

Y4  
. C 13/2  
95-81  
PT. 2

1041

95/4  
C 73/4  
95-81  
pt. 2

NATIONAL AQUACULTURE ORGANIC ACT OF 1978

DOCUMENTS

GOVERNMENT

Storage SEP 28 1978

MCKELL LIBRARY  
KANSAS STATE UNIVERSITY

HEARINGS

BEFORE THE

COMMITTEE ON COMMERCE,  
SCIENCE, AND TRANSPORTATION

UNITED STATES SENATE

NINETY-FIFTH CONGRESS

SECOND SESSION

ON

S. 2582, S. 2762, and H.R. 9370

TO PROVIDE FOR THE DEVELOPMENT OF AQUACULTURE IN  
THE UNITED STATES, AND FOR OTHER PURPOSES

JUNE 6, 1978

PART 2

Serial No. 95-81

Printed for the use of the  
Committee on Commerce, Science, and Transportation



U.S. GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1978

KSU LIBRARIES  
A11900 955245 ✓  
54255

0.003  
10.10.4  
W.1  
7.1.8

149

7.9  
6.13.2  
18-20  
5.7.9

DOCUMENTS

SEP 1950

FARRELL LIBRARY  
KANSAS STATE UNIVERSITY

UNITED STATES SENATE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

HOWARD W. CANNON, Nevada, *Chairman*

WARREN G. MAGNUSON, Washington  
RUSSELL B. LONG, Louisiana  
ERNEST F. HOLLINGS, South Carolina  
DANIEL K. INOUYE, Hawaii  
ADLAI E. STEVENSON, Illinois  
WENDELL H. FORD, Kentucky  
JOHN A. DURKIN, New Hampshire  
EDWARD ZORINSKY, Nebraska  
DONALD W. RIEGLE, Jr., Michigan

JAMES B. PEARSON, Kansas  
ROBERT P. GRIFFIN, Michigan  
TED STEVENS, Alaska  
BARRY GOLDWATER, Arizona  
BOB PACKWOOD, Oregon  
HARRISON H. SCHMITT, New Mexico  
JOHN C. DANFORTH, Missouri

AUBREY L. SARVIS, *Staff Director and Chief Counsel*  
EDWIN K. HALL, *General Counsel*  
DOUGLAS R. ANDERSON, *Staff Counsel*  
MALCOLM M. B. STERRETT, *Minority Staff Director*  
GERALD J. KOVACH, *Minority Staff Counsel*

## CONTENTS

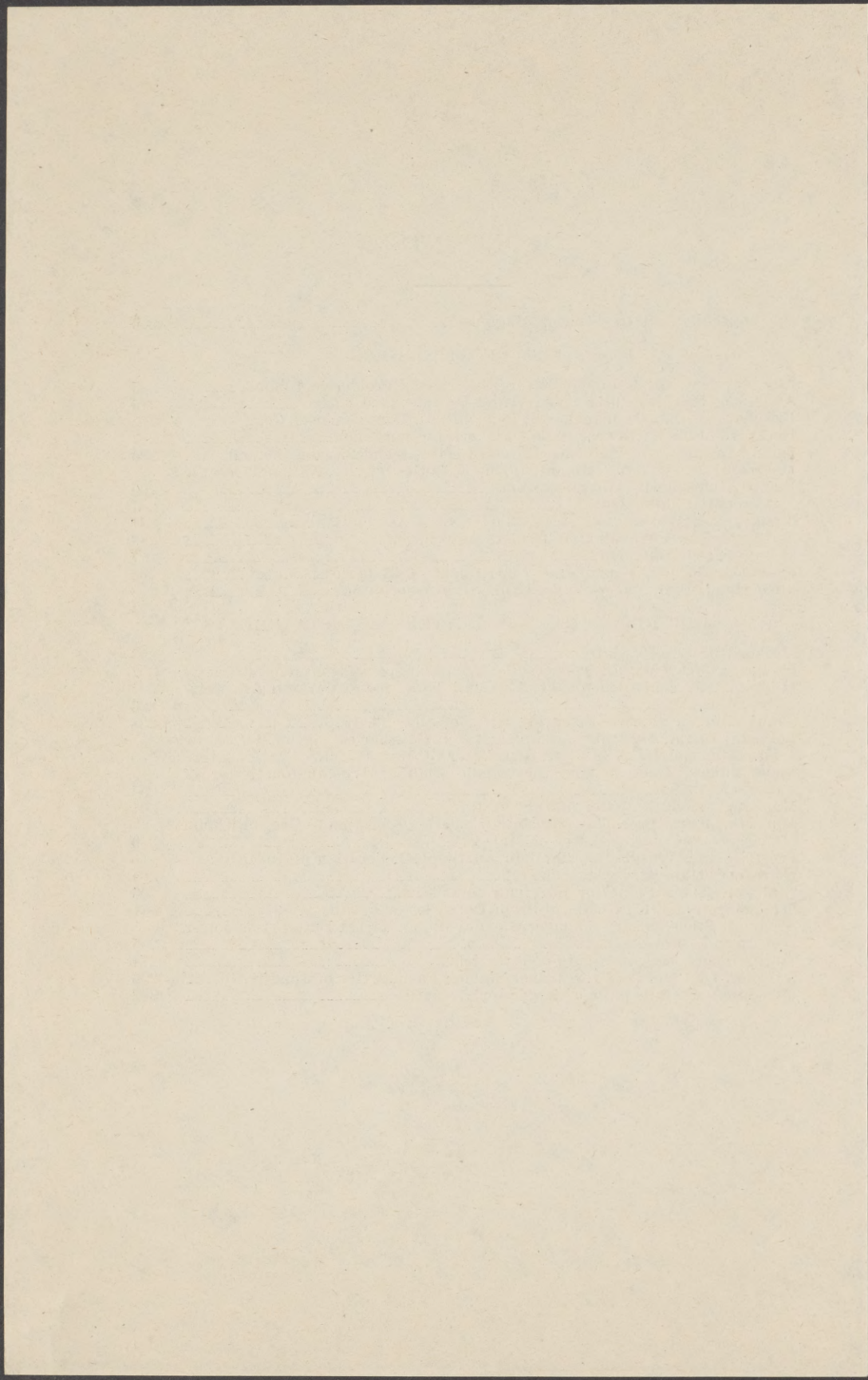
Opening statement by Senator Magnuson-----	Page 263
--	-------------

### LIST OF WITNESSES

Ady, Clement, the Columbia River Fishermen's Protective Union-----	285
Anderson, Paul L., Purse Seine Vessel Owners Association-----	276
Freeman, Harlan G., manager of aquaculture, Weyerhaeuser Co-----	270
Heckman, Jim, Northwest Indian Fisheries Commission-----	282
Judkins, Chuck, president, Northwest Steelhead and Salmon Council-----	285
Mahnken, Dr. Conrad, National Marine Fisheries Service, National Oceanic and Atmospheric Administration-----	265
Prepared statement-----	267
Manary, Ed, Washington State Charter Boat Association-----	281
Mathews, Steve, Washington Trollers Association-----	286
Prepared statement-----	287
Sandison, Gordon, Washington Department of Fisheries-----	263
Sutherland, Phil, Puget Sound Gillnetters Association-----	278

### ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

Heckard, Calvin W., letter-----	293
Hickey, Charles W., Jr., concerned citizen and sport fisherman, letter----	302
Hudson, Bob, general manager, All Coast Fishermens Marketing Associa- tion, Inc., letter-----	293
Jaqua, Jon V., Siuslaw Fisheries, letter of June 19, 1978-----	298
Leitzell, Terry, Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration, letter of May 12, 1978-----	289
Lone, James, chief Poggie, the Poggie Club of Washington, letter of June 7, 1978-----	294
Manseth, Arnold E., letter of July 10, 1978-----	301
Manseth, Karl, president, Siuslaw Fisheries, chairman, Oregon Chum Growers Association, letter of June 21, 1978-----	300
Prest, Jackie, Washington Trollers Auxiliary, Federation of Independent Seafood Harvesters, statement-----	304
"Salmon—Their Fight for Survival," article-----	303
Schoening, Peter K., Chemical-Proof Corp., letter of July 9, 1978-----	301
Seymour, Steve, fishery manager, Lummi Indian Tribal Enterprises, letter of June 7, 1978-----	295
Status report, Oregon Aqua-Foods, article-----	274
Swecker, Dan and Debby, Swecker Salmon Farm, letter of June 10, 1978--	296
"Washington State Salmon Egg Supply," article-----	302



# AQUACULTURE ORGANIC ACT OF 1978

TUESDAY, JUNE 6, 1978

U.S. SENATE,  
COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION,  
*Seattle, Wash.*

The committee met at 10:30 a.m. in room 815, Federal Courthouse, Seattle, Wash., Hon. Warren G. Magnuson presiding.

## OPENING STATEMENT BY SENATOR MAGNUSON

Senator MAGNUSON. The committee will come to order.

Yesterday, as you know, we had a long hearing on many phases of the fishing problems. Today we are going to receive testimony on the aquaculture bill. Actually, there are three bills pending in the Senate Commerce Committee which affect this particular problem.

The bills set forth generally the same objectives. They coordinate, or attempt to coordinate, aquaculture activities, and provide various incentives for private development.

While the committee was considering the bills, we received word from several fishery groups here in the State regarding the purpose of some of the bills. The introduction of the bills doesn't necessarily mean they will pass. Actually, it's a working paper, and we leave it open for hearings and suggestions from people as to what they think should be in the bill. We want to hear from all interested parties.

I have to leave at 11:30 for a longstanding engagement, so if we don't finish this morning, we can come back this afternoon. I think most of the witnesses are all going to talk about the same thing; therefore, to avoid repetition, I hope you will be brief.

I have as my first witness the Director of the Department of Fisheries, Mr. Gordon Sandison.

## STATEMENT OF GORDON SANDISON, WASHINGTON DEPARTMENT OF FISHERIES

Mr. SANDISON. Thank you, Senator.

Senator MAGNUSON. Sorry you couldn't be here yesterday; however, Mr. Wright did a very good job for you and expressed your opinions very well. It was a very interesting hearing as it covered the whole gamut of the fishing problems.

Mr. SANDISON. Thank you. I was burying an old friend yesterday.

Mr. Chairman and members of the committee, my name is Gordon Sandison. I'm director of the Washington State Department of Fisheries.

Basically, we are pleased that the potential value of aquaculture is being recognized in the United States of America. The State of Washington has, of course, been heavily involved in aquaculture for many years, as exemplified by our salmon culture program dedicated to the enhancement of the public capture fisheries. This program has long been financed through the State's general tax fund, although recent action by our State legislature has initiated a new program providing for a massive increase in salmon aquaculture facilities financed by user fees. This additional effort, together with enhancement resulting from a proposed settlement being prepared by the President's Task Force on Northwest Fisheries, will add enormous numbers of young salmon to our ocean pastures for harvest by our public fisheries.

Obviously, as with any other pasture, the capacity of the ocean is finite. Although we believe that salmon can at least be restored to their historical abundance, these limitations are currently unknown. We do know that returns on public investments in salmon production will decrease if carrying capacity is approached or exceeded. This could result from the addition of many more foraging salmon through the efforts of private sea ranchers.

Some additional changes could arise from private salmon sea ranching. Included among these are the possible impacts on those participating in the public fisheries due to portions of "treaty shares" harvested by sea ranchers as well as the probable increase in the cost of salmon enhancement sites resulting from private and public competition. On the other hand, there would probably be added an influential interest of a new industry in maintaining a favorable environment for salmon, as well as cost-saving salmon aquaculture innovations resulting from pressures unique to private enterprises. The desirability of these various impacts clearly depends on one's perspective.

However, in view of the State legislature's reluctance to pass conservative private sea-ranching legislation during the past two sessions, the very delicate situation that now exists among the various user groups, and the massive new salmon enhancement programs underway, we caution Congress to make sure that its actions are consistent with those of the State of Washington, the President's Regional Task Force on Northwest Fisheries, and the critical needs of the users of our existing public salmon resource.

Thank you.

Senator MAGNUSON. Generally, I think you've answered the question I have. I was going to ask what potential conflicts you see between the so-called private ocean ranchers and the State's public enhancement program.

You suggest that there might be a real potential for competition for salmon, for example; is that correct?

Mr. SANDISON. Correct.

Senator MAGNUSON. The facility sites are very important, aren't they?

Mr. SANDISON. Very important.

Senator MAGNUSON. There are only so many of them.

Mr. SANDISON. Yes; and as we attempt to obtain these sites now because of the possibility of it becoming an aquaculture setup, the

people are refusing to let go even marshlands that they would have sold before to anyone.

Senator MAGNUSON. I don't think any of the legislation intended to get into the matter of sites. Specifically, we have to be consistent with State laws and State control. We want to help you financially where the State had agreed upon a program. That is the general thrust of the bills.

Mr. SANDISON. Yes.

Senator MAGNUSON. Of course, that also applies to the 49 other States. We've become involved in the programs that have been carried on by the Department of Agriculture for many years, building farm ponds, which have been very successful inland, but these bills extend the jurisdiction, or at least move out into the saltwater area, and that's where you have the problem.

There is, frankly, an argument between NOAA and the Department of Agriculture—I think you've heard about it—regarding who's to take over the matter.

Now, what is the experience of your counterparts in Oregon regarding ocean ranching?

Mr. SANDISON. The director of the Oregon department, Dr. Jack Donaldson, who is a very capable biologist, was, prior to his being director, involved in that, and he has given us some pretty realistic expectations, and as yet—if I read Jack correctly—there is still a lot that they are going to find out and they also have the problem of how many cows can that pasture stand out there?

Senator MAGNUSON. The matter of sites is very important and very sensitive matter, is that correct?

Mr. SANDISON. That's correct.

Senator MAGNUSON. All right. Thank you very much, Gordie.

Now, Mr. Mahnken of the National Marine Fisheries Service, Dr. Conrad Mahnken. Glad to hear from you, Doctor.

