on my behalf, has reaffirmed to the Congress the views of the Department of State on the fundamental role of enhancement to restore salmon harvests and satisfy our treaty obligations. You may expect our full support on this important principle.

Ed has repeatedly told me of the vital contributions you and your colleague Senator Frank Murkowski have made throughout the negotiations. I know he values your counsel and looks forward to continuing to work with you towards effective implementation of the Treaty.

Sincerely yours,

GEORGE F. SHULTZ.

have no objection.

Mr. STEVENS. Mr. President, the United States and Canada have been negotiating the treaty currently before the Senate for over 15 years. This is a historic occasion with respect to comprehensive management of our fisheries resources.

The United States has had to make tough concessions on catch levels in order to reach an agreement with Canada. Alaskans will have to curtail their Chinook fishery and the pink and Sockeye fisheries in the northern boundary area. Pacific Northwest fishermen have given up a great deal to obtain this treaty. The tribal leadership has also agreed not to sue Alaska, and has indicated a willingness to work out allocation problems with the other States.

These concessions were made because U.S. fishermen can see that in the longrun comprehensive management will pay off. Conservation efforts on the part of the States will no longer be offset by increases in Canadian catches. The task before us now is to restore the stocks as quickly as possible so that Alaskan and Pacific Northwest fishermen will not have to dicker over allocations of reduced catch levels. I hope that the time will come when we can all cross the rivers walking on the backs of the salmon.

The Federal commitment does not end on the floor of the Senate today. In order for this treaty to work, the Federal Government will have to assist in restoring the stocks. This means commitment to offset situations where there is an equity imbalance with the Canadians. It also means a Federal commitment to restore the salmon stocks to alleviate the economic hardships that will occur in the coming years. Secretary of

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UNITED STATES-CANADA SALMON TREATY NEGOTIATIONS: THE ALASKAN PERSPECTIVE

By
TED STEVENS*

The final ratification of the 1985 United States-Canada Pacific Salmon Treaty came as a result of Alaska's support for the Treaty. The initial Treaty, while tentatively approved, was opposed by Alaskan fishermen in general and Senator Stevens in particular. The Treaty as ultimately accepted by Canada and the United States provides for Alaska's fishery conservation practices and addresses the concerns of Alaskan fishermen regarding intercepting fisheries near the Canadian-Alaskan transboundary rivers. Senator Stevens explains his opposition to the draft 1982 Treaty, his support for the 1985 Treaty, and concludes that the final Treaty is a fair, reasonable document that equitably spreads the burdens of Pacific salmon restoration amongst Canada, the Northwest, and Alaska.

In December 1982, both the United States and Canada initiated a draft of the United States-Canada Pacific Salmon Treaty signifying their tentative approval of the Treaty.¹ While the Treaty negotiations were designed in large measure to revamp the 1930 Fraser River Convention,² the scope of the 1982 Treaty was extended to include all intercepting salmon fisheries. Many Alaskans criticized the detailed chinook provisions in the Treaty because if enacted, they would have had a devastating impact on southeast Alaska fishermen. Moreover, at the time of the 1982 draft, there was no implementing legislation available to consider in conjunction with the Treaty and Alaska fishermen faced the threat of treaty fishing rights litigation from Pacific Northwest

*United States Senator, State of Alaska. LL.B. 1957, Harvard Law School; B.A. 1947, University of California at Los Angeles.

1. Treaty Between the Government of Canada and the Government of the United States of America Concerning Pacific Salmon (Negotiators Draft) (Dec. 22, 1982) [hereinafter cited as 1982 Agreement].

2. United States-Canada Convention for the Protection, Preservation and Extension of the Sockeye Salmon Fishery in the Fraser River System, signed May 26, 1930, 50 Stat. 1355 (1930), 8 U.S.T. 1058, T.I.A.S. No. 3867 [hereinafter cited as Fraser River Convention].

Indian tribes.³

When it became apparent that the concerns of Alaskan fishermen were not addressed in the Treaty, Alaska's congressional delegation opposed final approval and ratification.⁴ This delegation wanted both the Canadian and United States Governments to reconsider the Treaty's impact upon Alaska. The ultimate result was a modified and improved Treaty, ratified in March 1985,⁵ in conjunction with the enactment of implementing legislation,⁶ and settlement of the pending treaty fishing rights litigation.⁷

The proposed 1982 Treaty provided some protection for Washington and Oregon fishermen operating in the Fraser River System by including the waters outside of the Fraser River Convention area in the management structure of the Treaty.⁸ But there was no guarantee that United States fishermen could continue fishing at reasonable levels for an appreciable period of time. The 1982 version of the Treaty also contained an accelerated rebuilding cycle for Columbia River chinook salmon which favored the fishermen of Canada and the Pacific Northwest United States.⁹ However, many of the concessions which formed the basis of the initialed 1982 agreement were burdens on Alaskan fishermen. The 1985 Treaty, while not perfect, has corrected this imbalance.¹⁰

During the many long years of negotiations with Canada, Alaskan fishermen made many unilateral sacrifices in conjunction

3. The tribes would have sued the State of Alaska to restrict Alaska harvest of Pacific Northwest salmon, particularly chinook. See *Confederated Tribes and Bands of the Yakima Indian Nation v. Baldrige*, 605 F. Supp. 833 (W.D. Wash. 1985).

4. My colleagues in the Alaska congressional delegation are Senator Frank Murkowski and Representative Don Young.

5. Treaty Between the Government of the United States of America and the Government of Canada Concerning Pacific Salmon, Treaty Doc. No. 99-2 (ratified Mar. 7, 1985) (entered into force Mar. 18, 1985) [hereinafter cited as 1985 Treaty].

