

ALASKA LEGISLATURE COMMITTEE FILES, 1989-1990 8672
6016 HOUSE RESOURCES

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TASK FORCE MEMBERS

In late July 1989, Governor Cowper appointed the following task force members: Ken Castner, representative of commercial salmon fishermen; Mary Lou Cooper, public member; Gordon Harrison, private economist; Theodore Merrell, fisheries biologist; and Brent Paine, aquatic farming advocate. Mary Lou Cooper was designated chairman.

In August 1989, Gordon Harrison resigned from the task force to take a job as director of the Legislative Research Agency. Under Ch. 145, SLA 1988, State employees were not permitted to serve as task force members. John Weddleton was appointed as Mr. Harrison's replacement in September 1989.

On October 16, 1989, Mary Lou Cooper resigned as chairman while continuing to serve on the task force. Theodore Merrell was elected chairman by unanimous consent of the task force.

FUNDING

During the 1989 session, the Legislature appropriated \$50,000 to the task force. Of this, \$16,600 was appropriated for FY 89 and \$33,400 was appropriated for FY 90. Because task force activity did not commence until after July 1, 1989, the appropriation for FY 89 lapsed.

In September 1989, the task force received \$10,000 from the Department of Commerce and Economic Development through a reciprocal service agreement (RSA). In early November 1989, the Legislative Council awarded \$10,000 to the task force. In total, the task force had \$53,400 to spend on its efforts.

TASK FORCE MEETINGS

The task force held a series of meetings for the purpose of collecting information and developing its report to the Legislature.

The meetings are briefly described below. A list of persons testifying at each meeting is provided. For additional information, see the minutes of the meetings in Appendix D.

July 31, 1989. Juneau

Topics: Review enabling legislation and budget; develop goals and objectives; plan future activities.

Individual Testifying:

Deborah Greenberg, Special Assistant, Alaska Department of Fish and Game

September 6 & 7, 1989, Anchorage

Topics: Disease, genetics, and broodstocks; report format.

Note: While in Anchorage, task force members also attended various sessions of the American Fisheries Society Convention concerning aquatic farming and related issues.

Individuals Testifying:

Conrad Mahnken, National Marine Fisheries Service, Northwest and Alaska Fisheries Center

Dr. Lee Harrell, National Marine Fisheries Service, Northwest and Alaska Fisheries Center

Dr. Brian Allee, Director of Fisheries Rehabilitation, Enhancement and Development, Alaska Department of Fish and Game

Alex Wertheimer, National Marine Fisheries Service, Auke Bay Laboratory

September 27 & 28, 1989, Juneau

Topics: Siting and marketing; presentation from Tim Kennedy, Cordova fisherman and part owner of fish farms in Washington and British Columbia; presentation from Bill Heard, with the National Marine Fisheries Service, Auke Bay Laboratory.

Individuals Testifying:

Laura Dameron, Southeast Alaska Conservation Council

Rodger Painter, Alaska Mariculture Association

Diane Mayer, Office of the Governor, Division of Governmental Coordination

Janet Burleson, Department of Natural Resources, Division of Land and Water Management

Brian Allee, Department of Fish and Game, FRED Division

Sonja Corazza, United Fishermen of Alaska

Tim Kennedy, commercial fisherman and salmon farm owner

Paul Peyton, Department of Commerce and Economic Development, Division of Business Development

Bill Atkinson, Private Consultant on Japanese markets for seafood (by teleconference)

Bill Heard, National Marine Fisheries Service, Auke Bay Laboratory

October 16 & 17, 1989, Juneau

Topics: Review of previous findings; broodstock ownership, siting, disease, genetics; and commercial fisheries economics, regulation, and management.

Individuals Testifying:

Dr. Anthony Gharrett, University of Alaska and National Marine Fisheries Service
Gale Good, Alaska Trollers' Association
Sonja Corazza, United Fishermen of Alaska (by teleconference)
Ken Parker, Director, Alaska Department of Fish and Game, Division of Commercial Fisheries
Rodger Painter, Alaska Mariculture Association

November 5 & 6, 1989, Juneau

Topics: Regulating finfish farming; costs and benefits of a finfish farming industry; marketing issues; findings and recommendations.

Individuals Testifying:

Chip Toma, private citizen
Rick Harris, Sealaska Corporation

December 5, 1989, Work Session by Teleconference

Topic: Review of draft report and public comments received.

December 18, 19 & 20, 1989

Topic: Finalize report to Legislature.

ADDITIONAL ACTIVITIES

September 24 - 26, 1989, Tour of Puget Sound Fish Farms

On September 24, 25, and 26, task force members Ken Castner, Mary Lou Cooper, Theodore Merrell, and Brent Paine toured finfish farms in the Puget Sound area. Also present on the tour were Rick Harris, Sealaska, Tom Moyer, Legislative Aide to Sen. Bettye Farhenkamp, and Jon Sherwood, project coordinator for the task force.

On the afternoon of September 24, the task force visited the Squaxin Island marine pen fish farm and ocean ranching facility and viewed the proposed site of Swecker Farms marine pen fish farm, both in south Puget Sound.

On the morning of September 25, the task force visited Swecker Farms' processing facility in Olympia and its fresh water tank farm and hatchery facility in Rochester. That afternoon, the task force visited the Sea Farms Washington marine pen fish farm at Port Angeles. In addition, the task force conducted an aerial inspection of several marine pen operations in north Puget Sound.

On the evening of September 25, the task force met with representatives of the Marine Environmental Coalition, a group opposed to most aquatic farming in Puget Sound.

On the morning of September 26, the task force met with several members of the University of Washington faculty, addressing to them questions on disease, genetics, broodstock development, environmental impacts and research activities.

The faculty members were Dr. Ken Chew, Dr. Marsha Landolt, Dr. Bill Hershberger, Dr. Bob Stickney, and Dr. Donald Weston.

The trip to Puget Sound was hosted by Sealaska Corporation. The task force paid for its airfare to and from Seattle and for its food and accommodations. Sealaska Corporation paid for transportation within Washington and for the rental of a meeting room at the University of Washington campus for the morning of September 26. (An ethics report is on file with the Department of Law.)

November 17, 1989. Draft Report Released

On November 17, the task force released its interim report, including the draft version of its final report, to the Alaska Legislature. By November 20, copies of the report were mailed to the 130 people on the task force's mailing list, as well as all of the Legislative Information Offices.

A press release announcing the release of the report was also sent out. The task force received additional requests for the report. Eventually, a total of approximately 300 copies of the report were distributed to interested parties.

The task force received over seventy separate written comments on the draft report.

Throughout its existence, the task force gathered relevant information on finfish farming. Individual task force members collected data on various related topics, and information sent the task force from any source was distributed to the task force or (in the case of a few lengthy documents) summarized for the task force by the project

coordinator or a task force member. (See Appendix F, Bibliography, for a complete listing of sources.)

The task force developed a mailing list numbering approximately 150, including legislators, state and federal officials, various advocacy groups, and interested members of the press and public. Anyone who asked was put on this mailing list. After each meeting, the task force sent out letters summarizing the meeting and setting forth upcoming task force activities.

APPENDIX D

MINUTES OF MEETINGS

ALASKA FINFISH FARMING TASK FORCE
July 31, 1989

MINUTES

The meeting was called to order at 9:00 by Mary Lou Cooper, Chairperson of the Task Force. Task Force members present were: Mary Lou Cooper, Ken Castner, Gordon Harrison, Ted Merrell, and Brent Paine. No members were absent.

Mary Lou Cooper introduced the members of the task force and staff to the audience. Members of the audience identified themselves.

Mary Lou Cooper reviewed the rules and methods of operation of the Task Force.

Jon Sherwood, project coordinator for the Task Force, provided a brief overview of the legislation authorizing the Task Force. He explained that the Task Force is to produce an interim report by December 1, 1989 and a final report by January 15, 1990. He also reviewed the Task Force's budget. The Task Force is funded for \$33,000.

Task Force members then engaged in a discussion of their goals and how they would like to achieve them. Ted Merrell stated that the American Fisheries Society was holding its annual meeting in Anchorage in September and there would be a symposium on pen rearing salmon at the meeting. The Task Force decided to meet in Anchorage during the AFS meeting to take advantage of the expertise that would be available there.

Deborah Greenberg, Special Assistant with the Department of Fish and Game, addressed the Task Force on the legislative history of aquatic farming in Alaska. She then explained the Cowper administration position on mariculture. She also summarized the issue papers on finfish farming prepared by the interagency working group on mariculture. The issues included land use, water quality, disease, brood stock, habitat protection and product wholesomeness.

Ted Merrell asked whether minutes of the meetings would be provided. The Task Force decided that minutes indicating who spoke, the general topics, any formal decisions, and a list of observers should be kept.

The Task Force held a discussion of the topics for consideration included in its authorizing legislation. Members asked questions and exchanged information on finfish farming. Much of this discussion focused on the issue of minimizing land use conflicts. The task force identified a number of people to contact for additional information on this issue.

At 12 p.m., the Task Force adjourned for lunch.

The meeting was reconvened at 1:20 p.m. The task force members continued their discussion of the issues contained in the authorizing legislation. As each issue was discussed, contact persons were identified.

The issue of broodstock was addressed briefly. The task force then returned to their discussion of land use conflicts and siting.

Mary Lou Cooper raised the cost-benefit issue. Gordon Harrison stated that it would be a major task and depend on the assumptions made by the task force. Task force members discussed loss of jobs in the fishing industry, market niches, reasons for farming finfish, the cost of regulation, taxation of finfish farming, and the need to look at the three possible types of farming operations: freshwater, upland tanks, and marine pens.

Jon Sherwood handed out travel authorization forms for reimbursement of travel and per diem costs. He also passed out an article on salmon farming provided to the task force by Frank Homan, of Senator Sturgulewski's staff.

The task force discussed the cost of regulation issue contained in the authorizing legislation. Ken Castner said that this issue duplicated parts of the cost-benefit issue, except that it addressed the role of private sector in regulation. He stated that this role is a policy question. A brief discussion was held on this issue.

Mary Lou Cooper raised the issue of broodstock sources. Ken Castner suggested that the task force should review the debate before the Board of Fisheries in December of 1988. Brent Paine stated that he had put together papers on broodstock supplies while working for the Legislature. The task force discussed the practical and policy issues associated with supply of broodstock.

The task force discussed the issue of improving the marketability of Alaska salmon. Ken Castner suggested calling the producers of the Seafood Report radio program in Kodiak for the name of a good marketing person. Mary Lou Cooper mentioned ASMI as a possible resource. Ted Merrell suggested contacting the Alaska Trollers Association.

Ken Castner commented on how the task force members should conduct themselves in public. He said he did not want to see the task force members be perceived as public experts, and suggested that task force members keep their comments private. He stated that he did not want to do anything to poison or damage the quality of the task force's report.

Following the discussion of the issues, it was decided to divide the topics for consideration into five subjects: siting, cost-

benefit analysis, the amount and cost of regulation, broodstock-genetics-disease.

The task force discussed how to proceed. It was decided that each member would take one topic and work with Jon Sherwood to prepare a presentation for one of the meetings.

Ken Castner stated that he would like to teleconference with the other task force members for an hour or so before the next meeting. The task force agreed to do so, acknowledging that Gordon Harrison, and possibly Ted Merrell, would be unavailable to participate.

Mary Lou Cooper offered to take the marketability issue, Brent Paine the broodstock-genetics-disease issue, Gordon Harrison the cost-benefit analysis, Ted Merrell the siting issue, and Ken Castner the cost of regulations.

The task force briefly discussed the structure and intent of the marketability issue.

The task force decided to address the regulation and broodstock-genetics-disease issues at the next meeting. It was decided that the siting and marketing issues would be addressed at a meeting in the last week in September, and the cost-benefit issue would be addressed in an October meeting.

Ken Castner stated that he would like to have Jon Sherwood begin working on early drafts of the report soon. He said that the task force should devote 25 percent of its time to discuss writing.

The task force members updated their addresses and phone numbers for one another. The meeting was adjourned at approximately 5:30 p.m.

List of persons in attendance

Greg Erickson
Deborah Greenberg
Rick Harris
Sheila Helgath
Frank Homan
Eric King
Karl Ohls
Sandy Perry

APPROVED 9/7/89

ALASKA FINFISH FARMING TASK FORCE

September 28 & 29, 1989

MINUTES

The meeting was called to order at 8:35 a.m. on Thursday, September 28, by Mary Lou Cooper, Chairman. All task force members were present: Mary Lou Cooper, Ken Castner, John Weddleton, Ted Merrell, and Brent Paine.

Members of the task force introduced themselves to the new task force member, John Weddleton. Jon Sherwood introduced Fran Armon, who assists Jon in the office, providing administrative support for the task force.

Ken Castner reviewed the task force's past activities for John Weddleton. He listed the five categories of issues under consideration: broodstock, genetics, and disease; siting; cost of regulation; markets/marketing; and benefits and costs. Brent Paine reviewed the minutes from the last meeting for John Weddleton to provide a general idea of what the task force has accomplished to date.

The task force discussed siting issues, including local control, conflict minimization, environmental concerns, and the Washington interim guidelines for siting.

The task force members identified questions for Bill Atkinson, a fish marketing consultant, to be faxed to Atkinson so he would be prepared to answer them during the conference call on Friday.

Laura Dameron, with SEACC, spoke with the task force stating her concerns: impacts of the coastal environment and socio-economics and lifestyle impacts. SEACC opposes all fish farming because of upland impacts, pollution, water demands, and the potential loss of desire for habitat protection.

Rodger Painter, with the Alaska Mariculture Association, spoke with the task force on the need for rational policy guidelines for siting of finfish farms. He pointed out that state regulations for shellfish farming provide for local control and that the Washington interim siting guidelines address important siting criteria. He also offered his thoughts concerning the economic viability of finfish farming and how state regulation might affect it.

The task force adjourned for lunch and reconvened at 1:30 p.m.

Diane Mayer, with the Division of Governmental Coordination, discussed the state's Project Consistency Review procedures for use of coastal waters.

Janet Burleson, with the Division of Land and Water Management, discussed how the state's permitting process works for aquatic farms.

The task force addressed several questions to Brian Allee, Director of the FRED Division, Department of Fish and Game.

Sonja Corazza, with United Fishermen of Alaska, discussed negative impacts of finfish farming. Her concerns were that pens change the habitat of wild fish, that fish escape in large numbers, and that marketing farmed salmon on Alaska wild salmon quality is wrong. She also addressed siting issues, stating that area planning is very important. She suggested requesting mapping positions with the Department of Natural Resources and the Department of Fish and Game to consolidate habitat and use charts for public use.

The meeting was adjourned at 5:15 p.m.

The meeting was reconvened Friday at 8:30 a.m. by Ken Castner. Due to illness, Mary Lou Cooper was not present; all other members were present.

The task force approved the minutes of the last meeting with amendments. They then discussed the draft of the report's introduction and health of the fisheries section and suggested changes to be incorporated by the project coordinator.

Tim Kennedy, commercial fisherman and salmon farm owner, spoke with the task force. He stated that Alaska finfish farming would not be economically viable without raising Atlantic salmon, and noted that he would not start a fish farm up here.

Paul Peyton, with the Division of Business Development, discussed the economics of fish food production and addressed the outlook for salmon in world markets.

The meeting was adjourned for lunch at 11:25 a.m. and reconvened at 12:45 p.m.

The task force reviewed the siting issues discussed the previous day.

Bill Atkinson, expert on Japanese markets for seafood, was contacted via a conference call. Atkinson addressed several questions on Japanese markets for seafood and the impacts of farmed salmon on these markets.

Bill Heard, with the National Marine Fisheries Service at Auke Bay Laboratories, addressed research in raising salmon at Osprey Bay. He stated that indigenous species could be raised successfully, although he could not speak about the economic viability.

The meeting was adjourned at 5:00 p.m.

Minutes approved October 17, 1989

List of persons in attendance:

Brian Alløe, Department of Fish and Game
Susan Bradley, Coastal Zone Management
Janet Burleson, Division of Land and Water/Department of Natural Resources
Sonja Corazza, United Fishermen of Alaska
Laura Dameron, Southeast Alaska Conservation Council
Bill Heard, National Marine Fisheries, Auke Bay Laboratories
Sheila F. Helgath, Legislative Research
Frank Homan, Senator Sturgulewski's staff
Bill Janes, Environmental Conservation
Tim Kennedy, Fish Farm Owner
Amy Kruse, Environmental Conservation
Diane Mayer, Division of Governmental Coordination/Office of the Governor
Robert Mikol, Northern Deep Sea Fisheries, Inc.
Rodger Painter, Alaska Mariculture Association
Sheila Peterson, Senator Eliason's staff
Paul Peyton, Commercial Fisheries Development/Department of Commerce and Economic Development
Rick Reed, Habitat Division/ Department of Fish and Game
Lana Shea, Habitat Division/ Department of Fish and Game
John S. Thiede, Department of National Resources

ALASKA FINFISH FARMING TASK FORCE
September 6 & 7, 1989

MINUTES

The meeting was called to order at approximately 1:30 p.m. on September 6 by Mary Lou Cooper, Chairperson. Task force members present were Mary Lou Cooper, Ken Castner, Ted Merrell, and Brent Paine. No members were absent.

Mary Lou Cooper noted that Gordon Harrison had resigned his position on the task force to take a job with the Legislative Research Agency. She stated that the Governor's Office had not found a replacement for Mr. Harrison at that time.

The task force discussed the questions it wanted to resolve at the meeting, a proposal from Sealaska Corporation to tour operating farms in the Puget Sound area, and correspondence received from Sen. Fahrenkamp regarding the task force.

Conrad Mahnken, with the National Marine Fisheries Service, Northwest and Alaska Fisheries Center (NWAFC), joined the task force in a discussion of the genetic and broodstock issues. Both Atlantic and Pacific salmon were discussed..

Dr. Lee Harrell, fish pathologist with NWAFC, discussed the incidence of disease in pen-reared salmon and the potential for spreading disease to the wild stock.

At approximately 5 p.m., the task force adjourned for the afternoon.

The task force reconvened at 9 a.m. on September 7. Dr. Brian Allee, director of the Alaska Department of Fish and Game FRED Division, discussed disease, genetics, and broodstock issues with the task force.

Dr. Allee spoke to the state's existing hatchery programs, efforts to cultivate indigenous species of finfish, and the concept of creating areas free of salmon farming near critical salmon streams.

After breaking for lunch, the task force continued their discussion of Sealaska's invitation to take the task force on a tour of finfish farming operations in Puget Sound. The task force decided to accept the invitation.

The task force discussed the report with project coordinator, Jon Sherwood, who outlined some of the options for structuring the report. The task force directed the project coordinator to begin writing the report using an issue-by-issue format.

September 6 & 7, 1989
MINUTES

Alex Wertheimer, with the National Marine Fisheries Service, Auke Bay Laboratories, spoke to the task force regarding protection of the wild salmon stocks from disease.

The task force approved the minutes of the last meeting. Ken Castner requested that the word "produces" on p. 2 be corrected to "producers." The task force concurred.

The task force discussed developing its preliminary recommendations on the disease, genetics, and broodstock issues.

The task force then enacted its preliminary recommendations as follows:

- Only indigenous broodstocks should be used in finfish farming in Alaska. No stocks should be imported from out of state.
- The State will need to allow the use of private pathology services for the finfish farming industry to grow.
- Current state policies on disease control should be applicable to finfish farming.

The meeting was adjourned at approximately 5 p.m.

ALASKA FINFISH FARMING TASK FORCE
October 16 & 17, 1989

MINUTES

The meeting was called to order in Juneau at 8:34 a.m. on October 16 by Mary Lou Cooper, Chairman. Task force members present included Ken Castner, Mary Lou Cooper, Ted Merrell, Brent Paine, and John Weddleton.

Ms. Cooper announced her resignation as chairman and asked for the selection of a new chairman. By unanimous consent, the members approved Ted Merrell as the new chairman of the task force. Brent Paine took over as chairman of this day's meeting.

Jon Sherwood, project coordinator of the task force, apprised the members that state ethics requirements compel the members to report the services they received from Sealaska Corporation during the September meeting. Although the services do not constitute a conflict of interest, each member must report receipt of those services. Jon Sherwood will submit the required report on behalf of task force members.

Mr. Castner presented an Alaska Native Brotherhood resolution opposing finfish farming and a 1987 study on how commercial fishing affects Homer.

After reading various materials, the members discussed the format of the task force report. They reviewed a series of questions to ask Dr. Anthony Gharrett, a biologist with the University of Alaska Southeast Auke Bay Laboratory and the National Marine Fisheries Service. Mr. Gharrett made comments concerning the destruction of discrete genetic pools in the Pacific Northwest and encouraged the task force to prevent that occurrence in Alaska.

Mr. Merrell recounted his interviews with state officials regarding the relationship among state resource agencies, the permitting process, siting issues, and the establishment of sanctuaries. The members talked about these issues, the role of infrastructure for the economic survival of mariculture, and the question of public versus private ownership of broodstock.