#### STATEMENT OF DR. CONRAD MAHNKEN, NATIONAL MARINE FISHERIES SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Dr. MAHNKEN. Senator Magnuson, I'm with National Marine Fisheries Service, an agency of NOAA, and my purpose today is to outline NOAA's efforts and role in sea ranching in the Pacific Northwest; that is, in Washington, Idaho, Oregon, and Alaska.

NOAA is active in both research and development of aquatic culture systems and directly supporting the production of salmon at public hatcheries. Established farming exists in the Pacific Northwest not only for salmon but for trout, clams, and oysters, the two major industries being private oyster production and public salmon hatcheries. NOAA is directing most of its efforts, however, toward the salmon.

Senator MAGNUSON. I think it ought to be clear that NOAA and your division are interested in the public hatcheries and not in private hatcheries.

Dr. MAHNKEN. That is right.

Senator MAGNUSON. You have nothing to do with private hatcheries?

Dr. MAHNKEN. No; we have no direct link to private hatcheries at this point.

Senator MAGNUSON. And we wouldn't give you any money for it to begin with.

All right. Go ahead.

Dr. MAHNKEN. As you mentioned, salmon and steelhead hatcheries in the Pacific Northwest is where most of NOAA's support effort is going. These hatcheries are presently releasing about over 300 million fish annually to the public fishery.

There are two agencies within NOAA that share the responsibility for aiding these public hatcheries. They are the National Marine Fisheries Service and the national sea grant program, with activities primarily in the National Marine Fisheries Service located in Seattle with Northwest Fisheries Service and major sea grant activities at Oregon State University and the University of Alaska and the University of Washington here, but NOAA is also in charge of mitigation moneys which are allocated primarily to the hatcheries in the Columbia River in Washington, Oregon, and Idaho.

The majority of these funds are directly applied to the operation, maintenance, and upgrading of hatcheries in the Columbia River.

NOAA presently spends about \$6.8 million a year, of which 70 percent goes to the direct support of hatcheries, the rest of the money going primarily to research and advisory services within the national sea grant program.

I would emphasize here that commercial sea ranching exists today only because of the technical background developed over the past 100 years by State and Federal agencies and their public hatcheries. For this reason I feel it's a mistake to relate our concept of ocean ranching strictly to the private sector.

The concepts and philosophies as well as the technologies for public hatcheries and commercial sea ranching is essentially identical. In some respects, it is unfortunate that a single term is not used to describe both of these systems, because when opposition is voiced against sea ranching, it often carries an unconscious indictment against research efforts which apply to our public hatcheries.

Thus, when NOAA conducts research and development into, say, marine net pen culture and a commercial venture results then NOAA is criticized for aiding industry, despite the fact that the Washington Department of Fisheries also uses this technology for enhancement of recreational fisheries in the south Puget Sound.

Similarly, when Federal legislation is proposed for aiding aquaculture, the fishing community opposes it because aquaculture has come to mean in this area private commercial ranching.

You asked the question a little while ago, Senator, about Oregon, the State of Oregon. Maybe I could just fill you in quickly as to where sea ranching is legal and where it is not legal.

Alaska allows private nonprofit aquaculture, but only to enhance the fisheries. The State is providing long-term low-interest loans primarily to fishermen's co-ops and Native American groups. The projects are allowed to sell returning fish, but are only supposed to make enough money to sustain their operation, so in Alaska the State wholeheartedly supports sea ranching on a nonprofit basis.

Canada and Washington do not presently—

Senator MAGNUSON. If a group of fishermen got together in a non-profit cooperative, and wanted to go into some kind of ranching, could that be allowed?

Dr. MAHNKEN. That is allowed.

Canada and Washington do not presently allow private salmon ranching; saltwater net pen rearing or sea farming is allowed in both Canada and Washington.

Oregon and California both allow salmon ranching for profit.

It is accurate to say that the whole concept of sea ranching has become a highly emotional issue, an industry that's already fraught with controversy with what is conceived as even further constraints.

Senator MAGNUSON. You're talking about private sea ranching?

Dr. MAHNKEN. Yes; I'm talking about private sea ranching now.

There is something ingrained in our thinking about the common property nature of free swimming fish in public waters. The idea that inside of some boundary, part of these fish ought to belong to a private corporation threatens tradition.

Today, fishermen have some control over public hatcheries, and they feel their role would be diminished with big industry entering into production.

It is interesting to note that in Alaska sea ranching is nowhere as controversial as in Washington and in Oregon, where its major proponents are large corporations. Nevertheless, the concept in both those areas is the same, the biological technical concept.

Senator MAGNUSON. You have an interesting figure here. In 1976 three private rearing facilities were operating in Oregon and California, and as I recall, one of them was specified by a special law.

They release less than 1 percent of the fish from the private hatchery—that is, the public hatchery, less than 1 percent.

Dr. MAHNKEN. Right.

To follow up on that point, if you look at projections—

Senator MAGNUSON. And this is only for the three in Oregon and California where it's allowed.

Dr. MAHNKEN. There are presently about a dozen permits issued in Oregon, people gearing up.

Senator MAGNUSON. That will up it considerably, won't it?

Dr. MAHNKEN. That will up the projections for 1990 to about 10 percent for the total release of public hatcheries.

Senator MAGNUSON. All right. We'll put your statement in the record in full, and we appreciate this information.

[The statement follows.]

STATEMENT OF CONRAD MAHNKEN, OCEANOGRAPHER, NATIONAL MARINE FISHERIES SERVICE, NORTHWEST AND ALASKA FISHERIES CENTER, COASTAL ZONE AND ESTUARINE STUDIES DIVISION, NOAA, SEATTLE, WASH.

#### INTRODUCTION

My purpose today is to outline NOAA's efforts and role in sea ranching in the Pacific Northwest, that is in Washington, Idaho, Oregon, and Alaska.

NOAA has been active in both research and development of aquatic culture systems and in directly supporting the production of salmonids at public hatcheries since the NMFS became a part of NOAA in 1971.

Established farming exists in the Pacific Northwest for salmon, trout, clams, and oysters, with the two major industries being private oyster production and public salmon hatcheries. The potential exists for greatly increasing the production of these species as well as producing scallop, marine shrimp, crab, various

finfish, and marine algae for direct or indirect human consumption. Although NOAA is directing some of its efforts towards these other species, most of its efforts have been directed towards the salmonids because of the obvious economic importance of these fish.

The salmon and steelhead trout hatcheries of the Pacific Northwest and the most highly developed and technically sophisticated aquatic culture systems in the world. The hatcheries have been developed in large part to enhance declining natural runs resulting from dam construction and loss of natural habitat. These hatcheries have enjoyed unparalleled success in providing fish for a large segment of the U.S. salmon fishery. Releases now average more than 300 million fish annually. These massive releases of juvenile salmon and steelhead trout are presently justified by favorable benefit-cost comparisons. For coho and fall chinook salmon, the two principal commercial species, these ratios are 7:1 and 4:1 return respectively for each federal dollar invested.