6. Pacific Salmon Treaty Act of 1985, Pub. L. No. 99-5, 99 Stat. 7 (1985) (codified at 16 U.S.C.A. §§ 3631-3644 (West 1985)).

7. *Confederated Tribes and Bands of the Yakima Indian Nation v. Baldrige*, 605 F. Supp. 833 (1985).

8. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 4, para. 1.

9. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 3 (entitled *Conservation Measures for Chinook Salmon*).

10. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 3.

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with the State of Alaska's effort to reverse the decline of the chinook salmon.¹¹ This was exemplified by the Alaska Department of Fish and Game's actions in 1980-1984 to reduce catch ceilings for southeast Alaska trollers and the incidental catch rates for other fisheries.¹² During that period, however, Canadian fishermen actually increased their harvest of southbound chinooks, thereby negating Alaska's attempts to enhance escapement for the benefit of all Pacific coast salmon fishermen.

The 1982 agreement did not reflect the conservation efforts already being carried out by Alaska. A two cycle rebuilding period of ten years for chinooks to enhance the Columbia River stocks was contemplated by the 1982 agreement,¹³ but there was no reasonable transition for southeast Alaska fishermen. Reductions in catch levels for the southeast troll fishery necessary to sustain such a short rebuilding period, in addition to the limits already imposed by the Alaska Department of Fish and Game,¹⁴ would

11. For example, the Alaska Department of Fish and Game implemented many conservation measures to protect chinook salmon in southeast Alaska. These measures included: closure of waters west of Cape Suckling to trolling (1974); limited entry for power trollers (1975); restrictions on sport fishing bag and possession limits (1975); elimination of directed net fisheries for chinook (1975-1977); closure of terminal areas to trolling (1975-1977); closures of inside areas to protect immature chinook (1975-1977); a 28-inch minimum size limit for chinooks (1977); closure of outside waters to hand trolling (1978-1980); establishment of eight-day opening/six-day closure fishing periods (1979); prohibition of sport fishing from commercial vessels (1979); reduced line limits for power and hand troll fisheries (1980); moratorium on entry into the hand troll fishery (1980) and limited entry for hand trollers (1981); establishment of a guideline harvest level of 320,000 chinook (1980) and then reduction of the guideline harvest level to 285,000 chinook (1981); prohibited use of any hooks other than single hooks (1981); reduced chinook fishing seasons in coastal and offshore waters from April 15 - October 30 to May 15 - September 20 (1981); closed entire troll fishery from April 15 to May 15 (1981); closed the troll fishery in-season to protect chinook and coho twice during 1980 and three times during 1981; and required fishermen to report catches before transporting fish out of state (1981). Alaska Dep't of Fish and Game, Commercial Fisheries Div., Conservation Measures Taken by Alaska to Protect Chinook Salmon in Southeast Alaska (unpublished data) (Mar. 12, 1982).

12. See Alaska Dep't of Fish and Game, Southeast Region Fisheries Div. Staff, Draft Preliminary Report on 1985 Southeast Alaska Chinook Salmon Catch and Escapement (unpublished report prepared for U.S.-Canada Pacific Salmon Comm'n) (Jan. 1986) [hereinafter cited as Alaska Salmon Catch Report].

13. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 3 (entitled *Conservation Measures for Chinook Salmon*).

14. See *supra* note 9.

have forced almost all southeast Alaska fishermen out of the fishery, resulting in severe economic dislocations for Alaskan coastal communities.¹⁵

The 1985 Treaty, in contrast, takes into account the deep Alaskan commitment to conservation. It allows for an extended rebuilding period with protection against a sudden reduction of Alaskan harvests in order to achieve a gradual recovery of the Columbia River chinook stock without destroying the troll fishery.¹⁶

Although the 1982 agreement would have imposed restrictive quotas on all facets of the United States intercepting chinook fisheries, it did not include comprehensive restrictions on the Canadian fishery off of the west coast of Vancouver Island. As a practical matter, this "loophole" would have allowed Canadian fishermen to shift their efforts from restricted fisheries to the Vancouver Island fishery. The 1985 Treaty closed this loophole by imposing specific quotas on all significant Canadian intercepting chinook fisheries.¹⁷

Alaska's continuing effort to bolster the declining chinook stocks was incorporated into the 1985 Treaty. While the 1982 agreement would not have credited Alaskan fishermen for any future gains derived from the State of Alaska's restoration programs, the Treaty as adopted takes into account any demonstrated contributions of enhancement activities.¹⁸ This is particularly relevant to Alaska, because the State has already embarked on a comprehensive enhancement program which will provide over 200,000 additional chinooks by 1990.¹⁹

The establishment of a fishery regime in the northern boundary region between British Columbia and southeast Alaska was

15. Almost all communities in southeast Alaska rely on salmon for economic sustenance. See, e.g., G. ROGERS & R. COOLEY, ALASKA'S POPULATION AND ECONOMY: REGIONAL GROWTH, DEVELOPMENT AND FUTURE OUTLOOK 168-72 (Mar. 1962) (salmon account for 80% of total value of commercial fisheries; "southeast Alaska generally produced the largest portion of the total commercial fishery values during the decade . . .").

16. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 3 (entitled *Chinook Salmon*).

17. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 3, para. (d)(i)-(vi).

18. *Id.* at Annex IV, para. 2.

19. See ALASKA DEPT OF FISH AND GAME, PRE-SEASON MANAGEMENT PLAN FOR 1985 SOUTHEAST ALASKA CHINOOK FISHERIES 7 (Apr. 1985). See also Alaska Salmon Catch Report, *supra* note 12, at 10-14.