The task force then discussed siting. Mr. Castner stressed the importance of this issue by stating that "siting is everything in this game" and that any legislation authorizing finfish farming should contain a fiscal note that reflects the costs of siting. Mr. Paine agreed and said that conflict and confrontation can be diffused if siting is set up properly.

Members concurred that the proper siting of finfish farms should address the transference of disease, genetic interference with wild stocks, environmental degradation, aesthetic degradation, conflicts with existing users, avoidance of marine mammals, avoidance of water-borne organisms lethal to the farmed stock, and avoidance of conflict with designated uplands or neighborhood uses.

Members also wanted to include mention of the state of Washington's interim guidelines for siting and of the Alaska Coastal Zone Management Plan's permitting process for resolving siting issues.

Mr. Paine suggested that siting and the permitting process should be addressed as two separate issues. Mr. Merrell suggested that the Alaska Coastal Zone Management Plan's permitting process be used as a model for the finfish farming permitting process. He then asked for clarification on the structure of the task force report. Mr. Sherwood outlined the distinctions between conclusions and findings. Conclusions, he explained, should be statements of public policy. Findings should be points of agreement among the task force members on matters of fact.

Members then discussed the permitting process. Ms. Cooper and Mr. Merrell supported the inclusion of maps in the public notification process. Questions then arose about the adequacy of the state's inventory of sites.

At 10:30 a.m., Dr. Anthony Gharrett discussed disease and genetics among salmon, the homing habits of various salmon species, siting, how the Alaska Department of Fish and Game enforces its genetics guidelines, the genetic differences that exist among lakes within the same area, patentable gamete production, and the aquaculture research by Japan and the Soviet Union. He distributed a proposal calling for the Alaska Department of Fish and Game to implement its genetic policy by establishing, on a regional basis, sanctuaries for wild fish populations. Mr. Gharrett entertained questions from the members until 11:35. Discussion then returned to siting and permitting.

After lunch, the task force members heard testimony from Gale Good, member of the Alaska Trollers' Association. Mr. Good described his industry and voiced his opposition to finfish farming.

The members spent the rest of the day discussing findings and conclusions relating to siting. Specific issues addressed were: water quality; effluents; water circulation; the use of uplands; predation; disease; aesthetics;

pollution; user conflicts; having finfish farmers produce annual performance reports to governmental agencies; the distinctions among marine pens, marine upland tank facilities, and freshwater upland facilities; distances between farms and wild anadromous streams; distances between farms; and, the incremental implementation of finfish farming.

The meeting was adjourned at 5:14 p.m.

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The task force reconvened at 8:45 a.m. on October 17. John Weddleton presided over the day's meeting. Task force members present included Ken Castner, Ted Merrell, Brent Paine, and John Weddleton. Due to illness, Mary Lou Cooper was absent.

The members adopted, with corrections, the minutes from the September 28 and 29 task force meeting and briefly discussed broodstock issues.

At 9:00 a.m., the task force members listened to United Fishermen of Alaska's Sonja Corazza's testimony on the history of the Alaska fishing industry, the limited entry program, the ocean ranching program, and the implementation of the 200-mile limit. She pointed out that in Anchorage alone, 3900 fishermen contributed \$126 million to the economy. Because of the underfunding of the Alaska Department of Fish and Game, she claimed that errors in fisheries management have incurred losses to fishermen. She ended her testimony by voicing her opposition to finfish farming.

After listening to Ms. Corazza's testimony, the members resumed their discussion on broodstock selection for enclosed freshwater systems, the importation of eggs, the use of Atlantic salmon in the Pacific Northwest, the selling of smolt, and other broodstock issues.

At 10:10 a.m., the members heard testimony from Ken Parker, Director of the Division of Commercial Fisheries, Alaska Department of Fish and Game. Mr. Parker presented a fiscal history of his division and described its duties. He provided information about the catches and ex-vessel values among various fisheries; the number of fisheries permits, licenses, and processors and buyers. He showed the relationship between receipts and expenditures for commercial fisheries management before entertaining questions from the members.

Mr. Parker's testimony ended at 11:15 a.m. The members continued their discussion on broodstock issues.

At 11:35 a.m., Rodger Painter, President of the Alaska Mariculture Association addressed the task force, urging support for the development of finfish farming in Alaska. In addition to handing out the latest edition of the "Alaska Mariculture Report" (Volume 3, No. 6), he distributed a paper responding to concerns relating to the permitting process, the ability of regulatory agencies to deal with finfish farming issues, the impacts on wild stocks, disease control, support of adequate funding for regulatory programs, the demands on Alaska's environment by every industry -- from tourism to logging, public use issues, Alaska's declining market share of salmon, and the obtaining of salmon eggs for mariculture. He also addressed the role of private non-profit groups in the cultivation of broodstock. Citing his past experience at the Alaska Seafood Marketing Institute, he noted how the state still has a poor quality assurance program.

After the lunch break, the task force members discussed their agenda, the testimony they had received, developing strategies for retrieving Alaska's 1988 market share of salmon, and issues relating to quality, allocation, habitat, broodstock, costs/benefits, recapitalizing the fishing fleet, permit costs, and marketing.

After a brief break at 3:00, the members established the following meeting dates and deadlines:

November 5 & 6.....Task Force Meeting in Juneau
November 17.....Release of Draft Report
December 5.....Work Session on Draft Report
December 13.....Deadline for Public Comments
December 17 & 18.....Task Force Meeting in Juneau

Citing previous testimony, the members summarized their findings on marketing issues.

The meeting was adjourned at 5:35 p.m.

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The following people attended the task force meetings:

Sonja Corazza, United Fishermen of Alaska*
Laura Dameron, Southeast Alaska Conservation Council

Dr. Anthony Gharrett, Biologist, University of Alaska
Southeast Auke Bay Laboratory and the National Marine
Fisheries Service
Gale Good, Alaska Trollers' Association
Deborah Greenberg, Special Assistant, Alaska Department of
Fish and Game
Sheila Helgath, Legislative Research Agency, Alaska State
Legislature
Frank Homan, Aide, Senator Arliss Sturgulewski
Michael Kaill, Biologist, Fisheries Rehabilitation,
Enhancement, and Development Division, Alaska Depart-
ment of Fish and Game
Dale Kelly, Alaska Trollers' Association
Eric King, Alaska Trollers' Association
Richard Lauber, Pacific Seafood Processors' Association
Lynn Morley, Teleconference Moderator, Legislative Affairs
Agency, Alaska State Legislature
Dave Moses, Aide, Senator Paul Fischer*
Karl Ohls, Aide, Senator Fred Zharoff
Rodger Painter, President, Alaska Mariculture Association
Ken Parker, Director, Division of Commercial Fisheries,
Alaska Department of Fish and Game
Sheila Peterson, Aide, Senator Dick Eliason
Chip Thoma, Observer

* Participated via teleconference

Minutes were approved 12/19/89.

ALASKA FINFISH FARMING TASK FORCE
November 5 & 6, 1989

MINUTES

The meeting was called to order in Juneau at 9:45 a.m. on Sunday, November 5, 1989 by Ted Merrell, Chairman. Task force members present included Ken Castner, Ted Merrell, Brent Paine, and John Weddleton. Mary Lou Cooper was absent.

Jon Sherwood, project coordinator of the task force, distributed copies of a required "ethics" report on task force activities and the draft report of findings and recommendations dated October 29, 1989. He discussed the maintenance of task force records and announced that on Friday, November 3, the Alaska State Legislature's Legislative Council approved \$10,000 additional funding for the task force.

The members discussed task force staffing and agreed to have Mr. Sherwood on contract to testify on behalf of the task force before committees during the upcoming legislative session. They also discussed how to distribute the draft report, the press release that would accompany the report, and what an interim report should contain.

Mr. Merrell announced that Mary Lou Cooper spoke to him about the possibility of her resigning from the task force and that he had requested that she not do so. Members concurred with having her remain on the task force.

At 10:20 a.m., Chip Thoma addressed the task force. He voiced his strong opposition to allowing finfish farming in Alaska. He stated that finfish farming would undermine the marketing of Alaska salmon as a "pure, fresh, cold" commodity that would benefit from the "increasing trend in consumer buying and eating habits [by] stay[ing] away from raised or harvested foods that are linked with pesticides, toxins, or additives..."

The task force then discussed the costs of regulation caused by the introduction of finfish farming to Alaska. Mr. Paine cited fiscal notes from earlier legislation authorizing finfish farming. The members discussed this, the fiscal demands of siting requirements, the number of possible permits to administer, the fiscal impact on other resource programs with the introduction of finfish farming, and the spin-offs of those new demands to other regulatory agencies such as the Board of Fish.

Discussion then resumed on the draft report the task force planned to release on November 17. Several members voiced their concern about the public misconstruing the document as

being conclusive or as representing each individual member's position.

Mr. Sherwood suggested having a cover letter accompany the draft report, in which the task force could solicit public comment while emphasizing that the document is only a draft.

After lunch, the task force discussed costs/benefits issues, including: the volatility of salmon prices; market niches for farmed and wild salmon; the history and purpose of the limited entry program and its conservational and economic repercussions; marketing strategies; the threat finfish farming poses to the livelihood of fishermen; the effects on the market of price, quality, and consistency of supplies; the possible losses to wild salmon stocks from using gametes to start farming operations; finfish farming as an allocation issue; having hatcheries profiting from the sale of smolts; the possible benefits of sharing facilities between finfish farmers and ocean ranchers; incremental start-up of finfish farming; establishing genetic reserves; and, the production of fish meal.

At 4:25 p.m., Rick Harris, of Sealaska Corporation, spoke in support of allowing finfish farming in Alaska and its possible benefit to coastal areas. He argued that finfish farming can help market Alaska salmon as a commodity that is available year-round. Mr. Harris suggested that one form of economic rent would be the servicing of a remote site net per for common property benefit. The fish would be provided by the state or non-profit hatcher. The finfish farmer would feed the fish until their release and provide and maintain the pen facility.

After a brief break, the task force members resumed their discussion of costs/benefits.

The meeting was adjourned at 6:10 p.m.

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The task force reconvened on Monday, November 6, 1989, and was called to order at 8.43 a.m. by Chairman Ted Merrell. Task force members present were Ken Castner, Ted Merrell, Brent Paine and John Weddleton. Mary Lou Cooper was absent.

The task force began discussing the profile of finfish farmers and the role they would play in the various aspects of the fishing industry. Mr. Castner was concerned that they might not defend the issues that affected the commercial fishing industry, but rather look after only their personal interests. Mr. Paine disagreed, stating that good

The task force adopted the November 2, 1989 draft labeled "Draft with Ted's Changes" for purposes of discussion.

It was decided that costs and benefits needed to be broken into two categories: 1) State of Alaska; and 2) the industry. It was determined that a time line to show the development of a fish farm to market stage was needed for inclusion in the report.

Mr. Castner requested that duplicate references under a heading be footnoted, for purposes of cross-referencing.

The task force decided that the costs associated with the beginning of the industry (insurance, markets, etc.) needed to be included in the report. Time frame estimates were predicated on a 1991 allocation, leaving site approval for 1991, with smolt and fish availability in 1992.

After a brief break, the task force discussed marketing. Findings were clarified and regrouped. The task force decided that separate findings were required for fresh and frozen markets.

The task force discussed: competition between farmed and wild salmon; improved marketing of wild salmon through quality assurance programs; and marketing wild salmon as natural, chemical-free salmon.

The task force recessed for lunch at 12:18 p.m. and reconvened at 1:30 p.m.

The task force briefly returned to its discussion of quality assurance.

Mr. Castner recommended that the report introduction contain a section on the make-up of the task force. He also thought definitions were needed on mariculture, aquaculture and finfish farming.

Several findings in the draft report were amended to provide clarifying language.

Having completed its review of the draft report, the task force verified the November 17, 1989 release of the draft report.

The meeting was adjourned at 5:22 p.m.

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The following people attended the task force meetings:

Laura Dameron, Southeast Alaska Conservation Council
Deborah Greenberg, Special Assistant, Alaska Department of
Fish and Game
Rick Harris, Sealaska Corporation
Frank Homan, Aide, Senator Arliss Sturgulewski
Tom Moyer, Aide, Senator Bettye Fahrenkamp
Sheila Peterson, Aide, Senator Dick Eliason
Kate Tesar, Aide, Representative Fran Ulmer
Chip Thoma, Observer

Minutes were approved 12/19/89.

ALASKA FINFISH FARMING TASK FORCE
December 5, 1989
WORK SESSION

MINUTES

The work session teleconference was called to order at 2:30 p.m. on Tuesday, December 5, 1989, by Ted Merrell, Chairman. Task force members present were Ted Merrell, Mary Lou Cooper, Ken Castner, Brent Paine and John Weddleton.

Opportunities for public comment and participation were discussed. A request by Chuck Piedra, of Elfin Cove, to expand the public comment period and testimony methods, was noted. It was decided to continue the same comment procedures as in previous meetings of the task force. No written comments relative to substantive changes in factual findings in the draft report had been directed to the task force as of the December 5 meeting. The task force reiterated that written comments on the draft report should be received by December 13, 1989, to ensure consideration.

The task force reviewed and edited the final chapters of the draft report. Jon Sherwood, project coordinator, discussed the format and content of the final chapter of the report.

The work session was adjourned at 4:42 p.m.

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The following people observed the task force meeting:

In Juneau--

Chip Thoma, Observer
Mary McDowell, Aide to Senator Dick Eliason
Frank Homan, Aide to Senator Arliss Sturgulewski
Gordy Williams, Angoon
Karl Ohls, Aide to Senator Fred Zharoff

In Anchorage--

Valerie Brown, Alaska Wildlife Alliance
Jay Nelson, Aide to Representative Cliff Davidson
Bryce Edgemon, Aide to Representative George Jacko
Charles McKee, Observer

Minutes were approved 12/19/89.

ALASKA FINFISH FARMING TASK FORCE
December 18-20, 1989

MINUTES

The Alaska Finfish Farming Task Force meeting was called to order on December 18, 1989, in Juneau, at 1:19 p.m., by Ted Merrell, Chairman. Members present were Ted Merrell, Mary Lou Cooper-Elton and John Weddleton. Brent Paine and Ken Castner were absent due to weather and eruption of Redoubt Volcano causing flight cancellations.

Format and appendices of the final report were discussed. Mr. Merrell noted patterns to the public comment received. Members felt that comments from the public sector about the draft report indicated a need for clarification of numerous points, but no significant changes in format or content. Minutes of October 16-17, November 5-6, and December 5, 1989 meetings were reviewed and corrected. Final approval was postponed pending Mr. Castner's approval.

Brent Paine arrived at 2:28 p.m. The task force recessed at 2:30 p.m., returned at 3:29, and adjourned at 3:30 p.m.

* * * * *

Ted Merrell called the task force to order on December 19, 1989 at 8:53 a.m. Members present were Ted Merrell, John Weddleton, Mary Lou Cooper-Elton and Brent Paine. Ken Castner was absent but arrived later at 9:34 a.m.

Members began reviewing the revised draft on an item by item basis, starting with the Cost of Regulation (Ch. 5). The consensus was that the actual costs will depend on the legislation that is passed.

Discussion of regulatory costs continued, including taxation and public notice costs. A recommendation limiting predator control to non-lethal methods was adopted. The task force addressed the compatibility of wilderness areas and national monuments (Ch. 4) with finfish farming, and modified the recommendation on that subject.

The task force recessed for lunch at 12:30 p.m. and reconvened at 1:45 p.m.

Minutes of October 16-17, November 5-6 and December 5, 1989 meetings were approved as corrected.

The task force continued its review of public comments on the draft report and adopted many changes in wording to clarify the findings and recommendations.

Brent Paine's Production Model draft and timeline of a typical finfish farm was discussed. The task force agreed that a clear

description of a finfish farm should be included in the production model section.

The Health of Fisheries (Ch. 2) was taken up next. Disease transmission, genetics and risks were clarified. A consensus was reached on content and format of the final chapter of the report: All recommendations in the body of the report should be repeated; the facts do not support an unequivocal "yes" or "no" to finfish farming in Alaska; the legislature should not extend the current moratorium; and finfish farming could be done without harming fishery resources if strictly regulated. Ted Merrell agreed to prepare a draft of the chapter for review by the task force next morning.

The task force was adjourned at 6:45 p.m.

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Ted Merrell reconvened the task force at 8:15 a.m. on December 20, 1989. Members present were Ted Merrell, John Weddleton, Ken Castner, Brent Paine and Mary Lou Cooper-Elton.

The task force completed Chapter 3, General Findings and Recommendations. Costs and Benefits (Ch. 6) were considered and clarified. Marketing (Ch. 7) was discussed and it was decided that it needed to be revised and expanded to reflect numerous comments by the public. John Weddleton agreed to rewrite this section and return a revised draft to Jon Sherwood as soon as possible.

Jon Sherwood will prepare a final draft of the task force's report, incorporating all the changes that were adopted and the additional sections from Brent Paine and John Weddleton. This draft will be sent to task force members for approval by the first week of January, 1990.

No further meetings of the task force will be necessary, but a final teleconference to approve any changes in the report to the legislature, may be required.

The meeting was adjourned by Chairman Ted Merrell at 1:05 p.m.

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The following people attended the task force meeting:

Rodger Painter, Alaska Mariculture Association
Mary McDowell, Aide to Senator Dick Eliason
Frank Homan, Aide to Senator Arliss Sturgulewski
Sheila Helgath, Legislative Research Agency
Kate Tesar, Aide to Representative Fran Ulmer
Barnaby Dow, Aide to Representative Mike Davis
Chip Thoma, Observer
Gordon Williams, Self/Alaska Trollers/Angoon F&G Adv. Committee

APPENDIX E

LIST OF PERSONS SUBMITTING COMMENTS ON DRAFT REPORT

ALASKA FINFISH FARMING TASK FORCE

PUBLIC COMMENT TO DRAFT REPORT

#	Name	Organization	Address
1.	James Kallander		PO Box 2272, Cordova, AK 99574
2.	Joe Craig		Box 941, Douglas, AK 99824
3.	Lonnie Haughton	F/V China Cove, Inc.	PO Box 3006, Ketchikan, AK 99901
4.	News articles	Seattle P.I. &	Alaska Fisheries Journal
5.	William Royce	AFS	10012 Lake Shore Blvd NE, SEA, WA 98125
6.	Paul Zimmerman	Keener Packing Co.	PO Box 890, Kenai, AK 99611
7.	Sen. Zharoff	State Legislature	PO Box 405, Kodiak, AK 99615
8.	Barry Griffin	Nor'Eastern Trawl	7910 NE Day Rd W, Bainbridge Is, WA
9.	William Wilson	AIFRB	13611 Capstan Dr., Anc., AK 99516
10.	Rep. Jacko	State Legislature	PO Box 47001, Pedro Bay, AK 99647
11.	James Mackovjak	Pt. Adolphus Seafoods	PO Box 63, Gustavus, AK 99826
12.	Concerned citizens	Elfin Cove	Elfin Cove
13.	Charles Piercy	F/V Tucioe	PO Box 1025, Ward Cove, AK 99928
14.	Charles Piedra		Box 4, Elfin Cove, AK 99825
15.	Jeff Hetrick		PO Box 7, Moose Pass, AK 99631
16.	Joseph Mehrkens	SE AK Nat Res Center	PO Box 20212, Juneau, AK 99802
17.	Kathryn Troll	SE AK Seiners Asso.	PO Box 9579, Ketchikan, AK 99901
18.	Brian Paust-see#60	Coop Ext Svc-Sea Grant	PO Box 1329, Petersburg, AK 99833
19a.	Ralph Mackie	Craig Fishery Adv Com	(see #28 below-dupl.)
19b.	Julie Hursey	F/V Thunder	Box 213, Petersburg, AK 99833
19c.	Debra Lyons		Box 296, Petersburg, AK 99833
20.	Chris Nerison	Cordova Dist Fshrmn Un	PO Box 939, Cordova, AK 99574
21.	Charles Piedra		Box 4, Elfin Cove, AK 99825
22.	Shirley Piedra		Box 4, Elfin Cove, AK 99825
23.	Denby Lloyd	Office of Governor	Box A, Juneau, AK 99811
24.	Rosemary Enderle		PO Box 10, Elfin Cove, AK 99825
25.	David Bedford		PO Box 1211, Petersburg, AK 99833
26.	Ralph Guthrie		Box 595, Petersburg, AK 99833
27.	Chris Sharpsteen		Box 1255, Petersburg, AK 99833
28.	Ralph Mackie	Craig Fishery Adv Com	PO Box 252, Craig, AK 99921
29.	Sid Cox	United Cook Inlet Drft	Box 4649, Kenai, AK 99611
30.	Jerry Wickstrom		3605 Arctic #745, Anc, AK 99503
31.	Pete Granger	Seafood Producers Coop	2875 Roeder Ave, Bellingham, WA 98225
32.	Mardi Hutchens		11340 Borealis, Eagle River, AK 99572
33.	Chip Thom		
34.	Nick Yur	Gast Channel F&G Adv C.	9412 Longrun Dr., Juneau, AK 99801
35.		United Fishermen of AK	211 4th St. Ste 106, Juneau, AK 99801
36.	Cheryl Sutton	Kenai Pen Fshms Asso	Box 546, Soldotna, AK 99669
37.	Wolf Benson	Benson Sea Farms	PO Box 1541, Petersburg, AK 99833
38.	Laura Dameron	SE AK Conservatn Cil	PO Box 21692, Juneau, AK 99802
39.	Roger Painter	AK Mariculture Asso	130 Seward St., Ste 201, Juneau, AK
40.	Cathy Conner	Juneau Audubon Society	PO Box 21725, Juneau, AK 99802
41.	David Rogers	Sea Culture of AK Inc	130 Seward St., Ste 504, Juneau, AK
42.	Paul Barnes	AK Fish Trade	Box 211121, Auke Bay, AK 99821
43.	Rebecca Knight		PO Box 1331, Petersburg, AK 99833
44.	Robert Martin	T&H Reg Electrical Aut	PO Box 210149, Auke Bay, AK 99821
45.	Wallace Fields	Kodiak Reg Aquaculture	Box 91, Kodiak, AK 99615
46a.	Sen. Fahrenkamp	Sen. Resources Com	PO Box 1, Juneau, AK 99811
46b.	Sheila Helgath	Leg. Research Agency	PO Box 1, Juneau, AK 99811-3100