#### NOAA'S ROLE IN RESEARCH AND OPERATION OF ANADROMOUS SALMONID HATCHERIES

Two agencies within NOAA share the primary responsibility for aquaculture, the National Marine Fisheries Service (NMFS) and the National Sea Grant Program (NSGP). NMFS research activities are centered in the Northwest and Alaska Fisheries Center with active salmonid aquaculture programs at the Auke Bay Laboratory in Juneau, Alaska and the Manchester Field Station on Puget Sound, Washington. Major NSGP research activities are located at Oregon State University and its Marine Science Center at Newport, Oregon; at the University of Alaska; and at the University of Washington and its field station at Big Beef Creek on Hood Canal, Washington.

Mitigation monies which are allocated to Washington, Oregon, and Idaho for the operation of Columbia River hatcheries are channeled through the Environmental and Technical Services Division of NMFS in Portland, Oregon. The majority of these funds are applied directly to the operation, maintenance, and upgrading of mitigation facilities on the Columbia River. Authorization for these expenditures is a result of the Mitchell Act. The value of fish from the 28 NOAA-funded facilities to the Pacific Coast sport and commercial fisheries is estimated at \$33 million annually.

Present annual expenditures for aquaculture in the Pacific Northwest and Alaska by NOAA are as follows:

	<i>Thousands</i>
1. Direct NMFS funding to state agencies for operation, maintenance, and upgrading of public hatcheries on the Columbia River and its tributaries <sup>1</sup> .....	\$4, 250
2. NMFS operational improvement studies for hatcheries .....	480
3. NMFS research and development for salmonids .....	1, 201
4. NSGP research and development for all species (approximately 1/2 is for salmonids) .....	763
5. NSGP extension and education services .....	99
Total NOAA expenditures .....	6, 793

<sup>1</sup> NOAA and its predecessor agency, the Bureau of Commercial Fisheries, have invested a total of \$26,000,000 over the years in modernization of Columbia River hatcheries which have an estimated current replacement value of \$75,000,000 to \$80,000,000.

NOAA's efforts in salmonid culture are aimed primarily at the development of marine and freshwater artificial propagation systems for use by public management agencies and will probably continue to emphasize these aspects in the near future.

NOAA research activities for salmonids in the Pacific Northwest & Alaska can be divided into six categories:

1. Studies on identification, control, and prevention of major diseases affecting hatchery and pen-reared salmon and trout.
2. Releasing coho salmon smolts, and pink and chum salmon fry for evaluating ocean ranching in selected Alaska locations.
3. Consulting and advising the State of Alaska, salmon processors, fishermen native corporations, and legislative committees on various aspects of gravel incubator hatcheries, pen-rearing systems, and ocean ranching for salmon.
4. Selective breeding programs with various stocks of Pacific salmon to produce strains best suited for culture efforts.

5. Determining nutritional requirements for cultured species and developing cost-effective feeds which will satisfy their nutritional need.

6. Development of physiological and pathological measures for determining the quality of smolts released from public hatcheries and how this relates to adult survival.

I would emphasize here that commercial sea ranching exists today only because of the technological background developed over the past 100 years by state and federal agencies in their public hatcheries—primarily in Washington and Oregon. For this reason, I feel it a mistake to relate our concept of ocean ranching strictly to the private sector.

The concepts and philosophies as well as technologies for public hatcheries and commercial sea ranches are essentially identical. In some respects, it is unfortunate that a single term is not used to describe both systems because when opposition is voiced against sea ranching, it often carries an unconscious indictment against research efforts which apply to our public hatcheries. Thus, when NOAA conducts research and development into say marine net-pen culture, and a commercial venture results, then NOAA is criticized for aiding industry despite the fact that the Washington Department of Fisheries also uses this technology developed for enhancement of recreational fishing in Puget Sound. Similarly, when federal legislation is proposed for aiding "aquaculture" the fishing community opposes it because salmon aquaculture has come to mean private, commercial sea ranching, despite the inclusion in the legislation of aid to public hatcheries.

In its broadest definition, aquaculture should include any activity of man that directly aids adult returns—including public hatcheries; management strategies for wild stocks; and other enhancement or rehabilitation schemes (including ocean ranching).

#### PROSPECTS FOR COMMERCIAL OCEAN RANCHING

How have the Pacific Coast states and Canada viewed increased artificial propagation of salmon? All states and Canada have taken a biologically optimistic view. All have projections for increased artificial production of salmon.

But as regards private sea ranching, the vote seems to be split. Alaska allows private nonprofit aquaculture, but only to enhance the fisheries. The state is providing long-term low interest loans primarily to fishermen's coops and native-American groups. The projects are allowed to sell the returning fish, but are only supposed to make enough money to sustain their operation.

Canada and Washington do not allow private salmon ranching. Saltwater net-pen rearing for profit is allowed. However, if any fish are released or escape from private facilities, the fish become public property. The private company cannot harvest the returning adults.

Oregon and California allow salmon ranching for profit. California is being very conservative with private operations; one farm operates under special legislation on a test basis.

Opposition to sea ranching can be divided along political and biological lines. It is not my place today to dwell on these issues. However, it is accurate to say that the whole concept is a highly emotional issue that hits an industry already fraught with controversy, with what is conceived as even further constraints. There is something ingrained in our thinking about the common property nature of free swimming fish in public waters. The idea that inside of some boundary part of these fish suddenly belong to a private corporate grant threatens tradition. Today fishermen have some control over public hatcheries, and they fear the role will be diminished with big industry entering into production. It is interesting to note that in Alaska sea ranching is no where as controversial as in Washington and Oregon where its major proponents are large corporations.

#### PROSPECTS OF OCEAN RANCHING

What is the present status and potential of sea ranches and their likely contribution and impact on public hatcheries and a free enterprise fishery? Perhaps some background on releases of salmon and steelhead trout would broaden your prospective. As I indicated earlier, in 1976, 151 public artificial rearing facilities on the Pacific Coast released near 300 million salmon and steelhead trout. The facilities (hatcheries, ponds, and saltwater net-pens) are located in Alaska, British Columbia, Washington, Idaho, Oregon, and California.

In 1976, three private rearing facilities in Oregon and California made releases of 1.6 million salmon, less than one percent of the releases from public hatcheries in Washington, Oregon, and California.

These figures describe what is presently happening—but what is projected for the future? Private hatcheries in Oregon (there are about a dozen licensed sea ranchers) are projecting releases of 261 million chinook, coho, and chum salmon. The one California facility is projecting future releases of 1 to 2 million coho salmon. How about future releases from public hatcheries? Projections from Alaska, Canada, Washington, Idaho, Oregon, and California are for the release of 2.6 billion salmon by 1992.

The biological ramifications of these massive releases are completely unknown. One hypothesis argues that the capacity of coastal waters to grow certain species and stocks of salmon is being approached and that releases of additional young fish will not result in larger populations of harvestable adults. Evidence in favor of this hypothesis revolves around the observation that the harvest of coho salmon has not increased in recent years despite increased releases of juveniles from hatcheries. However, the fact of the matter is that no sound data are available supporting an argument for or against a limit to ocean carrying capacity.