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also an integral element of the negotiations.²⁰ The critical issue involved the need to limit fishing effort in a way that would prevent high incidental catches of each Nation's salmon stocks by the other Nation. Early in the negotiations it was recognized that unreasonable limitations on United States harvests of Canadian sockeye would significantly impede the ability of southeast Alaska fishermen to harvest the Alaskan pink salmon resource. In spite of these concerns, the 1982 agreement imposed strict limitations on the sockeye catch at Noyes Island and Tree Point.²¹ These limitations would have forced United States fishermen to forego harvesting millions of pink salmon of United States origin.

The 1985 agreement moderated this adverse impact by permitting United States fishermen an incidental catch of 480,000 sockeye at Noyes Island for a four year period and 130,000 sockeye per year at Tree Point.²² The principle is clearly established that interception limits will not prevent the United States from harvesting its own fish.²³ The agreement does permit a larger Canadian incidental harvest of pink salmon, but the Canadian troll fishery will close down in the northern part of the boundary area upon reaching an incidental catch of 300,000 pinks.²⁴

The key feature of the Treaty which resulted from the prolonged negotiations on the northern boundary area,²⁵ is the recognition by all parties that the fish stocks should be managed to permit fishermen of each nation to continue "targeting" on stocks originating in their own waters.²⁶ The specific restrictions embodied in the 1985 agreement reflect that understanding.

The transboundary river controversy was another issue of

20. See 131 CONG. REC. S2687 (daily ed. Mar. 7, 1985) (statement of Sen. Lugar referring to the 1985 Treaty, *supra* note 5, at Annex IV, ch. 2).

21. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 2 (entitled *Northern British Columbia-Southeastern Alaska Boundary Area*), para. 2(i) & (ii).

22. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 2 (entitled *Northern British Columbia Southeastern Alaska*), paras. 2 & 3.

23. *Id.* at para. 4 ("the Parties shall implement appropriate management measures which will take into account the expected run-sizes and permit each country to harvest its own stocks").

24. *Id.* at para. 3(c).

25. This is the boundary between the United States and Canada in southeast Alaska. See *supra* note 18 and accompanying text.

26. See 131 CONG. REC. S2687 (daily ed. Mar. 7, 1985) (statement of Sen. Lugar).

concern for Alaska during the negotiations. Canada's increased harvests on the transboundary rivers located in southeast Alaska, especially the Stikine and the Taku Rivers, appear to have been promoted for the purpose of Canada's obtaining additional leverage in the overall negotiations. There were no traditional or viable commercial Canadian fisheries on these rivers before the negotiations. In fact, the Canadian Government had to subsidize the Taku River fishery to maintain a claim for future Canadian fishery development there.

The 1982 agreement called for an allocation regime that might have established an economically viable Canadian fishery for sockeye and coho on the Stikine and Taku Rivers.²⁷ For the years 1983 and 1984, the Canadians would have been allowed a sockeye harvest approximating fifty percent of the total allowable catch.²⁸ There was a dispute over whether Canada would be allowed thirty-five percent of the catch or fifty percent of the catch after 1984. That coho harvest was included at the last minute in the allocation scheme.²⁹

Many southeast Alaskan fishermen have traditionally depended on Stikine and the Taku River harvests. In the 1982 agreement, the benefits of the State of Alaska's strict conservation regime designed to restore these runs would have passed on to a previously non-existent Canadian fishery. The final Treaty moderates the impact of a transboundary allocation scheme on Alaskan fishermen. It expressly provides that the Canadians will be entitled to only thirty-five percent of the sockeye on the Stikine River,³⁰ and fifteen percent of the sockeye on the Taku River.³¹ The Canadians are also limited to 2000 coho on the Stikine and an incidental catch on the Taku.³²

The 1985 Treaty and agreed understandings largely resolved the questions presented by the "equity" principle.³³ The Canadi-

27. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 1 (entitled *Transboundary Rivers*).

28. *Id.* at Annex IV, ch. 1, para. 3.

29. *Id.* at para. 3(b).

30. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 1, para. 3(a).

31. *Id.* at para. 3(b).

32. *Id.* at para. 3.

33. See Jensen, *The United States-Canada Pacific Salmon Interception Treaty: An Historical and Legal Overview*, 16 ENVTL. L. 363, 400 n.106; see also Memorandum of Understanding, para. A, accompanying the 1985 Treaty, *supra*

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ans were, and still are demanding that they receive disproportionate compensation for Canadian fish caught by United States fishermen. It was contemplated that this compensation would come in the form of increased fishery allocations to be decided by the Commission. The 1985 Treaty allows the United States to assert its position forcefully, although Canada will doubtless keep up the pressure to obtain its claimed share.

The process of implementing the Treaty into domestic law has also served to protect United States interests. The Reagan Administration recognized the need to restore the salmon stocks by enhancement as soon as resources permitted in order to mitigate any economic dislocation resulting from the Treaty fishing limits.³⁴ The United States Department of State specifically stated that it would support funding for an enhancement program in Alaska.³⁵ The implementing legislation also mandates Commission positions³⁶ and provides veto authority for northern and southern delegations as a safeguard against unjustifiable tradeoffs between the north and the south.³⁷

The implementing process also put to rest the issue of whether the fishery allocation regime, established by Judge Boldt in *United States v. Washington*³⁸ applies to chinook harvests off Alaska. The "Boldt decision" held that the Pacific Northwest Indian Tribes, which are protected by the Stevens and Palmer Treaties, are entitled to fifty percent of all harvestable anadromous fish passing through their traditional fishing grounds.³⁹ Due

note 5.