#	Name	Organization	Address
47.	Sen. Jones	State Legislature	352 Front St., Ketchikan, AK 99901
48.	Scott Swanson		3800 Valley Ave, Juneau, AK 99801
49.	Valerie Brown	AK Wildlife Alliance	PO Box 202022, Anchorage, AK 99520
50.	Paul Peyton		1647 Harbor Way, Juneau, AK 99801
51.	David McFadden	F/V Sand Dab	PO Box 668, Petersburg, AK 99833
52.	Geron Bruce	Unit SE AK Gillnetters	PO Box 021186, Juneau, AK 99802
53.	Oliver Holm	Kodiak Peg Aquaculture	Box 3407, Kodiak, AK 99615
54.	John Nielsen	AK Shellfish Grower's	Box 220029, Anchorage, AK 99522
55.	William Heard	(replcemnt) NMFS-Auke	PO Box 210155, Auke Bay, AK 99821
56.	Sen. Eliason	State Legislature	PO Box V, Juneau, AK 99811
57.	Rep. Ulmer	State Legislature	PO Box V, Juneau, AK 99811
58.	Bruce Smith		PO Box 45, Gustavus, AK 99826
59.	Steve Pennoyer	NOAA, Marine Fish.	PO Box 21668, Juneau, AK 99802-1668
60.	Brian Paust's art.	Coop. Ext. Svc.	(see #18)
61.	Rep. Davidson	House Resources Com.	PO Box V, Juneau, AK 99811
62.	Richard Harris	SEALASKA Corp.	One Sealaska Plaza, Juneau, AK 99801
63.	Neil Kinney		(Homer?)
64.	Brad Pierce		
65.	Dennis Watson	City of Craig	PO Box 23, Craig, AK 99921
66.	Rebecca Knight		PO Box 1331, Petersburg, AK 99833
67.	Dan Hull		310 N 46th #402, Seattle, WA 98103
68.	Nick Barlett		Box 4032, Homer, AK 99603
69.	Jim Green		1033 Millar St., Ketchikan, AK 99901
70.	Dan Berkshire		13010 Sher Circle, Anc, AK 99516
71.	Nevin Holmberg	US F&W Svc	PO Box 021287, Juneau, AK 99802-1287
72.	Doris Howe	(From Sen. Eliason)	Box 67, Gustavus, AK 99826
73.	Brian Allee	ADF&G, FRED Div.	PO Box 3-2000, Juneau, AK 99802-2000
74.	Chip Toma	(articles from indiv.)	
75.	Dale Kelley	AK Trollers Asso.	130 Seward St., #213, Jnu, AK 99801
76.	Concerned citizens		Juneau, Douglas, Auke Bay, Hoonah, Tok

APPENDIX F

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MAY 2 1990

North Pacific Fisheries Association, Inc.

HEADQUARTERS:

BOX 796 • HOMER ALASKA 99603

Dear Mr. Chairman -

Enclosed is my HB432 testimony
as requested. Please let me know if I
can provide any other information.

I am including an article
on VHS disease - another outbreak in
Washington.

— Ronja Covazza

AROUND THE PORTS

Herring gillnetters Week off 1990

SAN FRANCISCO — The San Francisco gillnet-herring season concluded Feb. 15, the last of three gillnet groups met their 144-ton quota. Round-haul boats and purse seiners were fishing, since the quota is split among various gear groups. The round-haul boats, a fourth group, receive separate quotas by individual boats, and in mid-February, only four of the 32 boats had reached their limits. The overall roe herring season on the bay ended Nov. 29, 1989, when the first gillnet group, designated XH, set out to harvest its

1,999-ton quota, a task it accomplished by Dec. 15.

On Jan. 2, the second gillnet group, known as the "odd platoon," started fishing. They worked week-on, week-off in rotation with the third, or "even platoon." The odd platoon filled its 2,300-ton quota in just 42 hours, leaving the even platoon to fish straight through the month to make its quota.

Though the even-platoon members landed 1,640 tons in a two-day stretch in mid-January, they suffered slow fishing until going over the top on Feb. 5. Roe counts averaged 14.3% for evens, 13% for odds and 11.6% for the XH boats — all up from last season. "Some fish even hit

17%," says John Greenwood of Producers Seafood in Oakland.

Ex-vessel prices were still undetermined in mid-February, though most expected them to settle in the \$1,000- to \$1,100-per-ton range for the baseline 10% roe content, with more money for higher percentages.

— Mick Kronman

April 1990 National Fishermen
VHS disease appears again in Wash. hatchery

BELLINGHAM — A deadly European fish virus surfaced again in a salmon hatchery north of Seattle operated by the Lummi Indian tribe. The outbreak of viral hemorrhagic septicemia (VHS) resulted in the destruction of 2.7 million coho salmon eggs.

The virus, which has killed up to 90% of the fish at trout farms in Europe in the past, was detected for the first time in North America at hatcheries on the Olympic Peninsula and Orcas Island in Puget Sound in

1989. Almost 4 million salmon eggs were destroyed in those cases.

Fisheries authorities had hoped the VHS was contained after the first outbreaks, and they remain puzzled as to the source and continued spread of the disease.

Though many fishermen remain skeptical, state investigators say the state's sea farm industry is an unlikely source for the VHS transmission because eggs used on the farms are sanitized and quarantined. More likely, they say, is transmission from ships passing nearby, though that, too, is a remote possibility.

The Lummi tribe says it will lead an effort to establish a research program to determine the source of the VHS in U.S. waters.

— Brad Matsen

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— Brad Matsen

UFA TESTIMONY TO HOUSE RESOURCES ON HB 432 MARCH 13, 1990

Good evening, my name is Sonja Corazza. I am co-chair of United Fishermen of Alaska's mariculture committee. We support this bill prohibiting finfish farming in Alaska. Our statewide newspapers have lately run articles on the competition Alaskan salmon is getting from farmed salmon. But salmon farmers are in a competition battle with each other and small farms world wide are losing out to large businesses. B.C. farmers had a economic shake out this fall and large processing companies ended up the winners, buying out small farmers at 20 cents to the dollar. On some farms workers had not been paid in several months and finally walked off the job leaving hungry and dead fish for the Canadian government to dispose of.

Less well known is that Norway is in the same boat. It is estimated that for every fall in price of one Norwegian crown ten small farmers go bankrupt, and Norway is trying to curb new development. Last year Norway increased their production by 80% and ended up freezing a large number of fish. Chile, a country with extremely low labor costs and warm water temperatures is so productive they fear their industry is overcapitalized. We have strong wild runs and successful enhancement programs. Wild salmon as a renewable resource remains our best hope in these days of markets flooded with farmed salmon.

Wild salmon need protection of salmon streams and certain wetlands to survive. Unfortunately, many see salmon farming as a way to avoid protection of salmon habitat. We have a letter from a logging company in S.E. which explains the steps their company took to protect salmon streams but then goes on to say that it was all needless because "Norwegians can grow fish cheaper in bathtubs." He was wrong, Alaskan fish eat free & healthy meals in the North Pacific Ocean; the costs of growing fish are astronomical. How unfortunate some people think wild salmon and the environment are expendable if domesticated fish can be pulled out of tanks. To commercial fishermen, wild fish may be our economic mainstay but they are also a natural treasure.

We are concerned about the budgetADF&G is 1.5 million dollars underbudgeted now. We have commercial fisheries pouring hundreds of millions of dollars into our State and the State has not dedicated enough money to properly assess stocks or do research. We strongly feel that any newly funded money must go into these programs. While working on shellfish mariculture regulations SE shellfish farmers told me about leases that had not been checked in three years..empty logs holding mariculture permits. DNR said they did not have the personnel or money to adequately monitor

all the sites. NO TIME, NO MONEY, NO STAFF...that is the song of the resource agencies. How can anyone ask for funds to go into new programs that are very likely to be dominated by foreign corporations, when the cornerstones of Alaska's resident fisheries are being damaged by underfunding? Finfish farming would not produce any measurable economic benefits for at least five years from its start. The salmon fleet has a capital investment of \$800 million in vessels and onboard equipment and \$900 million in permits. Alaskan residents hold nearly 80% of all salmon permits. The salmon industry pays raw fish tax, license fees, and fuel taxes. Every year salmon fishermen in this state tax themselves \$4 million a year for our Ocean Ranching programs.

Egg surplus from hatcheries is a hot topic. A Department of Fish and Game report States, "The principle reason salmon smolts would be surplus to the common property fishery is that the present ocean ranching program is operating below capacity due to funding constraints." While other countries envy us our success and are trying to improve their own programs, Alaska is neglecting her own. In the fisheries world our biologists are famous and in Alaska we're putting them out of work. This past year there was a major shortage of chum salmon eggs in Southeast. Coho in the northern region of Southeast did not fare well. If a finfish farm had been looking for eggs this last year they'd have been in trouble. No one can assume that a large number of surplus eggs is available and from ADF&G's statement we must assume they should not be any surplus eggs.

If fish farming were allowed in Alaska with a ban on imports of eggs, the pressure to legalize egg imports would not stop because Pacific salmon is not economically profitable to raise. Last spring a company in Washington State destroyed 1,000,000 chinook fry because they would have lost money raising the fish to maturity and marketing them. The company switched to Atlantic salmon. Would future legislatures resist pleas of economic hardship due to an importation ban? Washington State and B.C. did not and now there are hundreds of thousands of escaped farmed salmon in their waters.

Salmon in Alaska are a common property resource which no Alaskan should take for granted. We may squabble over fish allocations but the public as a whole has fish to argue over. Salmon farmers want private hatchery rights...private ownership of one of our most valuable resources. We strongly believe that control of Alaska's egg supply should always remain under control of the State for the good of all the people. All anadromous fish in Alaska are fully allocated between commercial, sport, subsistence and personal use fishermen. If the State of Washington had not exported salmon eggs Chile would not be their competitors in the

marketplace. Nor would Japan have a chum salmon run. Washington gave away the goose that laid the golden egg. Alaska must not make the same mistake.

There is one strong opinion coming from Dutch Harbor that fin fish farming is the best thing since king crab. Dutch Harbor relies on bottom fishing (which is dominated by factory trawlers from Seattle) and crab stocks and herring. Salmon is not a critical issue for Dutch Harbor but it is the economic lifeline for the rest of Alaska's coastal communities.

UFA thanks you for your time tonight and we urge you to pass this bill. Thank you.

REPRESENTATIVE
BEN GRUSSENDORF

P O Box 928
SITKA, ALASKA 99835
(907) 747-8458

RULES COMMITTEE
LEGISLATIVE COUNCIL

DISTRICT 3
ELFIN COVE
PELICAN
PORT ALEXANDER
SITKA
TENAKEE

Alaska State Legislature



WHILE IN JUNEAU
P O Box V
JUNEAU, ALASKA 99811
(907) 485-3824
(907) 485-3720

House of Representatives

RULES COMMITTEE CHAIRMAN

MEMORANDUM

TO: Rep. Cliff Davidson
Rep. Curt Menard

FROM: Rep. Ben Grussendorf

DATE: March 5, 1990

RE: HB 432

Attached is a draft CS for HB 432 which I would like to propose for adoption by the House Resources Committee. Senator Eliason (the prime sponsor of the companion bill SB 397) and I drafted this CS in response to concerns expressed by both the Fish and Game Department and the general public about the need to clarify the final section of the bill.

The only changes in this CS from the original HB 432 (and SB 397) are on page three, section 2 (b). This section spells out what activities are allowed once the finfish farming ban is in place. First of all, we deleted the original number (3) as Fish and Game pointed out that sale of fish used for scientific and educational purposes is already not allowed so that exception was unnecessary. Next, at the request of the Fish and Game Department, in the item that was number (4) in the original bill and is number (3) in the CS, we added the words, "provided that the fish are not reared in or released into water of the state."

Finally, in section 2. (b) (2) we amended the language to make it more clear that private non-profit hatcheries may not do any finfish farming, but may continue to do the "cost recovery" fish sales that they currently do, and may sell surplus eggs to the state or to other PNPs as currently allowed by statute.

None of these changes affect the original intent of the bill, but are designed to simply clarify it.

I would hope that the committee could adopt this version to work from in its deliberations on HB 432.

Original sponsor(s): REP. GRUSSENDORF, Ulmer, Goll, Davidson, Navarre,
Wallis, Hudson, Taylor, C.Davis, Jacko, Kubina, MacLean, Swackhammer

1
2 IN THE HOUSE

3 CS FOR HOUSE BILL NO. 432 ()
4 IN THE LEGISLATURE OF THE STATE OF ALASKA
5 SIXTEENTH LEGISLATURE - SECOND SESSION

6 A BILL

7 For an Act entitled: "An Act prohibiting finfish farming; and providing
8 for an effective date."

9 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

10 * Section 1. FINDINGS. Based on a legislative examination of the
11 potential effects of allowing finfish farming in the state on the common
12 property resources and on the overall economic well-being of the state; the
13 number of serious concerns associated with finfish farming and the need for
14 study of finfish farming that has caused the legislature to enact two
15 moratoriums on finfish farming and establish a nonlegislative task force to
16 study the issue and to report its findings and recommendations to the
17 legislature; a review of the final report of the Alaska Finfish Farming
18 Task Force which notes several possible benefits and some serious risks of
19 finfish farming; the need for the legislature to take action before the
20 current moratorium on finfish farming expires on July 1, 1990; the recom-
21 mendation of the task force that the legislature not extend the moratorium,
22 but make a final determination to either allow or prohibit finfish farming;
23 and the testimony and evidence received; the legislature finds that

24 (1) the state has the healthiest stocks of wild salmon and other
25 wild finfish in the world and benefits from thriving commercial, sport, and
26 subsistence fisheries for these fish and a growing tourism industry related
27 to sport fishing;

28 (2) the people, economy, and environment of the state are depen-
29 dent in large measure upon the continued health of the state's wild finfish

1 resources;

2 (3) serious risks are posed by commercial finfish farming,
3 including the spread of disease among wild fish by farmed fish, genetic
4 intermingling of wild fish stocks with genetically manipulated farmed fish,
5 degradation of water quality near finfish farms, and land use conflicts
6 over the siting of commercial finfish farms;

7 (4) the state has invested significantly in marketing efforts to
8 promote Alaskan finfish as wild and natural fish products, and this invest-
9 ment in developing the reputation of Alaskan finfish would be lost by
10 allowing commercially farmed finfish to be produced and marketed from
11 Alaska;

12 (5) the cost to the state to regulate the commercial finfish
13 farming industry would be high;

14 (6) few jobs would be generated by a commercial finfish farming
15 industry in the state;

16 (7) the state is responsible for ensuring the protection and
17 wise use of the renewable natural resources of Alaska and providing a
18 framework for a sound economy;

19 (8) a long-term decision must be made regarding the future of
20 commercial finfish farming in the state;

21 (9) avoiding harm to the state's wild finfish, land, and water
22 resources must take precedence over the development of a new speculative
23 and potentially harmful commercial finfish farming industry;

24 (10) the best interests of the state are served by prohibiting
25 commercial finfish farming.

26 * Sec. 2. AS 16.40 is amended by adding a new section to read:

27 Sec. 16.40.210. FINFISH FARMING PROHIBITED. (a) A person may
28 not grow or cultivate finfish in captivity or under positive control
29 for commercial purposes.

1 (b) This section does not restrict

2 (1) the fishery rehabilitation, enhancement, or development
3 activities of the department;

4 (2) the ability of a nonprofit corporation that holds a
5 salmon hatchery permit under AS 16.10.400 to sell salmon returning
6 from the natural water of the state, as authorized under AS 16.10.450,
7 or surplus salmon eggs, as authorized under AS 16.10.420 and 16.10.-
8 450;

9 (3) rearing and sale of finfish for aquariums or ornamental
10 ponds provided that the fish are not reared in or released into water
11 of the state.

12 * Sec. 3. This Act takes effect July 1, 1990.

By Rep. Ben Grussendorf and
Sen. Dick Eliason

EXPLANATION OF CS FOR HB 432 AND SB 397
(Draft CS dated 3-12-90)

This proposed committee substitute version of HB 432 (and SB 397) has been drafted in response to concerns expressed by both the Fish and Game Department and the general public about the need to clarify the final section of the bill.

The only changes in this CS from the original HB 432 (and SB 397) are on page three, section 2 (b). This section spells out what activities are allowed once the finfish farming ban is in place. First of all, we deleted the original number (3) as Fish and Game pointed out that sale of fish used for scientific and educational purposes is already not allowed so that exception was unnecessary.

Next, in the sub-section that was number (4) in the original bill and is number (3) in the CS, in the first line the word "ornamental" has been added before "finfish" to more clearly spell out the intent ("ornamental fish" is defined in AAC5.41.100(4)). In that same sub-section, at the request of the Fish and Game Department, we've added the words, "provided that the fish are not reared in or released into water of the state."

Finally, in section 2. (b) (2) we amended the language to make it more clear that private non-profit hatcheries may not do any finfish farming, but may continue to do the "cost recovery" fish sales that they currently do, and may sell surplus eggs to the state or to other PNPs as currently allowed by statute.

None of these changes affect the original intent of the bill, but are designed to simply clarify it.

I would hope that committees would adopt this version to work from in deliberations on HB 432 and SB 397.

See attached copies of statutes and regulation referenced in the new CS.

5 AAC 41.080

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5 AAC 41.090

FISH AND GAME

5 AAC 41.100

(g) Stocks of fish in hatcheries or rearing facilities in which a Class II disease has been detected must be immediately destroyed by the permittee if the commissioner or his authorized designee determines that the disease poses a threat to the health and perpetuation of native, wild, or hatchery stocks of fish in the hatchery effluent watershed or the intended release location. (In effect before 1988)

Authority: AS 16.05.251(a)

5 AAC 41.090. DELEGATION OF AUTHORITY. For the purposes of administering this chapter, the commissioner may delegate his authority to designated employees of the department. (In effect before 1988)

Authority: AS 16.05.020
AS 16.05.270

5 AAC 41.100. DEFINITIONS. In addition to the definitions set out in AS 01.10.060 and AS 16.05.940, in 5 AAC 41.001 — 5 AAC 41.100

(1) "completed application" means a form, series of forms, letters, or other documents that provide all of the information necessary for the commissioner or the commissioner's designee to issue, condition, or deny a permit;

(2) "department regional office" means the Alaska Department of Fish and Game, fisheries rehabilitation, enhancement and development division offices located as follows:

Region I — Southeastern Region
230 South Franklin Street
Juneau, Alaska 99801

Region II — Central, Westward and
Arctic-Yukon-Kuskokwim Region
333 Raspberry Road
Anchorage, Alaska 99502

(3) "fish pathology section" means the Alaska Department of Fish and Game, fisheries rehabilitation, enhancement and development division, fish pathology section, located at 333 Raspberry Road, Anchorage, Alaska 99502, telephone (907) 344-0541;



(4) "ornamental fish" means a fish commonly known as "tropical fish," "aquarium fish," or "goldfish," which are imported, cultured, or sold in the state customarily for viewing in aquaria or for raising in artificial systems, and not customarily used for sport fishing or human consumption purposes;

(5) "permit" means a fish transport permit, including any amendment or condition issued or approved by the commissioner or the

A tale of two islands

One Maine Island community decided to try salmon farming to supplement its traditional income from fishing; the other said, "No way."

By Nancy Griffin
Field Editor

The craggy, convoluted coast of Maine is studded with many islands where shrinking communities of rugged individuals stubbornly cling to a year-round way of life that grows increasingly more difficult to maintain.

Two such communities are Swans Island and Vinalhaven, somewhat different in size but with many common features. Most of the year-round families on both islands have lived there for generations. Most of those families now depend solely on lobstering for their livelihood, which means they saw their incomes drop during the past year along with the price of lobster.