In conclusion, NOAA does not view commercial sea ranching as a serious threat to the existence of publicly supported hatchery systems in Oregon, Washington, and Idaho based on total projected releases. Nor is it a threat in Alaska where few hatcheries presently exist and where private nonprofit sea ranching is considered as partial replacement of public salmon hatcheries.

The fact of the matter is that commercial sea ranching, if properly controlled, can make significant contributions to the commercial catch without the expenditure of federal or state tax dollars, allowing the state agencies to concentrate on the enhancement of seriously declining wild stocks. Herein lies NOAA's major interest—i.e., the development of the most cost-effective production systems for salmon and steelhead trout and the continued availability of this high quality fisheries product for the American fisherman and consumer. The wise management of these new systems will tax the innovation of fishery managers for decades to come with the major problems being common to both public and private hatcheries.

Senator MAGNUSON. Our next witness is Mr. Harlan Freeman.

**STATEMENT OF HARLAN G. FREEMAN, MANAGER OF  
AQUACULTURE, WEYERHAEUSER CO.**

Mr. FREEMAN. Thank you. My name is Harlan Freeman, and I'm manager of aquaculture for the Weyerhaeuser Co. I'm also president of Oregon Aqua-Foods, a wholly owned subsidiary of Weyerhaeuser Co., engaged in salmon ranching in Oregon.

You should also understand that Weyerhaeuser operates a shrimp farm in Florida.

Salmon ranching is rearing, releasing, and recatching salmon by private individuals and corporations. Until recently, this has been practiced only by the public sector, the State and Federal hatchery system.

Salmon ranching is expensive and risky. For those reasons, salmon ranchers need the support embodied in national aquaculture legislation. At the same time, the benefits to society of private salmon ranching for profit are manifold.

Salmon ranching benefits all interest groups—the sport fishermen, the commercial fishermen, the ocean rancher, and the consumer. Salmon ranchers buy salmon eggs from the public agencies, thus helping them with their budget problems; hatch the eggs, rear the small salmon and release them, increasing the catch of the sport and commercial fishermen, and also increasing the tax return to the public agencies through catch-and-yield taxes paid on those salmon. Ranchers finally recapture quality salmon for consumption on the tables of the American con-

sumer. Thus, salmon ranching means more salmon at no cost to the taxpayer.

Private salmon ranching, because of its benefits to all the interest groups and concerns, should be part of this legislation. No other type of aquaculture that I know of benefits the entire industry from the fishermen through the processors, distributors, and finally, consumer.

I am in favor of national aquaculture legislation. For all the reasons outlined in H.R. 9370, in addition to the reasons covered in the testimony on that legislation as documented in the Congressional Record, we favor aquaculture legislation. The time for aquaculture has arrived, and it behooves our Congress as well as our President to recognize aquaculture for the first time in the history of our country as a vital force that has the potential to provide wholesome food to our citizens and those of other nations, to help with our balance of payments, to provide jobs and other economic developments, and finally, to provide high quality protein in a more energy-efficient way than the traditional fish hunting of the past.

Given the recognition in Congress that the time of aquaculture has arrived, a number of pieces of legislation are presently in the Senate. The bills differ in many respects, and I won't go into them individually but I will indicate conceptually and philosophically the concepts that our company feels should be embodied in aquaculture legislation.

The principal need of aquaculture at the present time is knowledge. I am talking about research and development in nutrition, genetics, management systems, bioengineering, and disease control.

This industry has progressed to its present point partly due to the research efforts under Sea Grant, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and, to some extent, the Soil Conservation Service under the Department of Agriculture. I feel that such research in the past has been largely very productive and that it should be continued at higher levels.

We feel future research by these agencies should be coordinated. Duplication of effort must be avoided. Research programs that reinvent the wheel must be eliminated. The research efforts must be focused on those 5 or 10 species that consumers are willing to buy and that aquaculturists are able to produce.

In that way, maximum benefit can be achieved with the least cost. In order to accomplish those research goals, a lead agency should be selected and representatives of that agency, along with those from the sister agencies which at present or in the future are likely to be engaged in aquaculture programs, should develop a national aquaculture plan.

Consistent with the developed plan, the aquaculture program should then be conducted by the respective Federal agencies. As I stated earlier, duplication of effort and quarreling over turf should be avoided as much as possible.

In development and administration of the national aquaculture plan, input should be solicited from the various industry groups such as the National Fisheries Institute, the Catfish Farmers of America, the U.S. Trout Farmers Association, the American Salmon Growers Association, and the National Shellfish Institute, among others.

If, as a result of national aquaculture legislation, research and development needed by aquaculture is funded, what else needs to be done?

An extension of the R. & D. should be pilot programs. Such pilot programs should be carefully and judiciously selected, requiring matching funds with the aim of ending up with demonstration projects that have meaning.

As an example here would be aquaculture utilizing waste heat from power-generation plants. A variety of small studies have been completed or partly completed over the years, but no projects of any magnitude, say, above 40 acres in size or producing more than one-half million pounds per year, has ever been built. The risks are too great; in some cases the technology just does not exist.

The economic payoff from utilization of powerplant waste heat for aquaculture has tremendous potential, and this committee could provide great assistance for aquaculture by exploring and removing those regulatory barriers not necessitated by public safety, to use waste heat.

Other barriers are institutional; among them the Delaney amendment which essentially precludes utilization of waste heat from nuclear powerplants for aquaculture aimed at human consumption.

A goal of a national aquaculture plan could be to crack the impasse in order to allow utilization of that wasted energy to produce food energy for people.

Constraints on orderly development of aquaculture tend to be political and administrative, according to the National Academy of Sciences. We support the recommendations of the report of the committee on aquaculture of the National Academy of Sciences, entitled "Aquaculture in the United States, Constraints and Opportunities."

The other aspects of the present legislation and those which cost the major amounts of the enumerated expenditures are the loan guarantees, the disaster loans and the disaster insurance. We generally are not in favor of such loans and guarantees; we would not make use of them, and we feel the dollar magnitude of these programs should be dramatically reduced. Such reduction ought to make the legislation much more palatable to the administration.

In summary, we support your efforts to pass national aquaculture legislation. We feel the time is ripe. We feel the legislation should deal with the interagency cooperation and avoid duplication of effort, and that the primary thrust should be on research and development. We support the National Academy of Sciences study, and we feel that if cost of this legislation is of significant concern, that top priority should be given to research and development.

I would like to submit for the record the 1978 status report of Oregon Aqua-Foods.

Senator MAGNUSON. Very well, we will insert it into the record.

I think the record should show that aquaculture involves all kinds of other things including salmon. There is great support in the gulf for shellfish, as well as on the east coast and New England, but we get to a matter here where salmon is different. It is an unusual stock and has many, many problems.

Some farmers have been able, with 2 acres of water, to raise more protein for their own use than they do on 20 acres of land. It's a broad subject.

But today, of course, we're concerned more with aquaculture as it pertains to salmon. I don't think there is any particular opposition to research in the other fields.