34. See *Hearings Before the Subcomm. on Fisheries and Wildlife Conservation and the Environment of the House Comm. on Merchant Marine and Fisheries*, 99th Cong., 1st Sess. 102-03 (1985) (colloquy between U.S. Negotiator Kronmiller, Rep. Lowry, and State Dep't Counselor Derwinaki).

35. See Letter from Secretary of State George Shultz to Senator Ted Stevens (Mar. 7, 1985) (discussing the United States-Canada Salmon Treaty), reprinted in 131 CONG. REC. S2675 (daily ed. Mar. 7, 1985).

36. See 16 U.S.C.A. § 3632(a)-(h).

37. *Id.* § 3632(g). It should be noted that "north" means Alaska and "south" means everyone else except Canada.

38. 384 F. Supp. 312 (W.D. Wash. 1974), *aff'd*, 500 F.2d 676 (9th Cir. 1975), *cert. denied*, 423 U.S. 1086 (1976). See *Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n*, 443 U.S. 658 (1979).

39. See, e.g., Comment, *Empty Victories: Indian Treaty Fishing Rights in the Pacific Northwest*, 10 ENVTL. L. 413 (1980); Harrison, *The Evolution of a New Comprehensive Plan for Managing Columbia River Anadromous Fish*, 16 ENVTL.

to the ongoing, managerial nature of *United States v. Washington*, the issue of the tribal right to protection of the fishery resource throughout its range remained unresolved in 1982. In an effort to promote their positions in the Salmon Treaty negotiations, the Treaty tribes threatened to seek a court ruling which would have included Alaskan harvests under the Boldt decision.

In the final analysis, that tactic proved beneficial for both Alaska and the tribes. The tribes extracted a provision for equal representation on the United States Section of the Pacific Salmon Commission.⁴⁰ In exchange for supporting ratification of the Treaty and participation by the tribes, the State of Alaska obtained a legal commitment on the part of the Tribes not to seek inclusion of Alaskan harvests of Pacific Northwest salmon in the *United States v. Washington* allocation scheme as long as the 1985 Treaty remains intact.⁴¹

The 1985 Pacific Salmon Treaty imposes harsh burdens on many of southeast Alaska's fishermen, but there is a widespread perception in Alaska that sacrifices must be made in order to rebuild the salmon resources. Alaskans are willing to share part of this burden; however, it was necessary to ensure that the burden was spread fairly among all parties. The 1985 Treaty succeeded in achieving this goal.

L. 705 (1986) (discussion of equal share). See generally F. COHEN, HANDBOOK OF AMERICAN INDIAN LAW 220-28 (1982). The various Stevens Treaties are given in Holt, *Can Indians Hunt in National Parks? Determinable Indian Treaty Rights and United States v. Hicks*, 16 ENVTL. L. 207, 217 n.66 (1986).

40. See 16 U.S.C.A. § 3632(e)(3).

41. See *Confederated Tribes and Bands of the Yakima Indian Nation v. Baldrige*, 605 F. Supp. 833, 836-37 (1985).

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United States Senate

COMMITTEE ON APPROPRIATIONS

WASHINGTON, DC 20510-8025

JAMES H. ENGLISH, STAFF DIRECTOR
J. KEITH KENNEDY, MINORITY STAFF DIRECTOR

June 29, 1990

Dale Kelley
Executive Director
Alaska Trollers Association
130 Seward Street, No. 213
Juneau, Alaska 99801

Dear Dale:

Thanks for your second letter about Congressional intent over the mitigation of losses in chinook harvests caused by the implementation of the U.S.-Canada Pacific Salmon Treaty.

It was clear to all concerned in the negotiations that the enhancement of chinook stocks would be a priority. When Congress enacted the implementing legislation, however, the decision was made to delegate the decision making authority to the State of Alaska to allocate enhancement funds to projects chosen by the State. The State of Alaska agreed to this responsibility in exchange for the federal commitment of \$20 million enhancement funds.

The short answer is that there was no Congressional intent on how the funds would be specifically allocated. We simply did not address it at that time because the State assured us that it would allocate the funds fairly.

I share your concerns about the slow rebuilding of the chinook stocks, and have contacted Don Collinsworth on this matter.

With best wishes,

Cordially,


TED STEVENS

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referred by Rick Lamber.

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Sunday

364-2372

Sincerely

Hatchery stocks may hurt wild gene pool

By LAINE WELCH
and DONNA PARKER
Special to the Daily News

FISHING REPORT

that is common
an option that includes
The genes of wild salmon stocks should be protected. That is the strong recommendation of two reports on the interaction between wild and hatchery stocks. A draft report on Alaska's salmon hatchery programs just released to the legislature recommends a statute giving wild stocks priority status; giving management direction for mixed wild and hatchery stocks to the Board of Fisheries; increasing tagging studies; and installing a planning board to govern statewide hatchery policies.

The report also cites specific concerns over the increase of remote fry release in Prince William Sound. "The idea was to disperse the fishing effort and solve some allocation problems, but a large amount of the fish could be straying and spawning with wild stocks. Biologists are very concerned about that," said Molly McCammon, legislative report coordinator.

That concern is echoed in another report to be released this month, which compiles

the research shared at an international symposium held last fall in Cordova. According to coordinator Gary Thomas, the primary agreement was on the importance of retaining diversity in wild stocks. When Sweden and Norway switched their emphasis to hatchery reared fish, they soon lost most of their wild stocks through disease and parasites borne by non-indigenous species, he said.

In trying to develop new management strategies, Thomas said, the most difficult question is whether to impose caps on hatchery production. "Our main concern is that too many hatchery fish may spawn with wild fish and dilute the genetic strength of the salmon."