There's another common thing: each community was approached during the past two years by companies from off-island wishing to establish salmon farms. Here the differences begin. Vinalhaven residents resoundingly and unequivocally rejected the aquaculture idea, while Swans Island people wrestled with, studied, argued about and finally accepted the notion.

"We have to use the sea," says Bruce Colbeth of the Swans Island Fishermen's Co-op. "Not everyone wants to be a lobster fisherman, and we don't have the option of commuting 20 miles to work, or bringing raw materials to the island, putting them together and shipping them out. We either work on the island or move out."

Swans Island is 7,500 acres with 350 year-round residents. Summer residents swell the population to 800. Vinalhaven, reached by ferry from Rockland, has 1,200 year-round residents and a summer population that reaches nearly 6,000.

Town officials in Vinalhaven were approached in September 1987 by a Norwegian representing a company called Atlantic Salmon (Maine) Inc. Frank Gjerset sought a 10-year lease for 25 acres of bottom off Vinalhaven, a specific site adjacent to the White Islands area.

"The first most townspeople heard of the proposal was a sheet of paper posted around town announcing the public hearing," says Victoria Dyer, who was then Vinalhaven's town manager. "It would have been nice if a representative of the firm came in first and explained to people what they wanted to do."

Observers say this failure to approach people and win them over to the idea probably did more harm to Atlantic Salmon's cause than anything else. The proposed lease area was prime lobster and scallop bottom, heavily used by the island's fishermen. Not only did lobstermen fear loss of access to the 25-acre spot, but they worried about contamination to nearby bottom from salmon droppings, antibiotics used in the pens, chemicals used in the fish food and diseases such as those that plagued Norwegian fjord-based pens and Swedish pens more than a year ago.

Islanders also expressed concern that the Norwegian company would bring workers from off-island, and, while local fishermen would lose some of their traditional fishing territory, little of the revenue generated by Atlantic Salmon would stay on Vinalhaven.

Five hundred Vinalhaven residents flocked to the public hearing in February 1988 ready to show their opposition to the proposal. They never had the chance. The meeting ended at 2 a.m. with the company still presenting its case and townspeople asking questions.

Officials decided to continue the public hearing in April, when townspeople who had signed up as interveners could present their side. In the interim, the town held a non-binding referendum on the proposal, and voters rejected the idea, 5 to 1. Shortly before the scheduled reconvening, Atlantic Salmon withdrew its proposal.

In a letter to the Commissioner of Marine Resources, the company said its reasons for withdrawing included the emotionalism and misinformation raised by some opponents.

"There was a lot of emotionalism, but also people who attended the meeting had legitimate concerns that were not addressed," says Emily Lane, the current Vinalhaven town manager, then a selectman.

"I did a lot of research, and I still think it's a terrible idea," says Maudcann Warren of Vinalhaven. Her husband, Roger, is a sixth-generation lobsterman. "They talk about jobs, but the average is only about three to five jobs per farm. I think it's tragic to see big corporations taking the life blood of small communities," she says.

A Different Approach

Swans Island residents watched this process with fascination. Just as the Vinalhaven saga was ending, they were approached about a salmon farming operation. The approach, however, was different.

"One man from Ellsworth came and talked first to me," says Colbeth, himself a former lobsterman who plans to return to his traps in a few years. "We were interested. But we'd just read in the papers all the bad things about aquaculture, so we did a lot of research. We kept an open mind."

Fishermen were invited to discuss the proposal presented by Mariculture Products Ltd. and decide if they wanted to investigate it further. "After all," says Colbeth, "They were the ones with the most to lose."

After three informational discussion meetings, the lobstermen told Colbeth to pursue the project. Together, they chose 465-acre Toothacher Cove, parts of which were heavily lobstered while other parts were not lobstered at all. The ones who fished in those areas were willing to give it up for the good of Swans Island.

Then in March, things went haywire. Colbeth reports, "We found handfuls of papers this thick under windshields and at the co-op — all over the island — full of bad stuff about salmon farming. After I read three or four pages, I felt sick. The president of the co-op read it and suddenly turned against the project," he says.

Colbeth, however, felt the informational packets represented propaganda. "I said, 'I've got to find out the truth.'" He drove to Canada, visited several fish farms, interviewed lobstermen in New Brunswick communities with a video camera, and viewed videos that divers took periodically of the bottom under the pens at 50 different sites.

"The first two questions I asked everyone were: What about salmon pollution? And, what about antibiotics?" says Colbeth. "I don't even know how they can call it pollution. What are they going to do, stop all the fish from going to the bathroom in the water? Fish have to excrete. Pollution is not the right word; it's just a scare tactic word."

"One farm I looked at was beside fish weirs, and it also had lobster and clam flats right next to it," says Colbeth. "Everyone I talked to was happy. A lobsterman there who was the biggest opponent of salmon farming now has 25 pens of his own. He said he was wrong."

The sea farming operations Colbeth toured were small, tidal action was strong, and no buildup showed under the pens. In addition, Colbeth says the aquaculture ventures were mainly owned by small operators who were often lobstermen.

One of the damning things found in packets distributed on the island was a newspaper picture of a clammer holding a fistful of slime described in the caption as salmon gurry from a pen site. When Colbeth went directly to the office of the *St. Croix Courier* and asked about the picture, a staffer provided him with a copy of the

retraction that had run the following week, explaining that the slime was a form of algae, not salmon gurry.

To quell concerns about antibiotics, Colbeth investigated what was used in Canadian pens. It turned out the two antibiotics used are both U.S. Department of Agriculture approved and are commonly used in lobster pounds to prevent red tail. "No one seems to have a problem with using it in lobster pounds," Colbeth says.

Colbeth also checked out stories about disease-ridden salmon farms in Norway. He found out that the Norwegians moved the pens from the still waters of the fjords to the open ocean to solve the problem.

Opposition

Lee McCarthy summers on Swans Island in a camp situated down the cove from the salmon pens. She opposed the farming operation and still does. She says her opposition arises strictly from environmental concerns.

"They sidestepped every possible environmental protection that was part of the law. Those pens violate Department of Environmental Protection minimums for the depth of water under the pens," says McCarthy.

She says intense political pressure brought to bear by Mariculture Products and the state Department of Marine Resources won a three-year probationary permit from the Army Corps of Engineers for the farming venture despite demands from the Environmental Protection Agency, National Marine Fisheries Service, and Fisheries and Wildlife Service that the project be cut back by 90%.

"I quickly found out the position of state agencies is: This will introduce jobs," says McCarthy. "I understand the state is interested in the economic viability of coastal

Bruce Colbeth (standing) of Swans Island visited salmon farms in New Brunswick and talked to local lobstermen and fishermen about their reactions to the operations before he decided in favor of a farm for his community. James Acheson (sitting), from the University of Maine, supports the idea of salmon farms in the state.

communities, but we think they've jumped head first into a difficult issue with side effects people are just beginning to understand.

"Those fish are dropping 1,500-2,000 lbs. of waste products into the cove every day. Lobstering and scalloping are threatened," says McCarthy, who's read of the dangers of disease and pollution around fish farms in reports from Japan, Scotland and Norway.

"If scallops are in any danger from salmon farming, it won't be in Toothacher Cove," says Swans Island fisherman Kenneth Lemoine Jr. He's scalloped during the winter for several years. In a 15-minute tow where the pens are now, he says, you might get five scallops if you are lucky. "More likely you'd get three, or maybe one. As far as scallops go, that's waste bottom. It's just mud," he says.

"The species most likely to be affected by any pollution around salmon pens are the salmon themselves," says James Acheson, University of Maine professor of anthropology and marine studies and author of *Lobster Gangs of Maine*. Acheson toured salmon farms in Norway and Sweden last year and has read extensively on farming operations in other countries as well.

"To my knowledge, no damage is likely to occur to shellfish," he says. "If there was any pollution, shellfish would be more likely to thrive than the salmon. I see a



more serious conflict between salmon farming and industry. Industry wants the right to add some pollution to the water, and fish farms can't stand any."

In Sweden, Acheson says he saw lots of empty fish pens. Fish had been wiped out in 1988 by disease due to overstocking and fish pens placed too close together. "They just didn't have the tidal flushing to get rid of it like we [in Maine] do," he says.

Comparing other countries or even other coasts to Maine is like comparing apples and oranges, says Acheson. "We probably have the ideal environment for fish farming, and using data from other places

involves an interesting use of mis-scientific information."

Acheson believes the objections most people have to aquaculture revolve around a certain image of the state of Maine. Lobster boats are okay, a few other boats passing by are okay, but looking out at fish pens is not. It ruins the view and makes homeowners worry about property values.

Other Problems

If environmental issues were settled suddenly to everyone's satisfaction, salmon farms in coastal Maine still face economic risks, especially in winter. Superchill, which sometimes lowers coastal water temperatures

dramatically, can kill fish. Predators or storms can rip nets and release the salmon, or allow other predators in to destroy them.

A big difference between the experiences of Swans Island and Vinalhaven is that when Mariculture approached Swans Island, it promised to help set up any residents who wanted to get into salmon farming.

"We're using them for jobs, for expertise, for benefits such as insurance," says Colbeth. "We lose a lot of people from the island because they don't want to go lobstering. It's a hard job, and lobstering means you have to be self-employed. We can't have a year-round community without people.

"This is one of the things that can save our coastline. I think the summer people were the start of all this wild emotional speculation. People who come up for two or three weeks, maybe a month, and they don't want to look at salmon pens."

"It's very unfair to the natives who live here," says Colbeth. "I don't mind true facts; I want to hear it. But saying things that are not true is unfair to the people of the coast of Maine. They've made up some nice ones, I'll tell you.

"Fishermen hear it, and it is scary what they're saying. So the fishermen get behind them, like on Vinalhaven. We heard the same stories, but we investigated them and found out they're just not true."

New Brunswick provincial officials and biologists have been compiling a database of information during the past 10 years about the many salmon pens operating in their province.

"Initially, we took the strong position that we wanted to go relatively slow on the numbers of fish in cages; that's one reason the videos show it's clean under the pens. Tidal action is another," says Russell Henry, biologist with New Brunswick's Department of Fisheries and Aquaculture.

"Our whole objective is to carry out environmental studies to establish, from a solid data base, what are good levels. We did it more from a disease perspective," Russell explains. "It all goes together. If there are less fish, there is less stress and less potential for disease. The environmental impact will also be less.

"We can foresee pressure for increasing the numbers over the next three or four

years. We want to be able to say, 'Yes, you can,' or 'No, you can't,' based on site-specific data," he says.

Underway

This winter, Swans Island has seven salmon pens on 18 acres, with plans to open another 11 pens in the spring. Unlike other operations — even New Brunswick's, which raft pens together — Swans Island pens each sit alone on an entire acre. No antibiotics are being used, and some of the 204,000 fish are up to 3 lbs.

When the Norwegians started farming, their pens contained between 8,000 and 9,000 fish per cubic foot of water in 3' tides. A Canadian experimental fish farm operator recommends maintaining only 1 lb. of fish per cubic foot of water to insure against disease.

"We actually have only two-thirds of a pound of fish per cubic foot of water and 10' tides," says Colbeth of the Swans Island operation. "We're not taking any chances. There is not a trace of anything under the pens. Divers go down weekly and check it out."

Four people are employed full time now, with several seasonal part-time employees. The plan is that when the operation expands to 18 pens, the farm will have 10 full-time employees.

"I don't blame Vinalhaven for what they did. If fishermen didn't favor it, I wouldn't," Colbeth says. "I understand the company that approached them was going to bring their own people in and not leave much behind. If that was the case, I don't blame them a bit. All I can say, from what I've experienced and seen and from people I've talked to, there's no problem with the bottom under pen sites."

"At the time [of the Atlantic Salmon proposal], I was caught up in the island's [Vinalhaven] position," says former town manager Dyer. "In the meantime, I've followed with interest what's happened on Swans Island, and I've eaten farmed salmon.

"Now I think it's going to be valuable to Maine. I hope the errors that have been made in other places can be avoided. Maybe people on the coast can have another resource so they don't have to depend only on lobsters for their income," Dyer says. □

Alaska Mariculture Association

TO: House Resources Committee

FROM: Rodger Painter
Executive Director

DATE: March 5, 1990

RE: HB 432 (Prohibiting Finfish Farming)

House Bill 432 and its companion measure (SB 397) would impose a ban on all finfish farming activities. The Alaska Mariculture Association (AMA) believes this is an unreasonable response to the concerns of fishing groups which have focused on the net pen rearing of salmon in the marine environment.

The Alaska Finfish Farming Task Force spent several months grappling with these concerns, and determined that net pen rearing of salmon can be regulated in a manner minimizing environmental and biological impacts. The task force also stated that upland finfish farms present few potential problems, and the impacts of marine culture of non-salmon species would be much less than salmon in net pens.

While AMA agrees that the marine farming of salmon can be carefully managed to result in minor impacts on wild stocks or the environment, we respectfully request that you take care to separate upland farms and marine culture of non-salmon species from the net pen rearing of salmon. These are very different issues and should not be treated with the broad brush approach of lumping together all forms of finfish farming.

Upland fish farming virtually eliminates the potential for escapees and impacts on the genetic integrity of wild stocks. Likewise, the potential for transfer of disease from fish cultured in upland farms to wild stocks can be eliminated with proper treatment of wastewater discharges.

We urge you to question why operations such as the small-scale coho salmon farm in Fairbanks two years ago should be banned. Under a narrow exception in the three-year moratorium on finfish farming, Andy and Pam Wescott of Fairbanks started farming in tanks in their workshop.

House Resources Committee

HB 432

Page Two

The operation utilized water from a private well, and wastewater was disposed in the city sewer system. The broodstock came from surplus salmon returning to a local stream. The operation had no disease problems, and the director of the state's hatchery program said the fish were very healthy and were in excellent condition.

Yet, the Wemotts were forced to close down their farm when the Board of Fisheries refused to approve the required authorizing regulations.

There are numerous small freshwater salmon, trout and arctic char farms extending throughout the Pacific Northwest as far north as Whitehorse. Should Alaskans be denied these same opportunities? What are the objections to these land-based aquatic farms? Are there valid public policy reasons to ban an environmentally and biologically sound industry?

AMA believes a similar case can be made for the marine farming of non-salmon species, such as arctic char, steelhead, black cod and halibut. We urge you to question the necessity for prohibiting marine net pen culture of these species.

The fishermen's concerns always have been the net pen rearing of salmon. The primary objection to other forms of finfish farming is that it represents the camel's nose under the tent and it might set the stage for later approval of salmon farming. Is that how Alaska is going to diversify its economic base? What kind of statement would be made about the legislature's commitment to economic development by the passage of HB 432 in its present form?

Alaska Mariculture Association

TO: House Resources Committee

FROM: Rodger Painter
Executive Director

DATE: March 5, 1990

RE: Finfish Farming Information

Attached are two recent articles that may be of some interest to the committee. The Fish Farming International article contains estimates from the UN's Food and Agriculture Organization that worldwide aquaculture production now tops 13 million metric tons worth \$19 billion. When the legislature first started debating the fish farming issue four years ago, the FAO estimated world production at 10 million tons.

Members concerned about market impacts of farmed fish on Alaska salmon should read the article from the Alaska Fisherman's Journal. The article shows the interest of seafood buyers and consumers in fresh seafood, and underscores the importance of Alaska's involvement in finfish farming to meet market demand.

fish farming

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JANUARY 1990

HARVEST TOPS 13 MILLION TONS

WORLD production of aquatic products by farming is now estimated to be well over 13 million metric tons a year. Based on figures compiled by the Food and Agriculture Organization (FAO), this is a big increase on the earlier estimate of 11 million tons. The value of the harvest is around US\$19 billion.

Details of farm production by species and countries are given in the December 1989 bulletin of the FAO Aquaculture Development and Coordination Program (ADCP), which points out that part of the apparent rise may be due to more countries reporting their aquaculture harvests. Figures are now based on 142 countries and details in the bulletin are for 1987.

The ADCP terminated at the end of 1989 after 13 years. It began officially in 1977 after the big FAO Technical Conference on Aquaculture in Kyoto, Japan. It was funded by the UN Development Program (UNDP) with the purpose of implementing the Kyoto development strategy.

Among its activities to be continued by FAO will be the publication of the bulletin giving production figures.

— *and it's worth
\$19 billion!*

— The latest estimate of 13.2 million tons, shows that 11.1

million tons (84 per cent) was farmed in Asia, 1,047,593 tons (7.93 per cent) in Europe, and 449,993 tons (3.41 per cent) in North America.

China again topped the world league in volume of production, with 5.6 million

tons (42.6 per cent of the total). This was followed by the 1,226,190 tons of Japan, 876,788 tons of South Korea, and 746,300 tons of India.

Finfish (6.8 million tons) accounted for 51.4 per cent of world production, seaweeds (3.14 m tons) 23.8 per cent, molluscs (2.67 m tons) 20.2 per cent, and crustacea (574,906 tons) 4.4 per cent.

Alaska
Fisherman's
JOURNAL
March 1990

Alaska Seafood: The View From

by Laurie Underwood

Alaska product. For Alaska fishermen, it's everything. But for a distributor, Alaska product is just a small fraction of the seafood coming in and out of the warehouse from Asia, Latin America and throughout North America. For retailers, Alaska product is one item stocking the seafood counter—which is just one section of the meat department. And for consumers, Alaska seafoods offer a few more options in a supermarket full of the makings for convenient and affordably priced meals.

So how does Alaska product measure up? To find out, the *JOURNAL* called on seafood distributors and retail buyers around the country. Buyers in California, Oregon, Texas, Minnesota and Washington, D.C., offered insight into what Alaska suppliers are doing right and wrong, and how to compete better in today's fickle marketplace.

In a nutshell, buyers rated Alaska product as "top quality." However,

... in terms of a 52-week-per-year business, I don't even consider Alaskan product anymore.



as competition steps up from cultured and imported product, many say that Alaska suppliers need "to modernize"—to provide more fresh product, "retail-ready" processing, and reliable supply and price information. Here's what they said:

HALIBUT: Demand Is High; Supply Problems Stifle Fresh Sales

The good news is that halibut seems to have a secure market niche around the country, with demand

for fresh halibut high on both coasts and even in the Mid-West.

"I have to say [Alaska suppliers] have a pretty good thing going in that nothing competes with halibut. I know several people that just go crazy with the fresh halibut season. There's nothing like it," says Jeff Dulcich, vice president of sales and marketing for Pacific Sea Food Company based just outside Portland, Ore. PSF operates five distribution plants in California and Oregon. In the Northwest, Dulcich says, the only competition halibut faces comes from consumers who are not familiar with it. "Shark, swordfish and salmon compete with it head on. And cod competes with people who are very price conscious."

The scene is much the same in Los Angeles. At Von's supermarkets of Southern California, seafood buyer Rory Frank says that halibut is his top Alaska item. However, frozen halibut now competes on the freezer case with orange roughy from New Zealand and sea bass from Chile. Meanwhile, in the fresh case, many customers are hooked by lower-priced fish like "red snapper" (rockfish), perch and farmed catfish.

Even with heightened competition, retailers agree that demand for fresh halibut remains strong. "I don't think it competes really with

the halibut is fished because it is so difficult to market and plan a fresh promotion," says Gryska. "It's a carnival atmosphere for the week it comes in and because of weather and everything, you never know if you're going to get it when you run your ad. And then it's gone. So you just got everybody hooked on the product and it disappears."

"We could all sell more halibut if there was more fresh to sell, if the season were longer," says Ken Mills, director of perishables for United Grocers Inc., based outside of Portland, Ore. "And no one has anything to do with that except the government." Many retailers are supporters of the Seattle-based organization F.I.S.H. (Finding Intelligent Solutions to Halibut), which is working to increase fresh halibut availability by extending the season to nine months.

Besides the short season, retailers also complained that it is difficult to get clear information on openings. "The only problem I have with Alaskan seafood, on fresh side is how confusing the seasons are," says Gryska. "For example, here it is the beginning of the year and I am trying to roughly plan out what my advertising schedule will be. I don't know when there's gonna be an Alaska halibut opening. I have an idea it's going to be May. But whether it's the first week or the last week makes a big difference. If it's going to be something that's planned, let's plan it."

Getting information on supply and price can also be a headache for retailers. "One year, I literally had halibut in the air and I could not get a confirmed price," says Gryska. "Every May and every June, people call me up and say, 'Are you going to run any halibut? Are you going to run any salmon?' And I say, 'Sure. How much have you got available?' I don't know. 'What's the price?' I don't know. 'When are you going to have it? Sometime... Do you want to book any? I mean, Give me a break!'"

WILD SALMON: Stiff Competition from the Farms

Many of the difficulties of short supply and lack of information posed by fresh halibut also plague the fresh wild salmon industry. Some retailers are bitter about being excluded from bidding on fresh salmon destined for sale overseas, predominantly to Japan. "When there's no fresh salmon available out of Alaska because it's all being sold for export, that's aggravating for a retailer and to me as a buyer and the consumer on the West Coast," says Mills of United Grocer, in Oregon. "Here we are, one of the 50 states, and Alaska fisheries sell all of [the salmon] overseas. Shame on them. It doesn't instill a whole lot of loyalty. If they get a better price somewhere else, then God bless them. But at least give us a chance to bid."