Now, the State of Washington has recently rejected legislation legalizing ocean ranching, and all three of the bills provide for State control and do not except any Federal law. The State can pass any restriction they wish, and as pointed out by Mr. Sandison and Dr. Mahnken, Washington and Canada have restrictions; Oregon and California do not.

Now, the State of Washington has embarked on a \$33 million public salmon enhancement program. If private ocean ranching should be legalized in the State of Washington, what impact would it have on this program, in your opinion?

Mr. FREEMAN. In my opinion, Senator, the two things that are customarily talked about are competition for sites and competition for eggs. Specifically, the proposed legislation in Washington restricted ranchers to saltwater or to tidal influence.

As far as I know, the Department of Fisheries has no designs on any sorts of sites that involve that sort of land. I've studied their salmon enhancement plan. As far as I can tell, there is no competition for sites.

The other thing one hears about is competition for eggs, and at present time the Washington Department of Fisheries has an egg allocation policy, and they're selling eggs to ranchers.

I think if you will study the Washington Department of Fisheries' records, and I'm talking about tables 2, 3, 4, and 7 in their report No. 30, going back over the past 14 years for the principal species chum, chinook, and coho salmon, the Department utilizes between 19 and 60 percent of the available eggs, so I really don't see competition for eggs as an issue.

Senator MAGNUSON. Well, there are groups here today that will strongly disagree with you on that, and they suggest that ocean ranchers, or private ocean ranchers, will eventually try to restrict the fishing in Oregon and enhance their own return. How do you respond to that?

Mr. FREEMAN. I guess I've heard that argument many times, and that argument is always described as our vast political power. I think it's an insult to you, sir, and I will say beyond that that—

Senator MAGNUSON. You can't insult me. I'm a battle-scarred veteran.

Mr. FREEMAN. We've been trying to get ranching passed in this State for the past 5 years, and we haven't had much success, so I don't see any evidence of vast political power.

Senator MAGNUSON. What would be the effect on private ocean ranching for profit if it were excluded from the bill?

Mr. FREEMAN. I think the principal effect would be—

Senator MAGNUSON. I'm talking about salmon.

Mr. FREEMAN. I understand that. I think such exclusion would be a mistake. The principal reason, is that it sets a very dangerous precedent. There have been complaints about lobster farming in Maine, and there are complaints about abalone farming in California, because of pressure of commercial fishing interest groups. If we start excluding

certain species from the national aquaculture legislation, in reality we probably should not have that legislation.

Senator MAGNUSON. All right. Thank you very much.  
[The article referred to follows:]

#### STATUS REPORT, OREGON AQUA-FOODS

Oregon Aqua-Foods was started in 1972 with first ocean ranch releases in 1973. Weyerhaeuser acquired Oregon Aqua-Foods in August of 1975. Total releases since the beginning of Oregon Aqua-Foods as of May of this year are 3,553,682 salmon smolts. Three species, Coho, Chinook and Chum, have been released with Coho and Chinook salmon accounting for just under 90 percent of the releases.

Oregon Aqua-Foods has approximately 10 million salmon at the Springfield hatchery at the present time which will be released at Newport during the spring and summer of 1978. Almost all of these salmon are Coho.

Total adult returns to the saltwater facility at Newport number 6,880. Most of these, of course, are Coho since most of the releases have been Coho. Average length of returning Coho adults was 25" with weight of adults ranging from 6 to 10 pounds. For Chinook adults returning to Oregon Aqua-Foods, average length was 35" with average size of 22 pounds. These were a mixture of three- and four-year olds. In later years, as five-year olds begin returning, the average adult size will undoubtedly rise.

Oregon Aqua-Food's releases to date have contributed to the fishery. In its early years, Oregon Aqua-Foods used a half dorsal clip on Coho smolts. These fish were released in 1974 and adults recaptured by fishermen in 1975. Over 70 of these salmon were reported captured in the fishery with all reports being south of Newport, principally centered in the Coos Bay area. In later years, Oregon Aqua-Foods has used the coded wire tag such as is used by public salmon enhancement agencies. Tagged salmon have been captured in both Oregon and Washington with most again being reported south of Newport. On an overall basis, Oregon Aqua-Food Coho contributed more salmon to the Oregon fishery per zero smolt released than did the Oregon Department of Fisheries and Wildlife tagged Coho salmon. We think that such performance is outstanding given that Oregon Aqua-Foods is only just beginning with stocks of salmon that haven't yet been tuned in to the particular facilities and geography. Average length of the Coho captured in the fishery was 24" with average dressed weight between 5½ and 6 pounds. Round weight would be approximately 20 percent more than dressed weight.

Oregon Aqua-Foods releases zeros, that is Coho salmon that are only six months old and that have been accelerated by utilization of warm water in their hatchery phase. Such accelerated salmon produce fewer jacks than do the yearlings produced by nature and by the agencies growing salmon in the conventional manner. Jacks are generally less desirable in the sport and commercial fishery. Thus it appears that Oregon Aqua-Foods' accelerated zeros will produce proportionately more adults for recapture in the traditional fisheries than will conventional hatchery practice.

#### OCEAN RANCHING FACT SHEET

*Question.* Will ocean-ranching salmon depress the market?

*Answer.* No, ocean ranching entails considerable investment. Any marketing strategy to "dump" salmon or drastically reduce existing price levels lowers the return on that investment to uneconomic levels.

*Question.* How will ocean ranchers market their salmon?

*Answer.* Salmon is an international commodity with excellent markets in Japan, Europe and the United States. It is anticipated that ocean ranchers would sell large quantities of frozen salmon overseas. Since the return season is late fall, it can also be anticipated that a good fresh market exists in the United States at a period of time when little fresh salmon is available from other sources. Thus, ocean ranchers will not be competing with commercial fishermen in the fresh market or dock-side. U.S. exports of Pacific salmon have risen dramatically in recent years and in 1977 Japan alone imported 42 million pounds of Pacific salmon.

*Question.* Won't the increased salmon supply force prices down in this country?

*Answer.* No, an increased salmon supply offers new markets and promotional opportunities in the retail and institutional sectors. A more stable salmon supply will lead to increased restaurant use and frozen, prepared dinner makers can develop salmon lines confident of a steady supply. New product forms will also result such as frozen salmon loaf, extruded products and the like.

*Question.* Won't ocean ranchers release fish which trollers cannot catch?

*Answer.* Yes, many ocean ranchers plan to release chum salmon (in addition to coho and chinook). While chum salmon do not have as high a market value as coho and chinook, the cost of rearing and releasing them is considerably less. On a release weight basis, however, 90 percent of the smolts released will be coho and chinook and only 10 percent chum. The reason trollers catch few chum is that this particular species feeds primarily on small euphasid shrimp organisms and zooplankton and very little herring. With the proper technique, however, chum salmon can be caught with hook and line.

*Question.* What about genetically changing coho and chinook so they won't take a hook?

*Answer.* Coho and chinook gain about a pound a month while eating herring off the coast prior to returning. Any attempt to alter this natural feeding pattern could result in very low return percentages and fish of poor size and quality.