Cod seasons continue to get shorter each year in the Gulf of Alaska.

This year's cod quota could be finished off by March if fishing effort continues to accelerate. According to the Alaska Department of Fish and Game, 225

vessels, including 75 pot boats, are going after the westward region's 63,000 metric ton quota. Last year's catch of 77,000 metric tons was taken during April.

Although bycatch rates weren't available for the trawl fleet because of the delayed opener this year, preliminary numbers for the longliners look nasty. By Jan. 26, longliners showed a 3 percent bycatch rate, or 42 metric tons. If those levels continue, the longline fleet could be dropped from the cod fishery before long.

With the recent changes occurring in Russia, many feel that part of the 3 million tons of fish in the Okhotsk Sea soon will be made available to U.S. operators. According to market analyst Bill Atkinson, this is seen as part of an "agriculture-for-fish" plan, in which the United States would provide 26 agriculture-processing plants to Russia.

Atkinson said some Japanese observers wonder if the United States can meet the

challenge, saying they have limited experience in far-seas operations. There also are questions about the cost effectiveness of shipping processed products back to the United States.

The 1992 halibut catch will be up about 4 million pounds from last season. For Area 3A, the Central Gulf of Alaska, the catch limit will be 26.6 million pounds. For Area 3B, west of Kodiak, the limit is 8.8 million. Southeast fishermen in Area 2C can take 10 million pounds of halibut.

Two 24-hour openers will occur, on June 8 and Sept. 7, with a possible cleanup fishery on Oct. 5.

Mayday! Mayday! For those who have ever wondered, the international distress call comes from the French "m'aidez," which means, "You come help me."

Laine Welch and Donna Parker are Kodiak-based fisheries journalists. Welch also produces public radio's weekly Fisheries Report. Their information column appears every other Sunday.

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

Dr. Robert T. Couney

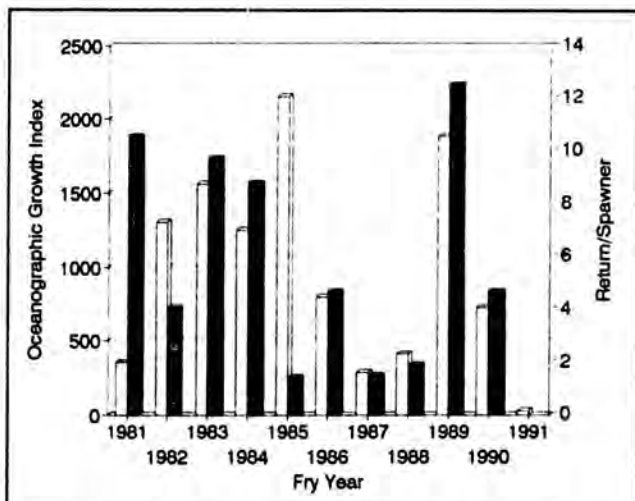
Oceanographers from the School of Fisheries and Ocean Sciences (SFOS) at the University of Alaska Fairbanks (UAF) and state and private fisheries scientists have joined forces to identify the causes of high- and low-production years for Alaska salmon. Members of this newly formed consortium – the Cooperative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

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

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

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

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



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

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



Dr. R. Ted Cooney (IMS File Photo)

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

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

Related reports may be obtained from:

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



UNIVERSITY OF ALASKA FAIRBANKS

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

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

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



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



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

OCEAN TEMPERATURE CYCLE

Dr. Thomas C. Royer

After more than a decade of increasing water temperatures in the northern Gulf of Alaska, temperatures are now decreasing. During the 1970s and early 1980s, temperatures increased by more than 1°C (nearly 2°F) throughout the water column; since 1985, temperatures have demonstrated a downward trend (Figure 1). Although more data are needed, this trend may confirm the existence of a natural 18.6-year temperature fluctuation cycle that also has been postulated to occur in other high latitude areas, including the Bering Sea, the North Pacific Ocean north of 55°N, the North Atlantic, and the Southern Ocean (Antarctica).

Institute of Marine Science researchers, working through the School of Fisheries and Ocean Sciences, have been measuring subsurface temperatures down to a depth of 250 m since 1970 at a sampling site at the mouth of Resurrection Bay, near Seward. These have been supplemented by sea-surface temperatures from ships taken since 1946 at sites near Seward and by air temperatures recorded at Sitka since 1828. The Sitka air temperatures correspond well with the Seward water temperatures and exhibit a similar pattern of periodicity (Figure 2).

The timing of the reversal of the warming trend appears to coincide with a cycle dictated by the lunar nodal tide, associated with changes in the moon's declination relative to the earth's equator. In contrast to the sun, which follows the same declination path each year, the moon's declination varies from 18 to 28 degrees above the equator over an 18.6-year period. The influence of the moon's gravitational pull on tides is well known; this and other research suggests that the moon also may affect ocean currents by influencing current speed as the moon changes position. Small changes in current speed can cause changes in average temperature by increasing or decreasing the

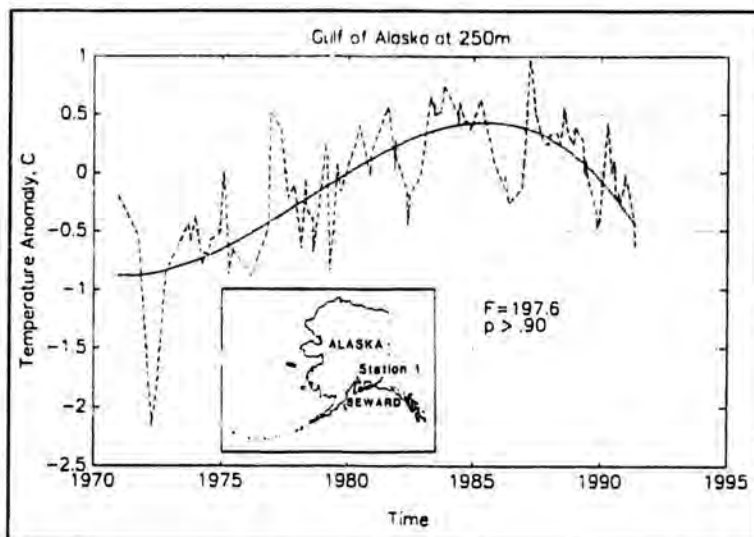


Figure 1. Water temperature anomalies at 250 m in the Gulf of Alaska. The third order polynomial suggests that the long term trend in temperature is cyclic rather than monotonic.