The primary difference between

any fish, except in some degree with swordfish and shark, being a whitefish fillet," says Peter Gryska, manager of seafood marketing for H.E. Butt Grocery Company, which operates 160 supermarkets throughout Central and South Texas. "I don't think [halibut] compares with other fish. It has its own place."

While buyers are happy with the demand for fresh halibut, most are unhappy with the supply. The chaotic atmosphere of the derby wreaks havoc on retailers' advertising campaigns. "I really object to the way

The Lower 49

supply problems with salmon and halibut is that, with salmon, many buyers have found a convenient alternative: fresh farmed salmon. Many have turned to it as the leading source of their salmon year round.

"What it's done is it's collapsed the frozen market here," says Dulcich, speaking of the Portland market. "They can get fresh fish all year long, and the perceived value of fresh fish is significant in Oregon. In fresh salmon, it's kept the price down in both wild and farmed."

"I am very sold on aquacultured product," echoes Gryska of HEB. "For consistency in price, consistency in quality, consistency in availability, nothing touches the fresh product out of the Northeast. Yes, during the summertime, chums and allivers are lower in cost than the East Coast product, but in terms of a 52-week-per-year business, I don't even consider Alaskan product anymore."

"It's just so easy for us to order farm-raised product. Why get all these headaches? Farmed product is always there, you're not waiting, whether you want 500 or 5,000 pounds," says John Hoppenjans, seafood buyer for Giant Food Inc. of Washington, D.C. The 148-store supermarket chain carries a small amount of frozen salmon in retail boxes; they carry fresh farmed salmon (mostly from Scotland) year round.

One of the marketing leverages that wild salmon suppliers have relied upon is the perception that wild product has a better taste and texture than farmed. Do consumers around the country perceive a quality difference between the two? Retailers say "yes," but add that preferences vary from region to region.

In the Northwest, there is a perception that wild salmon is richer and more flavorful, says Dulcich. "I think right now, wild has the connotation of being better, in Oregon at least." He adds that, for Oregonians, salmon is seen as an Oregon-area product, which has added appeal for consumers.

The perception is quite different in the Midwest, however, says seafood merchandiser Carson Roper of Lunds supermarkets in Minneapolis. "A lot of our customers were brought up on fish sticks. They equate flavor with 'fishy.' They prefer the milder flavor of farmed salmon."

A former Alaska fisherman himself, Roper believes that with a little consumer education, the market for wild salmon will preserve its niche. "There has been a transformation in the industry. But there will always be a market for wild caught salmon," says Roper. "A 7-to-11 pound king salmon is perfect for steaking. A lot of farmed fish is 1-2 or 2-4 pounds. When it comes to steaks, there'll always be a market for wild salmon."

Another hurdle that wild salmon suppliers face today, especially in

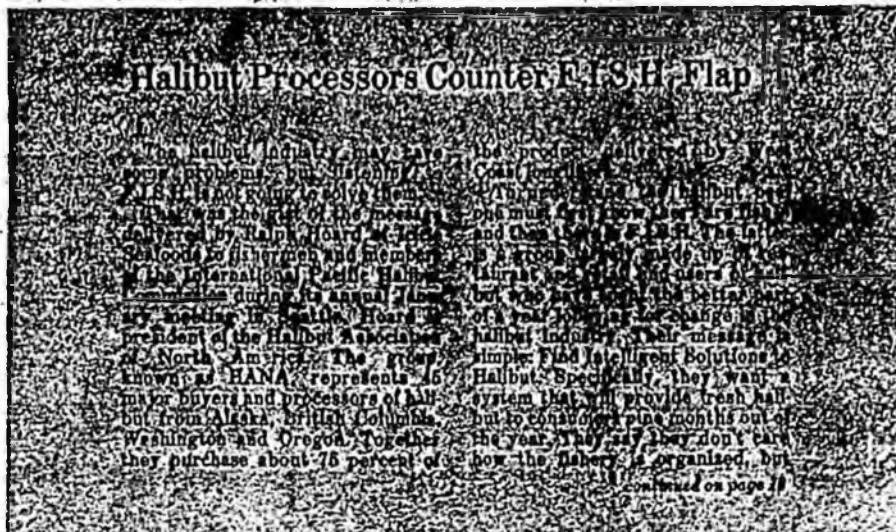
the East Coast, is consumer fear of water pollution. Consumers in the Mid-Atlantic region tend to assume that farmed product is "cleaner and healthier" with "less chance of environmental effects," says Hoppenjans of Giant.

POLLOCK: Fillets Still Suffer from Name Games; Surimi Secures Market Niche

Some retailers are still feeling the delayed effects of the 1985 FDA ruling that made it illegal to market pollock under the name "snow cod."

Lunds. The Minnesota-based chain of eight stores carries four brands of surimi sticks and flakes. Roper feels that surimi markets will continue to grow as new products are developed. "The first generation was crab. Then came lobster, shrimp and

I know several people that just go crazy with the fresh halibut season.



"It's hurt sales, it really has," says Ron Corno, senior meat merchandiser with Fleming Foods of Milwaukie, Ore. Fleming now markets pollock either as pollock or "Alaska Whitefish."

"We had people programmed," says Corno, referring to snow cod. "Now people think it's a different item. It'll take some time to get its credibility back."

"Whitefish is a pretty generic name," adds Fleming meat deli merchandising manager Roger Kirkhart. "It just doesn't make you hungry at the sound of it."

Under any name, pollock faces stiff competition with other lower-end, price-value items, retailers say. "The way we sell pollock, it is competing directly with things like the farm-raised catfish nugget, frozen Canadian cod, and frozen South American fillets such as trout and whiting," says Gryska.

Surimi seems to enjoy a more secure market around the country. "It very much has a niche. We use it in ads regularly," says Corno. "I've not seen any decline in movement. As long as Dungeness and Alaska king crab prices stay at the present level, it'll hold its own."

"There's a strong following for surimi. It's convenient, it's an affordable alternative," adds Roper of

scallops. The third generation will be oven-ready products. That to me is the next logical step: surimi pot pie, quiches, things like that."

MEETING BUYER DEMANDS: Retailers Want Fresh Fish, Ready-To-Sell

Throughout the country, buyers had three basic messages to Alaska suppliers: We need more fresh fish; we need it on time; and we need more pre-cut, "retail-ready" product.

"It's a lot of work, but in the end, the customer wants fresh product," says Bruce Steinberg, senior seafood buyer for Giant. "A lot of us out here would love to sell fresh Alaska product. There's a lot more that could be done if they would promote fresh fish."

"It's always a supplier wanting to sell me 40,000 pounds of frozen pollock," adds Hoppenjans. "I want to say, I'm sorry, those days are over. If you want to deal with supermarkets, that is. Give me fresh pollock fillets and sell it for three times the cost. We want fresh fish in small boxes. Gear it toward my supermarkets, and I'll buy it."

The view was much the same in Los Angeles. "We're gearing up for fresh fish," says Rory Frank of

Von's. "The quality [of Alaska product] is excellent. In frozen fillets, it would be my first choice; But now we are getting more into fresh fish." The chain now sells some 1.8 million pounds of Alaska halibut yearly, as well as salmon and king crab. However, Frank says his overall purchases of Alaska seafood have diminished slightly in the past five years as the store has shifted toward fresh seafood, and flying in other competitively priced species.

The logistics of air shipping fresh Alaska product poses another problem for buyers around the country, and many recounted halibut and salmon shipping nightmares.

"The biggest deterrent to doing product from Alaska is getting it here on a timely basis with the quality that we expect. It hasn't gotten any better in the eleven years that I've been doing it," says Steinberg of Giant. "You'll find product left in Denver, in Chicago, missed connections. Ask anyone who air freights stuff out of Alaska what a nightmare it is to get it to the East Coast. Just when you think you have got something arranged, the airline downsizes to a plane that doesn't carry containers."

"It's a gamble, especially with halibut," added Roper of Lunds. "Everyone wants to be the first. But you can't all be the first."

Lastly, buyers say Alaska product is difficult to get cut-to-order, or

packed in shipment sizes that are convenient for retailers. "There's nothing wrong with the fish. It's gorgeous fish. It's just the processing and handling," says Steinberg. "When the fish is in season, we need steaks and fillets. We can use a substantial amount if we sell an ad, but there aren't many people that are willing to make the extra commitment to selling us the steaks and fillets... The whole mentality is fish in a 40-pound carton with gel ice and a plane that might make it."

"The main thing is being willing to put product in a retail-ready form. Probably the one package style method that does not meet any specification of what a retail store wants to use is a 50-pound wetlock box. That is such an anathema to a retailer. Even worse is a 100-pound wetlock box," says Gryska. "They're difficult to handle, hard to move around. If people really want to get into business with retailers, they've got to put the product in a package that the retailers can use." Gryska says that most of the frozen product HEB carries comes steaked or filleted and ready to sell.

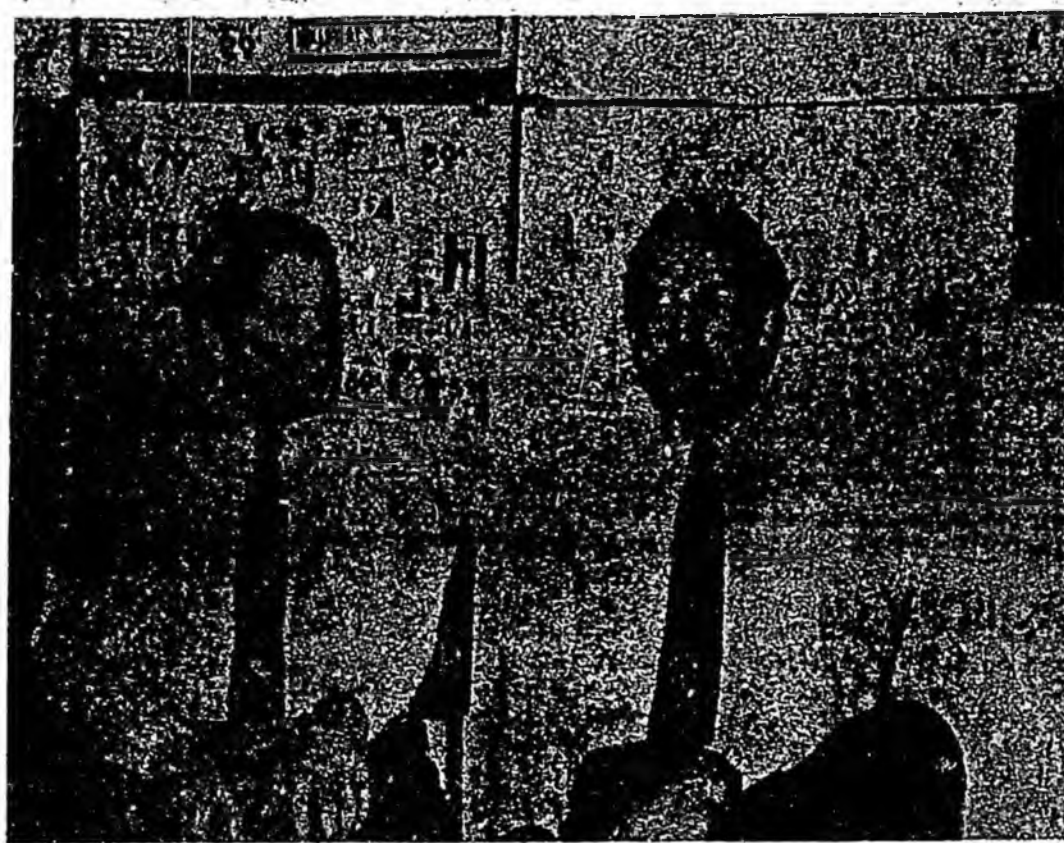
"If someone on the docks of Alaska wanted more money for their product, they could trim the halibut there. Don't just send it down here with the nape on and the tail on. Cut the wings off, cut the tail off, cut the collar bone off, get it into block-ready form. Then the product is worth more," says Gryska, adding, "[Alaskan processors] are much more adept at processing Alaska product than someone in Texas or Kansas."

FEEDING THE CONSUMER MARKET:

Stress Health, Convenience

While buyers say Alaska seafood enjoys a good reputation and healthy demand, competition is fierce and getting fiercer. Ultimately, the fish needs to appeal to consumers. Here's what retailers say about marketing Alaska product to consumers:

*sell more halibut if there was
sell, if the season were longer.*



ser: Roger Korkhart (left) and Ron Corno of Fleming Foods tell what it takes to sell fish in the

DUCK

At the consumer level, the seafood industry's biggest competition comes from the rest of the meat department—a fact that few seafood suppliers realize. As Jeff Dulcich assesses the future of the industry, competition from other meats has him a bit worried. "I would think that seafood is in for a little bit of turbulence. One of the concerns that I have is that the beef and chicken councils, all of these other protein items that we compete with, have a good cooperative advertising budget and seafood lacks that," says Dulcich. "You don't compete with just fish, you compete with every protein item in the case—the price of hamburger, the price of chicken."

On the up-side, the endorsement of seafood from the medical and health fields should continue to boost seafood sales, says Dulcich. "The American Medical Association has done wonders for the seafood industry. If that continues, I would expect (demand) to continue to grow."

A lot of Alaska seafood's ability to sell boils down to how it is promoted in the stores. Reports on the quantity and quality of literature provided through ASMI varied around the country. All buyers ranked ASMI publications among the best in the nation; however, the four buyers interviewed in Portland complained of receiving virtually no information. "They do a marvelous job with

what they produce. It's just a matter of getting it to me," says Dulcich, who says he has never been contacted directly by ASMI. Meanwhile in D.C., buyers at Giant say they receive "tons" of ASMI literature, but it isn't promoting the kind of product they are looking for.

"How excited can you get about

'One year, I literally had halibut and I could not get a confirmed p



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A M S
Alaska Marine Safety E

the same frozen salmon steak and the same piece of frozen halibut that they've been selling for 20 years?" asks Steinberg, adding that his customers demand fresh fish and are not enticed by the terms "flash frozen" or "fresh frozen" seafood. "If someone from Alaska marketing could get us some fresh product, we'd be excited about it. We could run a beautiful ad: Fresh Alaska sole, air freighted from the icy waters of Alaska... doesn't that sound appetizing?"

'How excited can you get about the same frozen salmon... and the same piece of frozen halibut that they've been selling for 20 years?'

"Point of Purchase" materials provide another avenue for promoting Alaska seafood, and most retailers said they could use more of them. "The number one marketing tool is recipes. The next thing after that would be brochures, where they talk about nutrition, handling, various ways of cooking," says Kirkhart of Fleming Foods, who adds that charts can help offset competition with other meat items. "Nutritional charts show how much better for you seafood is than the other proteins."

POP materials can also coax consumers who are unfamiliar with Alaska product into trying it. "A lot of people are still unfamiliar with fish. People are always leery of something new. The easier to prepare the more liable they are to buy," says Carson Roper of Lunds. Overall, Roper says that Alaska product simply competes with many more choices than it used to—a

trend that will continue. "It's a much more competitive industry. Seafood is hot. Even with all the bad press we're getting, it's becoming more and more competitive."

What can Alaska suppliers do to better promote their product? "Cooperate within the industry. It's difficult when you're up in Alaska to think about where your product is going. But we need a dialogue established between retailers and suppliers and fishermen," says Roper. "It reminds me of a poster in a cannery I worked in in Alaska. It said: 'Remember, fish is food'." □

F.I.S.H. Flap

continued from page 13



they're willing to support an individual quota system if it does the job.

F.I.S.H. members say they hear their customers demanding fresh product on a regular basis. What they don't see is why the bulk of a 60-million-pound resource has to be harvested in three or four openings. The derby fishery not only gluts the market, but promotes wastage and poor quality, F.I.S.H. claims.

Led by fish aficionados like Jon Rowley of Fish Works! and executive chef John Melchior of the Pacific Regent in Bellevue, Wash., F.I.S.H. has taken its message not only to the North Pacific Fishery Management Council and the Hal-

P.O. Box 72472
Fairbanks, Alaska 99707
March 7, 1990

Representative Cliff Davidson, Co-Chair
Representative Curt Menard, Co-Chair
House Resources Committee
P.O. Box V
Juneau, Alaska 99811

Dear Representative Davis:

I am currently trying to obtain the required permits to fish farming in the Fairbanks area. After reviewing the bills before your committee, I have learned that the bill intended to prohibit fin fish farming actually allows the type of farm I would like to start, whereas the bill intended to promote fin fish farming would effectively prohibit the type in which I'm interested.

Therefore, I would like you to consider the farming of grayling, rainbow trout, lake trout, burbot, arctic char, and non-food fish such as sticklebacks and minnows for their display as aquarium fish. According to the 1984 Yearbook of Agriculture, tropical fish farming is the fourth largest form of fish farming, underestimated at \$20 million per year. There are now cooler systems available to provide the conditions necessary for keeping cold water fish in aquariums. I would like to take advantage of the Alaska mystique currently found in the lower 48 states and export grayling as an exotic species for aquarium lovers.

For this to work, it is necessary to legally:

- own the fish
- sell the fish to the public
- transport the fish
- obtain brood stock
- make a profit

Thank you for your consideration,


Nick Ericson

cc: House Resources Committee

**KODIAK SEINERS ASSOCIATION
P.O. BOX 2399
KODIAK, ALASKA 99615
907/487-4939 907/487-2456**

February 14th, 1990

Curt Menard
Rm. 110, Capitol
P.O. Box V
Juneau, AK 99811

Dear Mr. Menard:

The Kodiak Seiners Association supports bills HB 432 and SB 397 that would prohibit fish farming in Alaska. Much has been written in the fishing press on this issue. To avoid redundancy, we agree that the reported health and genetic complications arising in fish farms throughout the world, the potential for dangerous health implications for our presently healthy and abundant natural salmon stocks, and the potential for disruption and degradation of wild salmon markets, are reasons enough to justify the ban.

Taxes on Alaska's natural fisheries resources being the second largest source of revenue for the State, it would be irresponsible to place finfish resources at the risk by their possible exposure to disease-prone farm fish. In addition, were the same State monies that would be needed to fund the development and regulation of fish farming devoted instead to the enhancement of existing hatchery and wild salmon runs, the State would realize a certain and almost immediate revenue gain.

Finfish farming would be a counterproductive graft onto the healthy body of Alaska's natural fisheries.

Sincerely,

Kodiak Seiners Association
Board of Directors:

Eric Manzer
Oliver Holm
Dana Reid
Chip Treinen

Dave Kubiak
Jeff Povelite
Chuck McWethy
Armin Reimnitz

cc: Arliss Sturgulewski
Steve Frank
Bill Hudson
Dick Eliason
Bettye Fahrenkamp
Mike Davis
PWS Seiners Association

Rick Halford
Fred Zharoff
Cliff Davidson
Jalmar Kerttula
Mike Navarre
George Jacko

Gov. Steve Cowper
Bert Sharp
Walt Furnace
Richard Foster
Curt Menard
SE Seiners Association

Cowper Administration Position on Mariculture

Mariculture may provide substantial economic benefits to our coastal communities and help diversify and stabilize our economy if it is developed in an orderly fashion which provides the maximum benefit to Alaskans while ensuring protection for our fisheries resources, other resource users and the environment. In order to accomplish these objectives, any legislation authorizing a mariculture industry must satisfy the following principles:

1. The mariculture industry must benefit Alaskans.

The mariculture industry must be developed in a manner which does not result in unfair competition with existing fisheries or cause undue economic displacement in our coastal communities. Legislation should, to the extent possible under the law, provide for local hire at mariculture facilities and give preferential access to mariculture permits and mariculture related tidelands leases to Alaskans.

2. The mariculture industry must pay for itself and the state should get a fair return for the use of state resources.

Legislation should contain provisions for recovering administrative and other state costs associated with managing the industry. The legislation should also ensure that the state gets a fair return for the use of tidelands and other resources.

3. The development of the mariculture industry in Alaska should be done in an orderly fashion which encourages a stable, dependable industry.

Legislation should provide general criteria which will lead to the development of a regulatory program which discourages speculation on permits and tidelands leases, encourages sound financial planning, and provides for a diverse industry ranging from "Mom and Pop" ventures to larger corporate operations.

4. The mariculture industry must meet all state and federal requirements for human health, product quality and sanitation.

Legislation should ensure that mariculture facilities meet all state and federal requirements for human health, safety, and sanitation. Legislation should also require that mariculture products meet or exceed

all state and federal product quality and human health standards, and provide the means to ensure that state

regulators can protect human health and product quality.

5. Mariculture activities must be managed to ensure protection of the biological integrity of natural plant and animal stocks.

Legislation must address the issues of pathological and genetic protections for natural sea vegetable and fish stocks.

6. Mariculture activities must be managed in a manner which ensures adequate environmental safeguards and habitat protection.

Legislation must ensure that mariculture facilities are sited, designed and operated to protect air and water quality, to provide for proper disposal of wastes, and to minimize adverse effects to important fish and wildlife habitat.