*Question.* Won't ocean ranchers attempt to change fishing seasons to provide for greater returns?

*Answer.* No, fishing seasons are set by state and federal agencies, not ocean ranchers. Seasons are established after public hearings and result from the need for adequate escapement of natural and state and federal hatchery runs to maintain adequate spawning for future enhancement. Thus ocean-ranched salmon, which spend some 18 to 48 months in the ocean, will increase the total available resource and take some the pressure off natural and hatchery runs.

*Question.* Can the ocean rancher document this contribution to the resource?

*Answer.* Yes, a certain percentage of salmon smolts the rancher releases are tagged. When these fish, which have the adipose fin clipped off to indicate the presence of the coded wire tag, are caught by sport or commercial fishermen, the snout containing the tag is forwarded to the appropriate agency (depending upon which state or country has landed). Based upon reported tags, an estimate can be made of the total contribution to the fishery. Analysis of tag returns from the 1977 season shows that private ocean-ranched salmon releases are contributing proportionally more to the catch by commercial and sport fishermen than are salmon released by the Oregon Department of Fish and Wildlife.

Senator MAGNUSON. Dr. Mahnken, are you still here? I think we should clear up the record on this one point, and you can answer it.

Would it be possible to manipulate either the genetics or the timing of the release of ocean ranch salmon so that they could not be caught by commercial or sports fishermen? Is this possible? I'm talking from a scientific standpoint.

Dr. MAHNKEN. Yes; I think in the case of timing of returns on the runs with existing fishing seasons, it is possible that you could have a run returning before and after the fishing season.

Senator MAGNUSON. Then we talked about the sites. Are the salmon that are recaptured at ocean ranching facilities as high quality as those caught by the fishermen?

Dr. MAHNKEN. The only experience I have to go on is what I have observed with Weyerhaeuser, down in Oregon.

Yes; in fact, the quality of the fish is very, very good, and equally as good as many of the commercially caught fish.

Senator MAGNUSON. What about the Manchester operation, Dr. Lindberg, he's raising the small ones for table use?

Dr. MAHNKEN. For table use; it's an entirely different product.

Senator MAGNUSON. That wouldn't be affected by this at all, would it? They don't go out to sea?

Dr. MAHNKEN. If some escape, they do get out of the pens, and then they are part of the public fishery.

Senator MAGNUSON. Thank you, Doctor.

Our next witness is Paul Anderson of the Purse Seiners.

#### STATEMENT OF PAUL L. ANDERSON, PURSE SEINE VESSEL OWNERS ASSOCIATION

Mr. ANDERSON. Thank you, Senator.

I am Paul Anderson, executive manager of the Purse Seine Vessel Owners Association. I'd like to comment on the proposed aquaculture legislation, the three bills which are before you.

Before I begin testimony, I would like to take this opportunity to express our appreciation for your coming to Seattle, so that our views may be considered. This is a very important matter and greatly concerns the users of the salmon resource of the State of Washington.

This is evidenced by the telegrams sent by many of the user groups to you and the other Congress committee members April 16 of this year.

Senator MAGNUSON. I was very pleased to get that telegram, not necessarily on this particular subject, but this is the first time in all the years we've been involved, that you all got together on something.

Mr. ANDERSON. There's a first time for everything, Senator.

One of the user groups that sent the telegram, the Purse Seine Vessel Owners Association, represents the approximately 300 purse seine vessel owners and operators who earn their living by fishing for salmon in Washington and Alaska.

We concur with the findings, purpose and policy set forth in the proposed legislation.

The seafood production in the United States needs to be increased. One excellent method of increasing this production is through private aquaculture. Congressional action promoting private aquaculture would certainly increase at a faster rate the national seafood production.

We do, however, have concerns of how private aquaculture of salmon would affect the salmon fishery in Washington State. The salmon fishery in Washington State faces the problems of inexact management and competition for salmon stocks for the available natural resources.

The fishery in the State of Washington is also confronted with the disastrous effects of the Judge Boldt decision. I am sure you are well aware of the effects of this decision and I won't dwell on its effects at this time.

One major point of the Judge Boldt decision, however, was—that I will mention, since it relates to salmon ocean ranching, is that the Judge Boldt decision declared that treaty tribes are "self-regulating."

In other words, currently in the State of Washington, the Department of Fisheries manages the noncommercial and recreational salmon fishermen while each tribe regulates its own fithermen. Hence, there is potential of approximately 20 management agencies regulating the utilization of one resource.

This has proven to be very disastrous as a practice. If ocean ranching was encouraged in the State of Washington and assisted by fund-

ing through your proposed legislation, it would add one more source of management complexity.

The tribes and the Department of Fisheries are striving to obtain uniform salmon enhancement guidelines to control the different agencies for rearing and releasing salmon.

Senator MAGNUSON. Well, Paul, I would like to clear up the record. When you mention my proposed legislation, I am just a conduit. This legislation had to come through the Commerce Committee. Although I believe in the general objectives presented, it is a broad piece of legislation. I don't reject any part of it, but it's not particularly my idea to begin with.

Mr. ANDERSON. Ok. I'm sorry if I made that inference.

Senator MAGNUSON. No; you didn't at all. It's got my name on it. I can't deny that.

Mr. ANDERSON. Without proper enhancement planning, it's evident that the stocks will clash with the biological behavior. There has to be one agency to set guidelines and principles and enforce the enhancement activities of salmon in the State of Washington.

At this point, introducing another source of salmon for ocean ranchers would further complicate the issue.

We hope through the task force efforts that there will be one agency setting the guidelines for this. To add another one right now would seem to us to be premature.

Senator MAGNUSON. That has to be cleared up.

Mr. ANDERSON. In 1977, the Washington State Legislature enacted a \$33 million salmon enhancement program. This program was supported and, therefore, will be funded by the commercial and recreational fishermen in this State through increases catch taxes and license fees.

The Washington State Department of Fisheries will institute the enhancement program by building hatcheries or salmon-rearing facilities. The department of fisheries is in the process of purchasing land with good fresh water supplies so necessary for productive salmon propagation.

It is our concern that if private industry were encouraged to enter into the salmon propagation endeavors they would add detrimental competition for the purchase of available land and water sites.

The department of fisheries also needs to most efficiently utilize all of the available salmon eggs for this new program. Again, private aquaculture would detrimentally compete for the limited salmon egg supply.

In view of these factors, the department of fisheries should be the sole agency responsible for production of salmon.

In a more technical aspect, the ocean ranchers claim that salmon eggs they will use to begin their hatchery operations will be the surplus eggs not needed by the department of fisheries. The department of fisheries through its enhancement programs has attempted to separate the timing of different runs of salmon to avoid competition between the stocks and overharvesting of mixed stocks. Through genetic selection, the department of fisheries has been capable of effectively separating many of these stocks. This is done by utilizing eggs from salmon that pass through the fisheries at the optimum time while discarding eggs from salmon that return at the wrong time. The discarded eggs are determined surplus and disposed of.

Hence, if the private aquaculture uses the surplus eggs, they will be adding back into the system the very portions of salmon stocks that the department of fisheries is trying to weed out of the fishery.