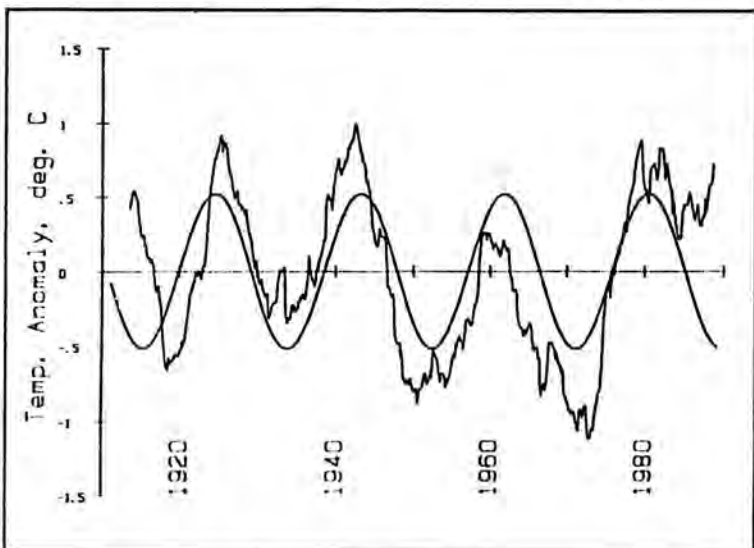


Figure 2. Sitka air temperature anomalies (five-year averages) with "best fit" 18.6-yr lunar tidal signal superimposed (smooth curve).

Changes in temperature suggest a tidal (lunar) influence rather than solar heating and cooling.



Dr. Thomas C. Royer (Photo: Cal White)

Dr. Royer has been a member of the Institute of Marine Science faculty since 1969. He obtained his Ph.D. (1969) and M.S. (1966) in Physical Oceanography from Texas A&M University. In the early 1970s he began oceanographic field work in the northern Gulf of Alaska to describe seasonal variations in physical parameters over the continental shelf and the adjacent ocean. His research combines oceanographic and meteorological approaches to examine the intricate coupling and forcing mechanisms of the ocean-atmosphere system in this region.

The research described in this issue of SFOS Highlights focuses on his investigations of water temperature variation since 1970, which indicate long-period fluctuations and demonstrate the interaction between the ocean and the atmosphere.

Related reports may be obtained from:

Publications Office
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UNIVERSITY OF ALASKA FAIRBANKS

rate at which warmer water from the equatorial regions is transported poleward into the northern Pacific.

Soviet researchers in the 1960s reported a similar cycle in sea-surface temperatures in the North Atlantic that they attributed to lunar tidal cycles. Others have suggested

sunspot activity, which follows a similar (22-year) cycle, as a possible cause. The Gulf of Alaska study, however, demonstrates changes in temperature throughout the water column, suggesting a tidal (and therefore lunar) influence rather than solar heating and cooling, which would affect primarily surface temperatures.

The warming trend observed initially was seen as a possible indicator of global warming, which is expected to be amplified in polar regions. The present cooling trend suggests instead the existence of a natural, cyclical pattern, although subsequent minimum temperatures could be modified by larger-scale global climate changes. Phenomena such as these point to the need for a long-term study of ocean and atmospheric conditions to discern long-period patterns, rather than drawing conclusions from results that are very short-term on a global climate-change scale.

If the cooling trend continues in the expected pattern, water temperatures should reach a low point in approximately five years. Regardless of its cause(s), the cyclical temperature pattern is expected to have some influence on thermally sensitive finfish and shellfish populations in the region. Some species may also provide additional evidence of the existence of the pattern: for example, an 18-year cycle is apparent in Pacific halibut. Other University of Alaska Fairbanks researchers have speculated on the influence of the current cooling trend on food stocks and on seasonal behavior. Salmon, for example, are expected to decline somewhat because the cooler water will affect the annual zooplankton bloom on which salmon fry feed. In contrast, crab populations are expected to increase because predator populations will move into warmer waters.

The research environment of the University, including the diligence and cooperation of the Institute of Marine Science boat crew members in collecting samples, has allowed for continued sampling since 1970 on an opportunistic basis with funding from a variety of sources. We hope to continue and expand the sampling program to deeper water off the continental shelf and to include nutrient sampling in the future to determine the influence of temperature fluctuations on nutrient abundance, transport, and distribution.



Institute of Marine Science technicians on board the R/V Alpha Helix collect Bering Sea water samples from the CTD rosette for shipboard and laboratory analysis. (Photo: Geoffrey Orth)

Many, FYI for your hatchery file
32-92

Hatchery Proves Costly; State May Get It Back

ANCHORAGE (AP) — Fisheries management in the wake of the Exxon Valdez oil spill could result in the collapse of the Kenai River red salmon run in 1994, Alaska Fish and Game commissioner Carl Rosier said.