7. Mariculture facilities must be sited to minimize land-use conflicts, maintain navigation and ensure access to upland areas.

Legislation should provide guidance for siting facilities to minimize conflicts with other tidelands users, reducing visual and aesthetic impacts, maintaining navigation and ensuring access across state tidelands.

8. Broodstock acquisition for mariculture purposes should be carefully regulated, especially for species subject to limited entry fisheries.

Legislation should contain provisions limiting the acquisition of broodstock for species subject to limited entry fisheries. Legislation should grant the Department of Fish and Game the authority to regulate the acquisition, transport, and propagation of mariculture broodstock, and provide the Board of Fisheries the ability to resolve allocation decisions regarding broodstock acquisition if necessary.

REPRESENTATIVE
BEN GRUSSENDORF

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SITKA, ALASKA 99835
(907) 747-8458

RULES COMMITTEE
LEGISLATIVE COUNCIL

DISTRICT 3
ELFIN CLIFFE
PELICAN
PORT ALEXANDER
SITKA
TENAKEE

Alaska State Legislature



House of Representatives

RULES COMMITTEE CHAIRMAN

WHILE IN JUNE AU
P O Box 1
JUNE AU, ALASKA 99811
(907) 485-3824
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MEMORANDUM

TO: House Resources Committee Members
FROM: Rep. Ben Grussendorf
DATE: March 5, 1990
RE: HB 432

I am forwarding the attached material for your information. You may find the articles interesting as you are considering HB 432 which prohibits finfish farming in Alaska.

Norway sees mounting disease, pollution threat from fish farms

The deadly salmon disease furunculosis, previously unknown in Norwegian waters, is breaking out of fish farms and threatening beleaguered wild stocks, says a top government official.

Svein Aage Mehli, head of the division of Norway's Directorate for Nature Management which is charged with protection of wild salmon, told a Washington State regulatory hearing Nov. 14 that 5,000 farmed salmon infected with the disease escaped this summer into Hjørundfjorden near Molde.

Despite an intensive fishery to catch the fish and a system of net barricades at the mouths of salmon rivers, an infected fish was found in fresh water, he testified.

"If the disease spreads to natural stocks, the situation may be out of control in Norway," Mehli said.

"I feel we are on a sharp edge with diseases. If we have (the parasite) *Gyrodactylus salaris* in more rivers we may just accept our wild salmon is extinct."

(Furunculosis is present in B.C. waters and leads to loss of appetite, fluid retention, ulcers and eventually death in up to 60 percent of affected stocks. It had not been found in Norway until smolt transfers from outside the country were undertaken. *Gyrodactylus* also has been linked to fish farming and is treated by killing all host fish with rotenone.)

Mehli was qualified as an expert witness at a hearing in Lacey, Wash., of the Shoreline Hearings Board, which is hearing an appeal of a Skagit County decision to reject a fish farm in the mouth of the Skagit.

The fish farm proponents, a tribal group, are appealing the refusal of the Skagit County commissioners to issue permits for the farm on the basis that it threatens Skagit salmon and could pollute the sensitive estuary.

Proponents have denied there is any evidence of a disease threat to wild stocks from farmed salmon.

As a result, the appeal hearing has turned into a deep investigation of the environmental impact of salmon farms on wild stocks. Mehli was flown from Norway to testify on behalf of county commissioners, who backed up their decision by referring to the Suzuki Foundation report on Norway called *Journey to the Future*.



• Svein Aage Mehli, of Norway's environmental agency, testified last month to a Washington State regulatory agency.

Mehli responded angrily to suggestions by fish farm proponents that there is "no conclusive evidence" of disease spreading to wild stocks from farms.

"We are very concerned," he said. "It is not right to ask for conclusive evidence at such an early stage."

Furunculosis imported on smolts destined for salmon farms broke out two years ago and authorities felt they had eradicated it, he said.

This year's outbreak was a shock, as was the continued spread of bacterial kidney disease (BKD), which is very difficult to treat even with antibiotics.

"BKD poses a problem for natural stocks because it was diagnosed for the first time in 1980 and previously did not exist in nature," Mehli said. "It is very easy to see a connection between BKD (in salmon farms) and wild stocks in the river."

"It's reasonable to conclude" BKD spread from farms, he said, and Norwegian scientists "see logic in such a connection." BKD is diagnosed or suspected in 100 netpen operations and hatcheries.

Antibiotic use on Norwegian fish farms climbed to 48 tonnes last year, equal to the requirements for human use and animal husbandry combined.

"If you see the first diagnosis of redmouth disease in Norway just two years ago, it's impossible to ask what happened in such a case," Mehli continued. "Veteri-

narians underline the seriousness of that situation, that net pen operations have an impact."

Mehli said redmouth now is present in 300 facilities but was unknown until 1985.

"Net pen operations may function as a multiplying station for disease," Mehli said. "They will give greater disease pressure on natural stocks that we didn't see before netpen operations."

Mehli said further studies on the straying of farmed fish into rivers show a sharp increase in the presence of farmed fish. A year ago, 18 percent of the fish found in the rivers studied were of farm origin. In 1988, the figure rose to 40 percent. The origin was confirmed by scale samples and electrophoresis.

Asked if strong regulations could control disease, Mehli agreed they could "minimize problems if they go far enough. Norway has not gone far enough."

Norway is proposing a ban on the transfer of eggs and smolts between regions of the country, he said, and considering a ban on all imports of sexual products like eggs and milt.

Even though existing regulations list diseases which must not be present in imported eggs, the list is limited and "in Norwegian cage culture we know other diseases are knocking at the door."

In theory, he said, fish farmers "want to get rid of disease, but if they see profit in the short term they may react in a different way."

Mehli also confirmed fears of negative genetic effects of farmed fish on wild stocks if they interbreed. "We are very afraid it could affect their ability to migrate."

Netpen salmon have undergone careful selection for size and growth rate, he said, but researchers may have inadvertently selected other characteristics which could have a negative impact if reintroduced into wild stocks.

"First there is a genetic problem and second an environmental problem. If Atlantic salmon (escaping in Pacific waters) have the same requirements as coho or steelhead trout — and we know that salmon escape in great numbers — then you will have competition for space in the rivers."

As to their ability to spawn, "we see them in rivers, they are mature, ready to spawn and we are very worried of what will happen."

New zoning regulations now being implemented in Norway will ban farms within 20 kilometres of salmon rivers and close entire fjords to farming where salmon stocks are present.

Farms offer 'surplus' chinook

Surplus chinook smolts offered to the fisheries department by the B.C. Salmon Farmers Association should be destroyed, says the UFAWU, rather than released in a makeshift enhancement scheme.

At least eight farms offered the smolts for sale earlier this month, suggesting that some kind of technological breakthrough led to survival rates above their forecast.

In fact, the proposal to sell the "surplus" chinook to the Salmonid Enhancement Program is a bid for a bail-out by an industry facing collapsing prices, said the UFAWU. May 10, 1989. Prices for farmed salmon have tumbled a dollar a pound in the past few months," said union spokesman Geoff Meggs. "They simply can't afford to feed these fish and are hoping the taxpayer will bail them out."

Fisheries department spokesman Ted Perry said at least six

million fish were available in farms and hatcheries from Duncan to Powell River. He said DFO would not buy any fish, nor accept donations of fish that were not genetically pure Big Qualicum or Robertson Creek stock.

The fish would be released by DFO into the wild.

At press time, the farmers were insisting on selling the fish, which will starve unless fed by mid-June.

"Release of these fish poses a disease threat to wild stocks and would open the door to private ocean ranching," Meggs said. "Fish farmers have resisted every effort to win appropriate govern-

ment regulations, but they're not shy about asking for government money when times get tight."

Uncontrolled growth of the industry has seen farm fish harvests rise to 6,000 tonnes last year from 387 tonnes in 1986. Prices have crashed from an average annual farm gate value of \$3.17 to \$2.27, according to B.C. provincial statistics.

"Spending on salmonid enhancement has been frozen," Meggs said, "but apparently money may be found for this boondoggle. It's a slap in the face to SEP volunteers who have donated thousands of hours and faced steady funding cuts to even to consider this kind of a scheme."

Consumer group urges farm salmon controls

Both levels of government should step up their regulation of the fish farming industry, says the Consumers' Association of Canada (CAC), to protect the consumer and wild salmon stocks.

In a comprehensive task force report on the industry released April 17, the CAC declares that "a self-regulated industry is not in the consumer's best interest."

Farmed fish is being sold "without specific regulations since pre-existing legislation is being used to govern a new industry," the report says.

In particular, the task force recommends:

- stepped-up provincial government monitoring and regulation of the aquaculture industry;
- public sector testing of fish for market to determine levels of residues;
- monitoring of environmental impacts and prosecution of regulatory violations; and
- consumer labelling to distinguish farmed and wild fish and to report harvest dates.

The report also urges the B.C. Salmon Farmers Association to rejoin the Canadian General Standards Board committees on feed and feed additives to seek ways to reduce residues and contaminants.

The task force expressed concern about colorants, drugs and other medication used in aquaculture "which may remain in the product at the point of consumption."

Antibiotics are a very real problem, the report says, because "long-term consumption of sub-clinical dosages of antibiotics by humans (for example, by consuming antibiotic-containing fish) can lead to the development of resistant strains of bacteria in the body system."

Treatment of infection in humans can be undermined by such doses, the report notes and "there is a potential for allergic reactions by individuals sensitive to antibiotic traces."

(The farm industry has established a Quality Assurance program with spot-checking which it says will control this problem. Fish must be held 42 days after drug treatment before going to market. The provincial government is recommending at least double that time.)

The task force recommends much tighter controls and monitoring of antibiotic use, including certification of farmed staff handling drugs.

The CAC proposes an industry commitment to "produce, catch and process fish without negative impact to the environment."

All types of fish, farmed and wild, should be checked for chemical residues, PCBs and pesticides.

Consumers should insist on protection of wild stocks, the CAC concludes. "A fish farm industry at the expense of the wild stock would, in fact, reduce the choices of fish for the consumer."



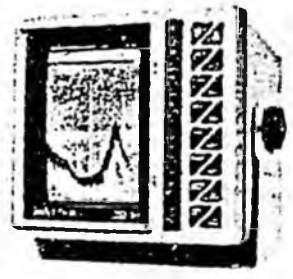
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Season's Greetings



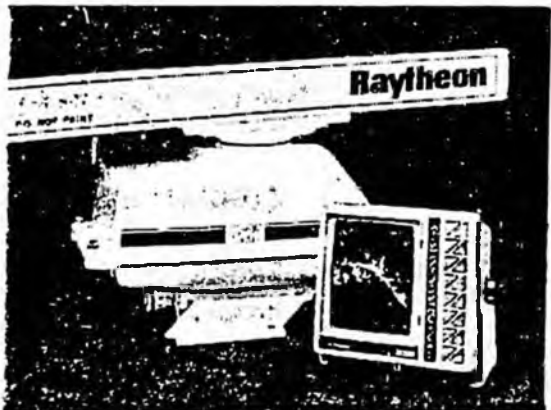
Fish farm use of antibiotics poses threat



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The widespread use of antibiotics in fish culture poses a serious potential threat to public health, says a Washington State zoologist, and should be strictly controlled.

Arthur Whiteley, a zoologist with a long-standing interest in microbiology, told a Washington State Shorelines Hearing Board inquiry Nov. 14 that antibiotic use on fish farms will produce antibiotic resistant bacteria in the human food chain.

If these resistant bacteria occur in humans, "the diseases caused by that organism could not be medically treated.

"It would eliminate from the tools of the physician those he would want to control disease."

Whiteley was qualified as an expert witness in the hearing, which was set up to hear an appeal against a decision by Skagit County to deny permits for a fish farm near the mouth of the Skagit River.

Whitley produced a pile of scientific studies which show that "in almost every case resistant bacteria is selected by the use of antibiotics in fish culture."

In other words, use of antibiotics to treat bacteria causing fish disease kill all but the bacteria which is resistant to the medication.

Studies have proved that this

resistance can be transferred from one type of bacteria to another, Whiteley said, and can create resistance to several types of antibiotic.

Whiteley said this type of transference has been documented in the case of a vibrio bacteria which causes disease in fish. In a laboratory, this resistance was transferred to different bacteria which exist in the North Pacific food chain and are pathogenic to humans.

"This has not been observed in the wild," he said, "but there is a probability it could occur. Experiments indicate the genetic mechanism is in place . . . and we can predict it will occur in nature under certain conditions."

The Centre for Disease Control in Atlanta has found the same phenomenon in beef and poultry, he said, and blame it for a dramatic increase in salmonella.

The only solution, he said, is to ban the use of antibiotics in fish culture which are used in human treatment.

In B.C., both oxytetracycline and erythromycin are used in fish culture even though they also are used in human medicine. There is no inspection to determine whether or not this transference of resistance is occurring in B.C. or whether fish sold to consumers is free of antibiotics.

IFAWI loses close vote

Additives to the Environment of Net-Pen Reared Fish
Pacific Marine Fisheries Commission 42nd Annual Meeting
Seattle, Washington, October 16-18, 1989

PHD Arthur H. Whiteley and Annamarie Johnstone

We have been asked to address our remarks to the matter of additives to the environment of net-pen reared fish. In this particular forum, we assume the emphasis should be on additives that may have an impact on humans when these fish come to market, rather than the impact on the plant and animal communities in the natural environment, though these are not wholly separable.

By its very nature, net-pen rearing of salmon requires the use of numerous chemicals, sometimes in large amounts, some used in the fresh water hatcheries to produce the fry and smolts, some used in the grow-out period in the marine pens, and others used during processing of the fish for the market. Partial lists are shown in Table 1, compiled from Austin and Austin, 1987, from a 1988 report for the Nature Conservancy Council by the University of Stirling, and from other sources.

The lists include chemicals used in salmon and in other forms of fish culture, both in this country and in foreign countries. Inasmuch as farmed fish are imported from some of these other countries, inclusion of these chemicals in the lists may be relevant to the matter of seafood surveillance in the United States marketplace.

Chemotherapeutics. The most relevant additives for present purposes are antibiotics and therapeutants used to control bacterial diseases. Because of stress, disease may cause losses of 30-40%, sometimes higher. Diseases in salmon farms include *Vibrio anguillarum* (vibriosis), *Aeromonas salmonicida* (furunculosis), *Aeromonas hydrophila* (hemorrhagic septicemia), *Yersenia ruckeri* (red mouth), *Vibrio salmonicida* (Hitra disease), *Renibacterium salmonarum* (bacterial kidney disease). To combat these diseases, medicated food containing antibiotics is supplied. In Washington, the FDA approved antibiotics and therapeutants are oxytetracycline (OTC), Romet 30 (sulfadimethoxine and orhomprim) and sulfamerazine. In addition, Tribissen (sulfadiazine and trimethoprim) is used in Norway and Scotland, and in British Columbia erythromycin is used to control BKD. In Japanese fish culture a wide variety of antibiotics has been used, but has recently restricted the use of chemotherapeutics in cultured fish (Aoki, 1988, pers. comm).

In the US, Norway, BC and Scotland, doses of drugs are as indicated in Table 1B. It is anecdotal, however, that additional amounts of antibiotics are used by farmers, who may mix the drugs with feed and binders. Control of use of antibiotics in Norway and Scotland is regulated by veterinarians, and this is supposed to be the case in B.C. In the British Isles it is apparently easy to find legal loopholes to permit other antibiotics and doses to be used (Austin and Austin, 1987). In Washington fish farmers are supposed to notify the Department of Fisheries if they use antibiotics, but veterinarian supervision is not required. Generally approval exists for only therapeutic use of these

drugs. Nonetheless they often are used prophylactically inasmuch as sick fish may not take the medicated food.

There appears to be no medical or public health supervision or regulation here, or in the other fish farming countries, on the use of antibiotics and chemotherapeutics other than the requirement of FDA approval of the three drugs and their dosages. There appears to be no monitoring by agencies of the use of these drugs or their persistence in marketed fish.

The amounts of drugs used are enormous. In Norway last year, 48 metric tons (105,000 lbs) of OTC alone were used - more than in animal husbandry and human health uses combined (Mehli, 1988, pers. comm. and press accounts). This figure has grown from 13,691 lbs in 1984 (Midtlying, 1985). The 1984 figure for Tribisuen, nitrofurazolidon and sulfamerazine is 30,204 lbs (Midtlying, 1985). Comparable figures for British Columbia and Washington are not at hand. Assuming the dosages cited earlier for the 13 Washington pens, calculation leads to a first approximation of about one ton of OTC, a figure similar to that given by a Washington fish pen operator (Dr. A. Bill, 1989, pers. comm.).

The relevant issue here is "Do these uses affect man?" Consumers clearly would be exposed to residual antibiotics in the fish meat. Because of the potential for these residues producing a serious problem in public health, Japan has recently restricted the use of chemotherapeutics, and does not allow cultured fish to move to market if residual drugs can be detected in fish meat (Aoki, 1988, pers. comm.). The potential for adverse effects has been emphasized by Austin (1988, conference in Vancouver, B.C.; Austin and Austin, 1987). The current regulations for control of such residues are based on admittedly minimal research. The FDA requires a 21 day withdrawal period after the last medicated feeding of OTC and 42 days for Romet 30 before slaughtering for the market. In B.C. the withdrawal period is 42 days, and in Norway 61 days. Very few data exist for measurement of persistence of these drugs in fish flesh after feeding. McCracken et al (1976) measured the presence of trimethoprim in trout muscle 77 days after medication; Salte and Liestøl (1983) calculated that the withholding period for trout receiving OTC should be 100 days at winter temperatures, and for Romet 30 they recommended withdrawal periods of 60 days, above 10°C. All authors emphasize that temperature is a seriously complicating factor - residues of Romet 30 persisted for several months in fish at colder temperatures, leading Salte and Liestøl to recommend using the component drugs only in summer. Clearly these limited data do not support the FDA regulation of 21 days. New, more refined measurements of drug residues in salmon coming to market clearly are needed - a recurrent theme of the Austins. Some of these measurements are being made now at the University of British Columbia by McEriano et al. (1989), and Grondel et al. (1987) have published a pharmacokinetic analysis of OTC distribution in carp. In the absence of more detailed studies, humans ingesting farmed salmon may be receiving subtherapeutic doses of antibiotics. One would like to see regulations established for testing the product, by agencies, as it comes to market to ensure the absence of detectable residues. Methods used should be such as those approved by the National Committee for Clinical Laboratory Standards

used by the Clinical Laboratories, Laboratory Medicine, University Hospital, University of Washington.

The issue extends beyond the limits of the penned salmon. Much of the antibiotic fed escapes into the fluid environment and, notably, into the sediments that accumulate beneath the pens (Jacobsen and Berglund, 1988), where it may be exposed to native fish, shellfish, and other indigenous species, thus providing another avenue to humans who may catch and consume these forms.

The medical consequences of the mis-administration of antibiotics are numerous, and are well discussed in such modern treatises as Goodman and Gilman (1985) and Kucera and Bennett (1987). A number of them are antigenic and elicit immunological hypersensitivity responses; some have toxic effects in various tissues varying with the physiological and health state of the person; some particularly should be avoided during pregnancy; tetracyclines lead to discoloration of infants' teeth and may interfere with bone growth; some, notably the tetracyclines, may lead to the development of superinfections by resistant strains of bacteria; they may interfere with the normal immune response; and the breakdown products of antibiotics, including OTC, can be toxic particularly in individuals with compromised livers. Basically, it is poor medical practice to ingest unneeded antibiotics or deteriorating antibiotics.

Another cluster of problems associated with use and misuse of antibiotics is the generation of strains of pathogenic bacteria that have resistance to the drugs. Such strains have now appeared in essentially all fish culture communities that have been adequately tested. Mostly the resistance factors are carried on R plasmids, which also usually are found to carry resistance determinants for 1 to 8 additional antibiotics, thus showing multiple drug resistance. In high proportions, these R plasmids are transferable to other bacteria, and thus drug-resistance may be disseminated to other ecosystems. Studies at the Centers for Disease Control have shown that outbreaks of salmonellosis could be traced to drug-resistant *Salmonella* derived through the foodchain back to land farms associated with agricultural antimicrobial use (Cohen and Tauxe, 1986). It is prudent to evaluate the possibility for a similar generation of R plasmids in fish farms and their dissemination to human populations in the marketplace. When drug-sensitive populations of pathogens are replaced by drug-resistant populations, then treatment of the affected fish becomes ineffective, and, if the R plasmids are in human pathogens, treatment of patients would be adversely affected. Particularly, it is a general principle that medically important antibiotics, including oxytetracycline, the sulfas and erythromycin, should be restricted in their nonmedical uses to minimize R plasmid selection and transmission.

When antimicrobials are used in fish farms near commercial or recreational shellfish beds, there is the further potential for drug-resistant organisms to be concentrated by the shellfish, through filtration, and thus enter human populations.

Food additives. The dry pellets, fed to the penned fish in the marine environment, contain fish meal, grains, fish oils and carbohydrates, supplemented by minerals and vitamins as indicated in Table 2. While these additives have no direct human import, it is reported that planktonic blooms of

the ichthyotoxic dinoflagellate, *Gyrodinium aureolum*, were enhanced by the biotin in fish farm wastes (Turner et al., 1984). These blooms cause mortalities to cultured fish, and, unfortunately, to wild fish as well (Bullock et al., 1985).

Pigment is added to the feed to produce a colored flesh in farmed salmon, inasmuch as the color of wild salmon flesh is derived from natural food organisms. In Great Britain, the carotenoid canthaxanthin, an analog of astaxanthin common in natural food organisms, is used in the form of carophyll red. It is stated in a report from the University of Stirling that this use is banned in the US because of possible carcinogenic properties of canthaxanthin (NCC Report, 1988). To date a petition for its use has not been submitted to the FDA (FDA, Seattle Office, 1989). A petition is presently under consideration for use of astaxanthin as a colorant. A main local supplier adds canthaxanthin as a colorant. There clearly are gray areas here where research and regulation is sorely needed.

Many wild fish are rich in omega 3, polyunsaturated fatty acids. A higher ratio of omega 3/omega 6 fatty acids is believed favorable for maintaining low cholesterol levels in humans. Cultured fish and other sea foods, because of their artificial diets, may have low levels of omega 3 fatty acids, and thus unfavorable ratios of omega 3/omega 6 (Suzuki et al., 1986; Chamugam et al., 1986). Consequently, individuals eating farmed salmon in the expectation of gaining this supplement will typically be erring, unless the farmer has specifically added it as a dietary supplement and indicated this in marketing. The dry pellets supplied locally generally do not have omega 3 acids added as a supplement (Moore-Clark Co., 1989, pers. comm.) because these are contained in the fish oils of the fish meal used.

Moist pellets, which are more commonly fed during the hatchery phases of salmon farming, are derived from fish meal that is pasteurized, combined with additives, and frozen. However, moist pellets used in some fish farms in Puget Sound contained *Salmonella* spp. (Draft PEIS, WDF, p. 116, 1989). Moist pellets used in British Columbia have been found to contain *Salmonella* (Kelly, 1988, pers. comm.; Babink, 1988, pers. comm.). In these cases it is unclear whether the pathogens had survived the pasteurization, or had appeared subsequently. These pathogens can persist for a period of time in marine waters, are harbored by fish in polluted waters, without harm to them (Buttiaux, 1963). Marine shellfish can concentrate *Salmonella* and transmit them to humans. There is, therefore, a potential for fish culture to join animal husbandry as a mode for affecting humans in the manner described by Cohen and Tauxe (1986).

Hormones. At this time, hormones are being used in B.C., experimentally and perhaps to an extent in actual culture, to control the sex, size and behavior of penned salmon, both *Oncorhynchus* spp. and *Salmo salar*. Gonadotropin, gonadotropin releasing factor and analogs, and antiestrogens have been used in adult females to modify spawning. Androgens and estrogens are used to cause feminization, and, in combination with other techniques, to produce triploid and tetraploid stocks for production of sterile salmon. A review is provided by Donaldson (1986).

In general, these treatments are used on egg-producing females or on eggs and sperm, and the likelihood of carry-over of hormones to adult, marketable fish is tiny. Anabolic steroids including methyl testosterone,

thyroid hormones, somatotropins, certain pituitary hormones can be used to accelerate growth in juveniles and the timing of smoltification (Donaldson, 1986). If these hormones, or androgens and estrogens, were used for growth acceleration or other effects on near-harvest adults, then there would be cause for concern to human consumers.

Pesticides. A remarkable list of agents are or have been used in salmon culture. Examples are: formalin, malachite green, acriflavin, Nuvan, Neguvon, Chloramine T, MS222, copper sulfate, tributyltin, diquat, in addition to the chemotherapeutics. Some are used in Scotland and Norway which apparently are not used, or not permitted, in the U.S. and B.C. Lists are incorporated into Table 1 of this presentation.

Treatment of salmon lice (*Lepeophtheirus salmonis*). These copepod ectoparasites pose a severe problem for adult penned fish in Scotland and Norway. In Europe, organophosphate pesticides (Nuvan^R (dichlorvos; Scotland) and Neguvon^R (trichlorfon which forms dichlorvos; Norway) are primarily used. Fish are treated by immersion in a concentration of 1 ppm for 1 hr, as needed. In 1984 39,600 lbs of Neguvon were used in Norway (Midtlyng, 1985). They are inhibitors of acetylcholinesterase activity in the cholinergic nervous system. These agents not only kill fish lice, but other crustacea in the environment as well, including commercially important species such as crabs, lobsters and mussels (Egidius and Moster, 1987), and they cause potentially serious problems to the treated fish (Davies and McKie, 1987; NCC Report, 1988). These agents are restricted by the EPA in the U.S. (Seattle EPA Office, 1989). In Washington, the carbamate Sevin^R (carbaryl) has been suggested for use for treatment of salmon lice, and it is used in oyster culture for controlling ghost shrimp. Sevin, also, is an inhibitor of acetylcholinesterase. Sevin has recently been restricted in parts of the United States, and its discharge is regulated by an NPDES permit. BRAVO (chlorothalonil), a fungicide has been suggested for and used recently on fishpen nets, a use banned by EPA because it is a class B carcinogen (EPA, Seattle, 1989).

Disinfectants and Antifoulants. Formalin and malachite green have been used for control of ectoparasites and fungi, usually in the fresh water phases of farming. Malachite green, a potential teratogen (NCC Report, 1988), is now banned. MS-222 is used under certain conditions for anaesthesia, but with a 21-day withdrawal period for clearance from tissues. Hatchery ponds are sterilized with chlorine.

To prevent fouling of nets by growth of algae and encrusting invertebrates, fish farmers have treated nets and pen structures with the antifouling agent, tributyltin (TBT). This substance, at exceedingly low concentrations, has a variety of adverse effects on marine invertebrates and perhaps on vertebrates (Bailey, D.S., 1987). When, in 1987, farmed salmon appeared in the Seattle markets carrying substantial amounts of TBT in their flesh, the state enacted a law prohibiting this use and partially eliminating it from use on boats. A similar law exists in the national statutes, in Great Britain and other parts of Europe. Despite this ban, a Canadian Governmental memorandum on August 11, 1988, titled "Private Salmon Hatcheries and Netpen Facilities, Some Serious Concerns" indicates that 25% of BC pens are still treated with unregistered boat hull paints, sometimes including TBT, which liberate

large quantities of particulate paint into the water, sometimes onto oyster beds, thus creating potential hazards for two kinds of aquacultured products.

If antifoulant is used on nets now, usually it is copper-based. Copper and other heavy metals are highly toxic to many marine invertebrates. Standards for permissible amounts of copper in farmed fish flesh appear to be lacking.

Summary. There are a number of chemicals and additives used in net pen culture now that have the potential for adverse human impact. Often these are used at the discretion only of the user, and with little or no external monitoring. There appears to be little or no input into this regulation by public health agencies.

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Table 1
Chemicals Used in Net Pen Culture of Fish
 (From Austin and Austin, 1986; The Nature Conservancy
 Report, Scotland, 1988; and other sources)

Chemotherapeutics

Oxytetracycline	Streptomycin
Romet 30 ^R (sulfadimethoxine and orthomeprim)	Sulfisoxazole
Sulfamerazine	Kanamycin
Tribrisen ^R (trimethoprim)	Fumequine
Erythromycin	Chloramphenicol
Penicillin G	Chloramine T
Oxolinic acid	Acriflavin
Minocycline	Acetic acid
Clindamycin	Formalin
Kitasamycin	Malachite green
Rifampicin	Iodine
Hyamine 3500	Iodophor
Copper sulfate	Benzalkonium
	Nitrofurantoin

Pesticides

Dichlorvos (Nuvan^R, an organophosphate)
 Trichlorfon (Neguvon^R, an organophosphate)
 Carbaryl (Sevin, a carbamate; used in oyster culture)
 Diquat

Antifoulants and Disinfectants

Tributyl tin - now banned
 Copper paint
 Bitumen
 Chlorine
 Chlorothalonil

Anaesthetics

MS-222 (tricaine methane-sulfonate)
 Benzocaine
 Carbon dioxide

Food additives

Colorants-canthaxanthin
 Minerals
 Vitamins
 Omega 3 fatty acids

Table 1B
Doses of Antimicrobials Commonly Used in Salmon Net-pen
Culture

Antimicrobial	Dose, mg/kg of fish/day	Days of Treatment
Oxytetracycline	75	10
Romet 30	50	5
Sulfamerazine	220	14
Tribrissen	30	10
Erythromycin	10-25, or unspecified	4-21

These regimens are repeated 2 or 3 times a year

Table 2
Mineral and Vitamin Food Additives
in Salmon Pellets
(Data from Nature Conservancy Council Report 1988, and
Moore-Clark Analysis)

Minerals

- Calcium phosphate
- Magnesium sulfate
- Sodium Chloride
- Potassium chloride
- Iron sulfate
- Zinc sulfate
- Copper sulfate
- Manganese sulfate
- Cobalt sulfate
- Chromium chloride
- Ethylenediamine dihydroiodide
- Selenium

Vitamins

- Thiamine hydrochloride
- Riboflavin
- Calcium pantothenate
- Niacin
- Pyridoxine hydrochloride .
- Biotin
- Folic acid
- Cyanocobalamin
- Inositol
- Ascorbic acid
- Choline chorlide
- Menadione
- alpha tocopherol acetate
- p-aminobenzoic acid
- Retinol acetate
- Vitamin A
- Vitamin B12
- Vitamn D3
- BHA-BHT, antioxidant

Algae, disease, low prices hammer B.C. salmon farmers

British Columbia's fish farming industry, wracked by collapsing prices, disease, algae blooms and bankruptcies, is facing a major corporate shakedown.

Despite continued assurances by industry leaders that all is well, signs of trouble include:

- ★ a rash of receiverships affecting about 12 farms and three companies;

- ★ devastating algae blooms throughout the Strait of Georgia which have wiped out some farms and crippled others;

- ★ industry agreement that the Sunshine Coast, the scene of a salmon farming goldrush only three years ago, may see an exodus of operations to colder, algae-free waters; and

- ★ continued low prices which are driving down wild salmon prices and forcing more producers to the wall.

The most visible problem has been the algae blooms, which sweep in on hot, calm days and suffocate salmon in their pens within hours. Persistent low levels of algae are believed to contribute to stress and disease.

Losses to various diseases continues to be high on many B.C. farms, according to industry publications.

According to the *Sechelt Press*, a plankton bloom during the Labor Day weekend wiped out five farms, severely damaged five others and destroyed 300 tons of salmon worth about \$2 million. The regional dump, which was to be closed to farm waste Oct. 20, was opened especially to handle the emergency.

Farms in Agamemnon Channel took the brunt of the assault, but the entire

region was affected. Local fishermen heard radio chatter from farmers seeking some place to dispose of the sudden large volumes of dead fish.

Professor Larry Albright of Simon Fraser University told a public meeting on the impact of fish farms later that month that the entire Strait of Georgia is so infested with the algae that farms will be removed from the area completely.

Meanwhile, prices continue to drop, heading below \$1 a pound according to some market reports. The break-even point is estimated to be around \$2.25 to \$2.50 a pound level.

The crunch of falling prices, provoked in part by aggressive marketing by Norwegian producers, is hitting farms hard in many areas.

Coopers and Lybrand, receiver for three firms put into receivership by secured creditors, reports continued financial problems for farms in the Campbell River area.

Eric van Soeren, receiver for North American Salmon Corp., operator of six sites around Quadra Island, and Sea

Grow, with operations at Nelson Island, said Sept. 19 that new buyers had not been found.

But both firms were thrown into receivership by Norwegian banks seeking to slow their losses on loans to B.C. producers. Now van Soeren is seeking a buyer for Atwood Bay farm near Desolation Sound and expects a busy fall with other troubled firms. He would not disclose who is buying the farm.

As a result of the chaos, the normally boosterish industry is shying away from an optimistic DFO analysis of the industry which predicts production could hit 80,000 to 100,000 metric tons by the year 2000.

Product of 50,000 tons is very realistic, the Price Waterhouse report claims. But industry spokesmen believe that disease and other problems will keep them in the low-growth range of about 20,000 tons until the turn of the century.

(Ed: The above article was reprinted with permission from *The Fisherman*, Geoff Meggs, Editor)

Fish farmer sues foreigners

A Washington state fish farmer and his corporation have sued in U.S. District Court alleging that foreign national interests have attempted to monopolize the commercial fish farming industry in his state. Lee A. Holley III of Lopez Island in northern Puget Sound alleges in his suit that foreign business interests, primarily

Norwegian, operated through American national fronts to destroy competition in the industry, remove local control and violate antitrust laws.

Holley, owner of Northern Nights Fish Farms Inc., is suing several Norwegian corporations that have either sole or partial ownership of farms in Puget Sound. Also named in the suit are state officials and other individuals who allegedly contributed to illegal activity. Holley charges that large financial contributions were made to state political campaigns by the foreign interests, which, he says, also assisted in defeating a moratorium proposed against new businesses in San Juan County, where Holley lives.

Comments from the Norwegian companies and state officials were being withheld pending litigation, according to several reached by telephone.

— Brad Matsen

The Fisherman January 25, 1989

Fish farm drug hits wild stock

Fishermen harvesting shellfish off Scotland say a chemical used by salmon farmers is killing marine life.

Scientists at Aberdeen University have linked the chemical with increasing numbers of wild salmon going blind.

The controversy has erupted over Nuvar 500, which farmers use to control pests. Its byproduct dichlovros, is listed by the 1987 North Sea Conference as one of 26 most dangerous chemicals in waterways.

The debate highlights the severe problems salmon farming disease treatment can pose for

the marine environment and other marine life.

According to the *London Observer*, in a report on its wire service Jan. 11, scientists at Norway's Institute of Marine Research in Bergen have found the chemical could be damaging sensitive lobster and crab larvae around the farms. Mussels and oysters also absorb the chemical.

Nuvar is strictly controlled on land, but salmon farmers have easy access because they are not subject to the same regulations.

Fishermen and environmentalists are demanding a ban on Nuvar, but farmers say they will

be decimated by sea lice if Nuvar is taken from their arsenal. They favour voluntary controls.

Nuvar is not registered for use in Canada, meaning it is unavailable. Valery Brooks, of the B.C. Salmon Farmers Association, said sea lice are not a problem in this province, but a special session on lice is scheduled for an aquaculture conference in Dartmouth next month.

Scientists there have concluded that sea lice threaten the viability of salmon farming in Atlantic waters and 96 percent of farms must use treatments to control the parasite.

A new problem for fish farmers

Foes of Puget Sound pens make an issue out of virus new to Northwest

By Jane Hadley
P-I Reporter

An exotic virus that caused fisheries officials to order almost 4 million fish and eggs destroyed at two hatcheries last week has given new ammunition to foe of fish-raising pens in Puget Sound.

Opponents of the net pens said yesterday they plan to make an issue of the virus at hearings tomorrow and Thursday on a state Department of Fisheries environmental impact statement on net pen fish farming.

But proponents of expanded fish farming on Puget Sound say it would be irresponsible to speculate on the source of the virus. They said there is no evidence pointing to Atlantic salmon or net pens as the cause, as some opponents charge.

But, Jerry C. Grover, of the U.S. Fish and

Wildlife Service said logic pointed to the Atlantic salmon.

There are 13 existing net pen operations in the state, most of which grow the Atlantic salmon. Close to 20 other net pens have been proposed.

The virus, known as viral hemorrhagic septice-mia or "VHS," was found in cell cultures in two hatcheries in December and positively identified Feb. 17. It has never before been reported in North America. It has caused substantial fish losses in Denmark and other European countries.

No fish reportedly have died of the disease in Northwest waters to date.

The virus was found in cell cultures at the Fish and Wildlife Service's Makah Hatchery near Neah Bay and a joint state-private hatchery at Glenwood Springs on Orcas Island.

"From the conversations I've heard, everyone's

looking at the net pen aquaculture industry in Puget Sound and Canada," said Grover, fisheries associate manager for the U.S. Fish and Wildlife Service regional office in Portland.

Grover said it's important "not to be finger-pointing because we don't know" and labeled such a guess as "speculation."

He added, "It doesn't take too much gray matter to put two and two together. You have to ask how the thing leap-frogs from Europe to Puget Sound. The common denominator would be Atlantic salmon. That's what the scientists are talking about."

The state Department of Fisheries, several scientists and an industry spokesman immediately jumped on Grover's comments.

"I'm certain this issue will be thrown at the

See FISH, Page B4

Fish: Virus origin to be probed

From Page B1

industry, when, in fact, I think it's groundless," said Anne Kirske, executive director of the Washington State Fish Growers Association.

But environmentalists were just as indignant yesterday and accused the state Fisheries Department of being a "booster" of net pen farming.

"This is really a terribly threatening thing," said L. Joe Miller, president of the Marine Environmental Consortium, a coalition of numerous local groups fighting proposed net pen operations around Puget Sound.

"It's the kind of thing environmental groups we work with have been anticipating and dreading and, now, here it is," he said. "The state and industry have said, no, this is not a realistic concern. They've said we're only worried about our views. Now they say this (virus) has come in on somebody's boot, which is really an

insulting suggestion."

Grover discounted the "boot" theory and some other suggested sources. He said it's "kind of far-fetched, even impossible" to believe that somebody who traveled in Europe brought the virus in on his or her boot. The virus can survive only a short time outside living tissue, he said.

Grover said his agency, the state Fisheries Department, the Wildlife Department, and Indian tribes are launching a massive testing program to try to track down where the virus might have spread. The U.S. Fish and Wildlife Agency, for example, will test the 35 miles of the Sooes River and its tributaries that are upstream of the Makah Hatchery.

The current theory, he said, is that Sooes River fish shed the virus and it got into the hatchery through its water intake.

The Fisheries Department will test saltwater around Glenwood Springs as well as some net pen operations. He said test results

should be available in late March.

Grover and Dr. Marsha Landholt, a fish pathologist at the University of Washington, said the rainbow trout is the most susceptible species of fish to get the disease from the virus. Coho salmon can carry the virus and pass it on without getting sick. But fisheries experts are worried about steelhead, because they are a type of rainbow trout.

Several weeks ago, Washington state rainbow trout were injected with the VHS virus in a federal laboratory and suffered "a high incidence of mortality," said Peck of the Fisheries Department. Landholt said VHS may seem "like a scourge to us because it's a new disease. But if you talk to people in Denmark and Europe that have VHS, they don't seem to worry to the degree we do. They seem to manage around it."

Landholt said they disinfect and destroy all fish in all infected hatcheries as well as those downstream.

Seattle Post-Intelligencer

February 28, 1989

Puget Sound anglers hooking Atlantic salmon

by Brad O'Connor
Times staff reporter



Steve Loop caused quite a stir in June when he showed up at Seacrest Boathouse in West Seattle with a 5½-pound Atlantic salmon he'd caught while fishing for blackmouth near the Southworth Ferry landing.

Atlantics are not supposed to be swimming around Puget Sound and it was only the second Dave Nelson, Seacrest manager, had seen in his 17

years at the boathouse.

Atlantics — 1 million or more of them — are in the Sound, but all are supposed to be confined to net pens where they are reared by private growers for markets mostly in the south, the East Coast and California.

Loops' Atlantic was an escapee.

Since June, Nelson has weighed about a dozen others, all caught on hook and line, which is remarkable. While Atlantics provide some of the world's greatest freshwater sports fishing, they rarely are caught on sports gear in salt water.

"Ponder this," said Nelson, "if we've seen a dozen here, there must be many, many more swimming around out there."

He's correct. There are more.

Will Sandoval, biologist for the Muckleshoot Tribe, said his tribal fishermen have told of netting several Atlantics during summer and fall salmon seasons.

"Some told of catching three or four a day," he said.

Three that Sandoval checked during a state and tribal test fishery for sockeye in July were approaching sexual maturity.

"What concerns me is that they may have been looking for somewhere to spawn. Even if they can't spawn successfully, there's a risk they could be carrying some exotic disease."

Decades ago, attempts were made to establish spawning runs of Atlantics in Washington and British Columbia. All failed and the belief among some fisheries scientists is that further attempts to establish Atlantic runs on the West Coast also would fail.

In fact, most fisheries managers nowadays shudder at the thought of Atlantics spawning in any West Coast stream — not only because of the risk of disease, but because of increased competition for food and space with native trout and salmon.

Reports of Atlantic catches are funneled to Lee Hoines, a Department of Fisheries biologist at Olympia. Of the 203 reported to him last year, most were caught by commercial fishermen in the Bellingham area and around the San Juans.

However, two were caught in fresh water,

on the Nooksack River and another in July in Cedar Creek, a tributary of the Nisqually.

What if they did spawn successfully?

"My assumption is that they can't. I can't say that absolutely is the case, but I hope they don't," said Tim Flint, another WDF biologist.

Should corporations use public waters for private profit?

By John de Young
The Columbian

Consider these things about floating fish farms:

- A typical net-pen fish farming operation on Puget Sound produces pollutants "equivalent to untreated sewage from approximately 10,000 persons." That's what a state report says. The pollution comes from fish feces, urine and food pellets deposited in the water and on the bottom of the Sound.