That, in turn, could trigger an economic disaster for Southcentral Alaska commercial fishermen, he said.

Addressing fellow members of the Exxon Valdez Oil Spill Trustees Council on Thursday, Rosier warned of a "major disaster on the Kenai Peninsula."

The trustees later voted to spend \$525,000 to study Kenai reds, despite questions over whether the decline was wholly a result of the spill.

Biologists wary of oil spilled by the Exxon Valdez in 1989 closed the Cook Inlet salmon fishery that year. So many sockeye salmon returned to Kenai Lake that summer that it became overloaded, and stocks plummeted, Rosier said.

When too many fish come back and spawn, the competition among young salmon is intense, causing them to grow up small and sickly, susceptible to predators and disease.

Biologists counted just 2.5 million juvenile salmon leaving Kenai Lake last spring. Those are the fish that were spawned the year of the spill.

That is one-tenth the number of juveniles, or smolt, migrating out two years earlier.

The Exxon Valdez spill followed two years of unusually high red salmon returns, or escapements, on the Kenai Peninsula. Biologists closed salmon fishing after the 1987 oil spill of the tanker Glacier Bay in Cook Inlet. And in 1988, a naturally large red salmon run filled the Kenai River.

Concern about floating oil kept the Cook Inlet drift fleet on shore in summer 1989. Setnetters, who didn't fish near the oil, caught some 4 million fish that year. And biologists opened a dipnet fishery when they realized too many fish were returning.

But it didn't alleviate an unhealthy escapement of 1.4 million fish.

Rosier said biologists like to see no more than 800,000 reds return to Kenai Lake.

"The key to managing those reduced runs is better information," Rosier said. "The heart of it is the Kenai River and how quickly you bring that back on line."

The study approved Thursday will look at what conditions in Kenai Lake

spill studies for the Department of Fish and Game.

Other factors like lake temperature, weather and availability of nutrients could have led to a low survival rate, he said.

"If next year is another very low year, we know we have a collapse of the fishery on our hands. If '92 showed good smolt production, we would be relieved," he said.

The Kenai River is the major producer of red salmon for an upper Cook Inlet commercial harvest, for more than 600 driftnet and 300 setnet fishermen. During the past half-decade, catch values have fluctuated widely from \$12 million to nearly \$100 million.

The fish also sustain a Kenai processing industry involving hundreds of seasonal workers.

Paul Krasnowski, Southcentral regional supervisor for the division of sport fish, said there is no evidence the Russian River system — a sport fishermen's haunt — would also crash.

"It seems to be handling large escapements and wasn't impacted as much as the rest of the Kenai River," Krasnowski said.

However just what is happening with the Russian is unclear, since the state doesn't monitor smolt leaving lake rearing grounds.

Women Voters Meeting Set

The Sitka League of Women Voters will meet 11 a.m. Saturday in the home of Clothilde Bahovec, 625 DeGroff Street, to set priorities for local action and make recommendations for national and state positions.

All those interested in knowing more about the League of Women Voters are invited to attend.

This past year the league has become a fully accredited league. It has held several voter registration drives in response to the national priority to "Take Back the System" and has assisted Raven Radio in providing live broadcasts of Sitka Assembly meetings.

Local issues the league has worked on include recycling, clean air and citizen's rights. The state and national portfolio focus on fields such as open

State Warns of D To Kenai Salmon

KENAI (AP) — Less than a year after taking over Tutka Hatchery from the state, Cook Inlet Aquaculture Association may give the troubled Kachemak Bay operation back.

Tom Mears, the association's executive director, said he will recommend backing out of the pink salmon hatchery when the board of the non-profit group meets Saturday.

Cook Inlet Aquaculture received the keys to Tutka in July. It planned to fund the hatchery by catching and selling excess fish.

When the run failed last year, the plan fell far short of its goal.

"It either makes it or breaks it on appropriations or fish returns," Mears said.

"If the cash doesn't show up one way or the other, we don't have any choice."

The association had hoped to catch and sell \$550,000 worth of Tutka pinks last summer.

Mears said the catch was only 105,000 fish — valued at \$58,000.

Another 60,000 fish were used for brood stock and provided roughly 36 million eggs.

Fry hatched from eggs taken last summer will be released this spring.

When the agency agreed to take over Tutka, the understanding was the hatchery would pay for itself, Mears said.

The board did not want to use aquaculture association funds, nor did it want to borrow money.

Cook Inlet Aquaculture is funded by a self-imposed tax on commercial salmon fishermen. That arrangement links the hatchery's fate to the competing interests of upper and lower Cook Inlet fishermen.

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The United C, ciation, which re upper Cook Inlet, generally oppose as well.

"The thing w the premise that and it's clearly DA administrative Mathews said.

"The rest of t to subsidize it."

The Kenai P Association, whi ily upper Cook has not taken a st

Pink salmon made up a large inlet salmon cat fishermen there (vital to their fish

If the aquacult sight of the Tut on next summer the project may b

Based on the survival average pinks should retu

But the run h the last four y summer when a j run never materia

The associati with \$400,000 i year.

The state also vide \$2 million improvements de hatchery's capaci venile pink salmc

Authorities sa delivered eventu said it had hope make repairs.

Fairbanks Bar Owner Heart for Alcohol Tax

FAIRBANKS (AP) — Area bar owners say they probably will not seek repeal of the city's tax on alcohol sales, despite an Alaska Supreme

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"We talked a thing done in Ja

Salmon squeeze

Fisherman asked to reduce fleet

OLYMPIA (AP) — Commercial fishermen in Washington will be asked to come up with a way to shrink their numbers under a measure passed by the state Senate Feb. 10.