- There are 13 commercial pens now operating over 60 acres of aquatic lands leased from the state. These 13 operations daily deposit to the bottom of Puget Sound nearly six times as much oxygen-demanding fecal matter and other wastes than does Metro's Renton Waste Water Treatment Plant, which serves 430,000 people. Materials that deplete oxygen can radically change or kill off the life forms in an unpolluted environment.

- Siting 27 more fish farms, now delayed by opposition from upland property holders, environmentalists and county officials, would add a pollution load to Puget Sound equal to that from building four new cities the size of Everett.

- The . . . proper siting of 100 farms would not have significant impact on the aquatic environment." So says the state's just-issued environmental impact statement on floating net pens.

Those 100 fish farms would produce 55 metric tons of oxygen-demanding waste per day. That's 18 more tons a day than Metro's Renton and West Point treatment plants together produce from the sewage of 1 million people.

Analysis

The environmental impact statement was prepared by three private organizations that supply fish-farm companies with paid expert witnesses.

Under Gov. Booth Gardner, state policy is to encourage any increase of fish farming in the state's waters and to downplay environmental problems that aquaculture may bring.

The official evangelist is the Department of Agriculture's Dr. John Pitts, veterinarian and former Jefferson County commissioner who appears at meetings and hearings — in one case, as a paid witness for a net-pen applicant — to quash potential environmental objections raised by net-pen opponents.

Opponents are not just those who own shoreline property, who howl against a net pen being erected in their aquatic front yard. They've been fired up by what the state's environmental impact statement confirms: A new, nearby fish farm can give view property a one-time, financial knock.

Opponents include environmentalists like David Orman of Friends of the Earth, who says: "Why should we be happy about fish farms that dump tons of fish poop every day into Puget Sound?"

They include commercial fishermen like the Puget Sound Gillnetters, who know something that has largely escaped the notice of sport anglers:

Atlantic salmon, not a salmon but a sea-run trout of the Atlantic seaboard, have escaped by the thousands from net pens here and in British Columbia. The E.C. government booms fish farms with a gusto exceeding even the 1970s-boom-decays from Gardner's men and from Brian Boyle, the separately elected head of the Department of Natural Resources, which manages shore bottoms and other public lands.

What's more, hundreds of thousands of Pacific salmon have also escaped from the pens, especially in British Columbia.

So what does that mean? The state environmental impact statement points out that escaped exotic fish like the Atlantic salmon "could establish self-sustaining populations and compete with indigenous fish," such as steelhead trout.

That may not be far off. In the North Puget Sound last year, commercial and sports fishermen caught hundreds, probably thousands, of Atlantic salmon weighing up to 10 pounds.

More dangerous by far is that for the first time ever at least three sexually mature Atlantic salmon showed up miles from the sea in the Nooksack River last year, near Bellingham, and one in the Nisqually, near Olympia. Rumor has a fourth Atlantic netted in the Skagit River at Sedro-Woolley.

What's the worry about four fish, though they may be forerunners of thousands to come?

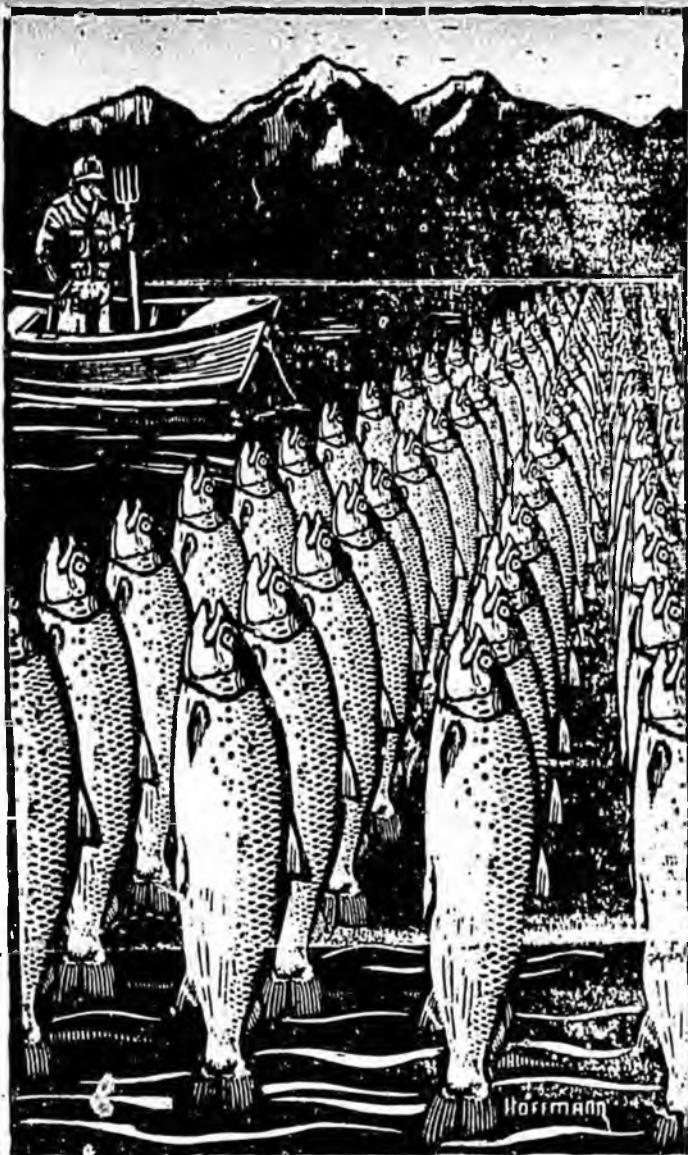
The environmental impact statement warns that accidental importation of "exotic" fish diseases, associated with fish farms in Europe could devastate existing salmon and trout runs in state rivers. Just in the past two weeks the public has learned that such a disease, viral hemorrhagic septicemia or VHS, has shown up at two hatcheries in state waters. It is the first time ever that VHS has been found in North America.

VHS, state fish-disease experts say, has never been found to occur naturally in Atlantic salmon. They say that the chance that Atlantic salmon in pens here are the source of the disease is "virtually zero." The disease was found in chinook and coho salmon, species raised extensively at federal, state and tribal hatcheries and at commercial net-pen operations.

The impact statement does not dwell on what has happened in Norway, where other diseases associated with that country's extensive net-pen industry have ravaged wild Atlantic salmon runs in 32 rivers. The government was forced to poison streams, set up a salmon sperm bank to preserve wild genes and consider banning any new net pen within 12 miles of a river mouth, an obvious rule not yet under consideration here.

Nor does the statement dwell on the possibility of migrating wild fish catching, indigenous fish diseases from net pens here or of net-pen escapes spreading such diseases into our river systems.

Fish farmers themselves helped call state attention to fecal build-up beneath pens, a build-up that kills clams, oysters and other bottom dwellers and can release poisonous hydrogen sulfide gas, which



DUANE HOFFMAN/PSA

can kill all fish in a pen in minutes.

In 1984 Commissioner of Public Lands Royle limited new net pens to sites where the water is at least 40 feet deep at low tide, a mile away from other pens and with enough current to flush away food and fecal deposits. He also limited the surface area of new pens to two acres or less.

These requirements ended up in "Recommended Interim Guidelines" written for the departments of Agriculture, Ecology, Natural Resources and Fisheries, which share regulation of the fish-farm industry, with Agriculture and Pitts calling most of the shots.

With no force of law and offered to help county commissioners site pens under state law, the guidelines deliberately do not talk about navigation problems, use conflicts and, most important, esthetic

If the two sides could stop feuding and start talking about necessary standards, we could have a safe, considerable industry.

—Peter Katz, fish farmer

Commissioners have learned that if they turn down a net-pen proposal, the applicant will seek a full rehearing before the state's Shorelines Hearings Board, with Pitts certain to show up to put the stamp of Gardner's administration on having the permit granted.

Dwain Colby, an Island County commissioner, put the matter thus in a 1987 letter:

"While there may be legitimate reasons for denying a permit to locate a salmon net pen, local government has been placed in the position of being able to say 'yes' to such a proposal but not 'no.'"

Under Gardner, the Department of Ecology has refused to require net pen operators to get pollution-limiting discharge permits under the federal Clean Water Act.

The Sierra Club Legal Defense Fund has announced it will sue the U.S. Environmental Protection Agency if necessary to force EPA to force Ecology to force every net pen operator have such a permit.

The state's draft environmental impact statement declares that the major impacts of net pens can be cured by "proper farm siting to assure dispersion of wastes, flushing of the site and protection of sensitive areas."

It's a view that one can come to easily while talking to such eloquent fish farmers as Peter Katz, a marine architect running the Paradise Bay Co. net farm at Port Townsend, and John Forster, a Ph.D. in aquaculture running Sea Farm Washington's similar

operations at Port Angeles.

Both pen systems, clean, low in the water, quiet, full of fat, bright Pacific and Atlantic salmon, are barely noticeable in the working harbors that contain them.

But that's quite different than siting a pen in Frenchman's Cove on the west side of Hood Canal, as International Marine Farms Inc. proposes.

Or siting a pen, as Tailfin Inc. proposes, in a main salmon and trout-fishing cove between East Point and Billy Beach on the west side of Wudbay Island, where from her home Margaret Johyston looks out across Saratoga Passage to Camano Island. She heads the Marine Environmental Consortium, made up of 20 citizen organizations that oppose fish and other floating farms.

Katz argues for having the state set standards for siting and operating net pens, to ensure that the pens do not harm the environment and to give the net-pen operators a clear but flexible regulatory framework to live with. But Katz feels the industry is getting a bad rap from people like Johnston, who, he says, simply don't want a net pen in the estuary front yard.

"If the two sides could stop feuding and start talking about necessary standards, we could have a safe, considerable industry . . ." he says. "But we're years away from that."

Forster, president of the Washington Fish Growers Association, dismisses esthetic revulsion as the main drive behind the opposition to what he characterizes as a clean, beneficial industry with vast prospects.

"It's more than esthetics. It's an intrusion into a life style that they don't like and they're using environmental problems as a smokescreen. Because of that, the debate is dishonest at the moment, terribly dishonest."

Johnston, at a gathering in her home with other members of the Marine Environmental Consortium, characterizes such comments as unworthy.

"The net pen issue raises a fundamental issue of public policy that involves more than us, though the environmental questions are real and cannot be brushed aside by the industry or the state. The big question is: Should the public waters of Washington State be turned over to a few corporations for private profit?"

That's a proper question for us all to ask. It must be answered by political action. Gardner's administration has a ready answer: Yes.

To me it seems stupid to site more pens in pristine salt and fresh waters (yet, an application is pending in Eastern Washington) until we have better, more extensive scientific information about siting than the draft environmental impact statement supplies.

Until we know if pens can be sited safely anywhere, we would be blind to commit ourselves to putting major sources of pollution in our unpolluted waterways and in waterways we are trying to clean up.

The tragedy of Norway's rivers demonstrates that

De Yonge was right on fish-farm perils

By Arthur H. Whiteley, John W. Brookbank and Annamarie K. Johnstone

In his article (P-I Op-Ed, March 29), State Land Commissioner Brian Boyle took severe exception to John de Yonge's March 5 Focus Section article on fish farms.

We believe that de Yonge's pithy comments were right on target.

Boyle argues against relating fish-farm pollutants to untreated human sewage. In terms of organic sludge whose combination with dissolved oxygen from the water, and loading of the water with various nitrogen compounds and phosphate which act as fertilizers, the two pollutants are essentially alike.

The question of dilution of these discharges is relevant.

Metro's West Point Wastewater Treatment Plant dumps its soluble discharge into the main channel of Puget Sound at considerable depth, permitting dispersion. Fish-pen wastes are deposited on the site as feed pellets and feces, which settle as sediment and dissolved components that enter the water column. The sites are channels or embayments with restricted water flow, not rivers, with a one-way flow that flushes things away. Tides flow and ebb and currents in bays create eddies, leading to retention and accumulation of the pen wastes.

Metro sewage must undergo treatment, at substantial and justified expense to our citizens who create this waste. Discharge is monitored by a permit, mandated by federal Clean Water Act. The fish-pen solid waste enters the bay raw, untreated, without disinfection — and free to the fish farmer. Washington's pens have avoided the federal discharge permits, although the Sierra Club Legal Defense Fund threatens the state with legal action if this requirement is not enforced.

real, just as it has been in Norway.

Boyle's understanding of the *Gyrodactylus salaris* issue in Norway is at variance with reports from Dag Dolmen of the Directorate for Nature Management in Trondheim. This trematode parasite has been introduced into Norway, according to Dolmen's analysis, "through stocking with salmon parr from infected hatcheries/fish farms." Johnson and Jensen report that total salmon catches in infested Norwegian rivers (1970 to 1984) dropped to 16 percent of levels in uninfested rivers. These were mostly wild fish which have been nearly decimated by a parasite spread through "hatchery/fish farm" stockings. The smolts that are stocked in salt water fish farms are reared as fry in fresh water hatcheries.

In November, Svein Mehli, head of the division of the Directorate for Nature Management concerned with protection of wild salmon in Norway, testified for Skagit County before the State Shorelines Hearing Board. Mehli reported the escape into Norway waters of thousands of pen-reared salmon carrying furunculosis, the appearance of bacterial kidney disease in farmed stock, the presence of redmouth disease in 300 salmon pens — a disease previously unknown in Norway — and of his concern about "other diseases knocking at the door." Given these facts, we disagree with Boyle's position that "environmental arguments against fish farms are essentially specious."

Boyle objected to de Yonge's extrapolation of the targeted 100 fish pens to the sewage equivalent of Seattle's sewage outfall — as "scientifically absurd." But Boyle can find a graph on pages 123 and 134 of the draft Programmatic Environmental Impact Statement to which he referred that shows that 100 pens will load Puget Sound with biological oxygen demand (organic sludge) 150 percent higher than that of the West Point plant, and add an amount of dissolved nitrogen to the embayments equal to that from this sewage plant. We think de Yonge stated things correctly.

In Norway, which has much smaller farms than are permitted here, pens are moved every couple of years to try to mitigate environmental problems. Moreover, they are located closer to the open water at the mouth of fjords. In some regions, alternate fjords are kept free of pens to create security zones between sites.

Atlantic salmon can become diseased in their pens and they do escape. This year commercial fishermen have recorded many Atlantics caught along with native salmon south of San Juan Island and between Bellingham and Point Roberts. Escaped Atlantics have been picked up in the Nooksack, Skagit and Nisqually rivers. These are adult fish, apparently ready to breed. We feel that there remains a possibility that they will breed, that they will become established and that they will compete on the breeding grounds with native salmonids — how successfully neither we nor Boyle knows yet. The presence of potentially diseased pen escapees among breeding natives poses a danger that in our opinions is

Boyle must be well aware of the current concern about appearance of viral hemorrhagic septicemia (VHS) in resident salmonids and doubtless has seen the U.S. Fish and Wildlife Service summary of March 3, 1989, which reports that this virus is confirmed in yearling coho and steelhead trout and fall chinook salmon fry from the Makah hatchery. We assume that he is aware of the opinion from the U. S. Fish and Wildlife Service that the logical, though not proved, avenue for entry of this new disease is via Atlantic net-pen culture. If these are proved to be "specious arguments," then we can drop them.

Is it fair for "the working stiffs" on the gillnet boats, purse seiners and reef boats — white and Indian alike — to be crowded off their fishing grounds, or worse, to have their resource diminished? Should clam growers, who have husbanded their rich resource for three generations, be forced to contend with pollution from a fish pen?

In order to generate new jobs and revenue, a wiser course for our state would be to accept the mitigation measure in the draft EIS — to culture salmon in tank farms. These should be on privately owned land with effluent monitored and regulated by permit and then discharged into deep water. In this way the negative impacts of floating mariculture — navigation hazards, storm-caused breakup of pens, dissemination of disease, release of untreated wastes, difficulties with antibiotics and impairment of aesthetics — would be eliminated. Lastly, land-based fin-fish culture would place the costs of this industry on those who profit from it.

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Senator Eliason

West Coast Shake-out

Supply and demand tremors rattle B.C. growers.

by Peter Chettleburgh

THE SHAKE-OUT has begun. Sagging salmon prices, excessive debt, high interest rates and a worldwide glut of salmon have triggered a period of consolidation in the west coast salmon farming industry. On the East Coast where prices are firmer and farmers have been more conservative in their approach there is still a margin of profit, but it too is narrowing as prices continue to slide in the face of skyrocketing worldwide production (220,000 tonnes in '89).

Everyone said it would happen, but no one really wanted to believe it. On the west coast, where prices have been hovering at or below production levels for most of the summer, reality has struck home with a vengeance. The need for cash flow has caused many farmers to sell a lot of small pre-market fish for ridiculously low prices - 90¢ a pound was one figure this writer heard mentioned earlier this summer.

Since May we have heard of at least four west coast farms that have been put into receivership, another two that have been sold at fire sale prices and at least a dozen more which are in desperate need of working capital. Everyone else is holding on, praying for higher prices in the fall.

One of the big ones that went into receivership is the Fremstad Group which has four farms, a hatchery and processing plant in the vicinity of Campbell River. It's being handled by the accounting firm of Coopers

and Lybrand which was looking for a buyer as we went to press in August.

Triangel Resources near Tofino on the west coast of Vancouver Island found itself in trouble earlier this spring and was taken over by General Sea Harvest, an affiliate of the Finnish conglomerate, Cultor Ltd. (formerly Finnish Sugar Co.), the parent company of Ewos Canada. General Sea and B.C. Packers were also looking at the assets of Ross Passage Salmon Farm, another west coast operation which found itself in trouble earlier this spring.

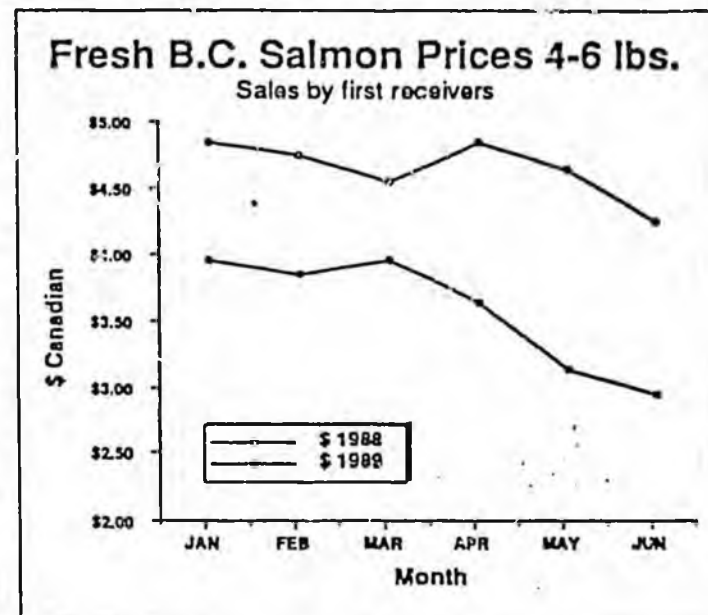
One other company that is known to be in receivership is Seagrow Industries Inc. (400 tonne capacity) with two sites in Jervis Inlet. The receiver, Coopers and Lybrand, was still looking for a buyer as we went to press.

There were also some amalgamations before the current shake-up began. For instance, within the last year Five Fishes (Sechelt) and Nordic Ventures (Quadra Island) were purchased by B.C. Packers, the large west coast fishing company-cum-processor owned by Westons. Apparently B.C. Packers is on the lookout for other expansion prospects, but doesn't plan to walk into a situation unless all the biological criteria, etc. are just right.

As a general comment, it can be said that the farms with some of the worst financial problems are in the Sechelt area. This is where the goldrush started in 1984

and it is the area that received a lot of the initial debt financing from Norway. Now the Norwegian financing has all but dried up and few investors are prepared to put additional

salmon farms at about \$250 million. And this does not include an additional investment of at least \$50 million in the supply and services sector (cages, feed, nets, etc.). Of this total in-



The graph above tells the story. The top line shows prices for B.C. farmed salmon (4-6 lbs.) during the first six months of 1988, while the lower line shows prices for the first six months of 1989. Prices are FOB Vancouver (Source BCSFA).

money into the farms because of their current debt structure. Adding to their woes are the growing conditions which many in the industry agree are not as good as those north of Campbell River or on the west coast of Vancouver Island. Indeed, some of the salmon farm sites may end up in the hands of oyster growers who are already lining up for a chance at leases that will probably turn out to be better for shellfish than salmon.

\$250 million investment

A recent estimate puts the total investment in B.C.

vestment, at least \$85 million has come in through Norwegian banks, much of which is now exposed to major losses, according to a recent report in a Norwegian newspaper.

Even for the smaller farms, those with debt in the neighbourhood of \$2-3 million, the debt servicing costs of 15-18% will skim off between \$300,000 and \$400,000 a year. That's a lot of fish, and a lot of debt relative to inventory, assets and equity, particularly in an industry that has yet to establish a solid production base.

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