A task force of commercial fishermen would decide how much fish permit-holders need to catch to keep their licenses, how many licenses should be held, and how to reduce the current number of licenses. The task force would present its recommendations to the Legislature by next January.

Commercial fishermen who can't meet poundage requirements because of an emergency could appeal to a peer review board and get the requirements waived.

Sponsoring Sen. Linda Smith, R-Vancouver, said declines in the state's salmon stocks mean "there is going to be a gear reduction" on Washington waterways. Full-time fishermen should retain their licenses, but permit holders who view their licenses as an investment or a tax break should lose theirs, she said.

Sen. Sid Snyder, D-Long Beach, said in support of SSB6047 that "a lot of these people who have these licenses are inactive."

But Sen. Ann Anderson, R-Acme, criticized the bill for throwing the problem of salmon depletion in the lap of commercial fishermen. Other groups whose activities harm fish runs should also be part of the solution.

"To get commercial fishermen together and ask them to solve the problem among themselves is the wrong way to go," Anderson said.

The bill passed 36-10 and now goes to the House for a hearing.

The Senate also passed a measure that orders the directors of the Fisheries and Wildlife departments to create a new way to count salmon.

Current accounting systems are "mediocre to poor" said Sen. Jack Metcalf, R-Langley. "This bill will help in getting an accurate count."

The directors would work with federal officials, Indian tribes and Oregon state agencies to come up with a plan by Dec. 31. They would also study how incentives, including penalties and license rebates, could be used to improve catch reporting.

Sponsoring Sen. Scott Barr, R-Colville, said an accurate count of salmon catches is especially important because of the possible listing of more salmon stocks under the federal Endangered Species Act.

* — SB6150 passed 47-0 and will now be reviewed by a House panel.

The House Fisheries and Wildlife Committee has passed a separate package of bills designed to help declining fish stocks recover. The bills would establish a fish recovery panel, regulate farm practices on state lands, promote water conservation, require installation of fish screens, and set up a new education program.

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200 Anderson Street, Portland, Maine 04101 (207) 874-0098 FAX (207) 874-0212

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RE: SALMON SAMPLES

FEB. 21, 1992

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REGULATIONS GOVERNING THE ALASKAN PRIVATE NON-PROFIT HATCHERY PROGRAM

By John McMullen, Special Projects Manager

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

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

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

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

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

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

ADF&G FISHERIES POLICIES

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

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

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

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

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

HATCHERY PERMITTING PROCESS

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

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

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

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

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

HATCHERY OPERATIONS AND REVIEW

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

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

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

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

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

EVALUATION OF PWSAC ENHANCEMENT PROGRAM

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

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

Dick -- One possible thing to consider is amending the loan program language that says commerce may defer loan payment from 6 to 10 years, to say that loans may be deferred "up to 10 years." Could also add some intent to encourage Dept. to allow for the deferrments in the upper end of that range when necessary to encourage production of non-pink species. By dropping the six year minimum, the Dept. may be able to save money on loans that don't NEED that long to be in a position of ability to re-pay and thereby save the loan program money and reduce the amount of additional general funds needed every year to keep the program going.

Dave Massey or Martin Richards of Commerce Dept. Div. of Investments should be attending and could discuss the idea.

How about a moratorium on granting permits for increased pink production?

* Section 1. AS 16.10 is amended by adding a new section to read:

ARTICLE 9A. MANAGEMENT OF FISHERIES.

Sec. 16.10.621. MANAGEMENT OF WILD AND HATCHERY STOCKS OF ANADROMOUS FISH. (a) The Board of Fisheries shall manage fisheries in the state to achieve sustained yield for wild anadromous fish stocks.

(b) In managing hatchery produced anadromous fish stocks, the board shall consider the need of anadromous fish hatcheries to obtain brood stock. The board may manage fisheries in the state to achieve an adequate return of hatchery produced anadromous fish stocks to hatcheries for brood stock; however, management to achieve an adequate return to hatcheries for brood stock may not prevent achievement of sustained yield for wild anadromous fish stocks.

(c) The board may consider the need of hatcheries authorized under AS 16.10.400 to harvest and sell fish produced by the hatchery that are surplus to needs for brood stock to offset the cost of operating the hatchery. The board may exercise its authority under this title as it considers necessary to provide a reasonable return of surplus fish to a hatchery to offset the cost of operating the hatchery. The board may adopt criteria for determining the reasonable needs of hatcheries for surplus fish and may adopt a management plan to provide surplus fish to a hatchery.

CORRECTION

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

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REGULATIONS GOVERNING THE ALASKAN PRIVATE NON-PROFIT HATCHERY PROGRAM

By John McMullen, Special Projects Manager

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

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

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

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

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

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

ADF&G FISHERIES POLICIES

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

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

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

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

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

HATCHERY PERMITTING PROCESS

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

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

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

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

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

HATCHERY OPERATIONS AND REVIEW

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

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

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

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

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

EVALUATION OF PWSAC ENHANCEMENT PROGRAM

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

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

Dick -- One possible thing to consider is amending the loan program language that says commerce may defer loan payment from 6 to 10 years, to say that loans may be deferred "up to 10 years." Could also add some intent to encourage Dept. to allow for the deferrments in the upper end of that range when necessary to encourage production of non-pink species. By dropping the six year minimum, the Dept. may be able to save money on loans that don't NEED that long to be in a position of ability to re-pay and thereby save the loan program money and reduce the amount of additional general funds needed every year to keep the program going.

Dave Massey or Martin Richards of Commerce Dept. Div. of Investments should be attending and could discuss the idea.

How about a moratorium on granting permits for increased pink production?