To allow this to occur, after extensive work that was previously conducted by the Department of Fisheries does not make sense. The commercial salmon fishermen are proud of the product they provide for the consumer market.

Salmon harvested at hatcheries have reached the point in their spawning migration where their flesh has begun to deteriorate and their skin has degraded to an unappealing appearance. Such salmon harvested by private aquaculturists at their hatcheries sold to the public as fresh salmon would, in a short time, downgrade the public's image of an otherwise fine product.

This may be contrary to Dr. Mahnken's statement but I think you have to compare the conditions in Oregon versus Washington where in Washington you have a major estuarine area in Puget Sound.

And in conclusion, we wholeheartedly support the concept of increasing the Nation's fisheries production by private aquaculture. However, due to the complexities that currently exist in Washington State salmon fisheries and due to the fact that a massive salmon production program is underway, we request that the proposed legislation be amended to exclude private salmon aquaculture in Washington State.

We certainly appreciate your consideration of our comments on this very important matter, and again, we very much appreciate your coming out to the State to hear our views.

Senator MAGNUSON. Legislatively, the bill does not examine or preempt State laws, so if you have an amendment that would exempt salmon in Washington State and if the State law, as I understand it, does not allow the private ranching now, we wouldn't need the amendment unless we change the interpretation of the preempting of State laws. But sometimes people differ on interpretations, and we probably should be specific about it. But then we get down to Oregon, and they allow it, so we'll have to do something about the situation there.

Mr. ANDERSON. Our concern is that someone mentioned previously the difficulties trying to get this legislation passed through the State legislature, I think it's been 5 years now, and with these available funds—

Senator MAGNUSON. That's down in Olympia?

Mr. ANDERSON. Yes; and with the available funds in this bill, it's going to get harder for us.

Senator MAGNUSON. Now, who is next? Phil, why don't you proceed?

#### STATEMENT OF PHIL SUTHERLAND, PUGET SOUND GILLNETTERS ASSOCIATION

Mr. SUTHERLAND. Senator Magnuson, I'm Phil Sutherland with the Puget Sound Gillnetters Association.

I first express appreciation on behalf of the Puget Sound Gillnetters for this opportunity to express our views, in this important matter, with its potential impact on our State salmon fishery.

It is with serious apprehension that the Northwest net fishermen regard their future. Opportunities to participate in this way of life so many of us have enjoyed for our lifetime are threatened from many directions.

Now comes before us yet another Government-considered issue that we view as a further menace to our existence. Our conception of what the establishment of private sea ranching facilities will mean to us are eventual extinction. Under the dire, current dire, condition of our court-castrated State fishery, it is beyond the scope of our imagination that any serious consideration would be given to that portion of the aquaculture bills that pertain to private salmon sea ranching here in the State of Washington.

In all the reams of articles and synopsis of how to solve our present fisheries dilemma, and indeed, between the slick covers of the recent 199-page task force proposal, it is left strangely unanswered.

But sooner or later it's got to be faced, to raise something other than paper fish, you must face an issue and come up with eggs and sperm. It's immaterial in the age-old argument of which comes the first, the chicken or the egg, that we use fish instead of chicken, but a stark reality lays it on us that to increase egg take for planned enhancement programs, present stocks of salmon will have to be enacted and less impacted from marketing for personal use, and utilized more for propagation.

Senator MAGNUSON. I'm hearing about this so-called egg shortage. I wonder if I shouldn't try to get the Federal participation in public hatcheries more. What about that? Gordon. I was thinking that we ought to be doing something about producing more eggs.

Mr. SANDISON. There is not enough.

Senator MAGNUSON. Does the State produce enough?

Mr. SANDISON. No; we are short of chum eggs at the present time, and as a result there is no surplus of chum eggs. We've had ocean ranchers and aquaculture people ask about it.

Senator MAGNUSON. Let's talk about this and see if we might be able to do something at that end, regardless of the bill, to enhance the production of more eggs. Would that be helpful for everybody?

Mr. ADY. I am Clement Ady. Senator, if there was less sale of eggs to private aquaculturists then we would have more eggs for the public utilization. Aqua-Foods in Oregon—

Senator MAGNUSON. We don't have any private sales in this State?

Mr. ADY. Oregon Aqua-Foods buys substantial Washington eggs.

Senator MAGNUSON. We have in the bill an authorization for increased egg production.

Mr. ADY. I see what you mean. I was thinking out loud. If there is a shortage, we ought to do something about it jointly.

Mr. SUTHERLAND. That's the only place we're going to point at, and I'm pointing this out as I continue and—

Senator MAGNUSON. Go right ahead.

Mr. SUTHERLAND. Open, well publicized, fairly administered programs in this direction certainly have endorsement of conscientious fishermen. In other words, enhancement programs. Their concern for their future has been well demonstrated by the past participation—

Senator MAGNUSON. Let me put this in the record. On page 13 of the bill, section 5, paragraph (3), "produce, under the authority of section 4(c) (4), and sell at cost seed stock for the priority aquatic species when privately produced seed stock is unavailable, unreliable \* \* \*".

That's in the bill. I just thought that should be in the record.

Mr. SUTHERLAND. Thank you, sir.

The fishermen's concern for their future has been well demonstrated by their past participation in self-instigated fish-rearing operations in Gig Harbor, Friday Harbor, Bellingham, plus the past voluntary proposed support of IPSFCC programs and on a poundage basis, and in assisting egg-taking operations without remuneration in the State hatcheries.

Under present impetus on acquiring eggs by reducing fish effort, hopefully by all parties, these enhancement goals, if acknowledged as practical, can nowise be reached with another monkey on our back such as the egg demands ocean ranching would create.

Three cycles or four cycles, 10, 12, 16 years, to attempt to rebuild Washington salmon runs, hopefully to their precivilization levels, a price must and will be paid, a price in dollars by us in reduced fishing time.

After 30 years of Puget Sound effort now at age 54, for sure, me and my fellow mature fishermen won't need ocean ranching demands to stretch that out any farther. Whether you hitch yourself as donkeys or elephants and whether you put the cart before or after us animals, the harness of ocean ranching won't fit commercial fishermen.

The egg acquisition issue is plain enough, but big business approach a safe journey home for their production is another facet for our prime concern. The previous State level legislation attempts to authorize this and the various method of fisheries have been prefaced by glowing terms of solicitous concern, for placing more fish in the sea for the general public welfare.

Weyerhaeuser—and I apologize for granting this accolade to only one interested party—has, of course, long been noted for its company policy of harvesting only to the profit point and forest products, then inviting open public participation in taking of timber, and Christmas trees. Facetiously intended, yes; naivete established, no.

Methods of propagation, positioning, and timing of runs all are State and Federal taxpayer financed technological development, and expertise must be utilized to its maximum for the benefit of the citizens who paid for it.

Lastly, if the *Boldt* decision has created one era that is favorable, it is a new awareness of how interrelated all user group efforts and activities are, and real progress toward consideration of equal resource access has occurred. Interestingly enough, all of our present operations are based on one concept. Our U.S. Supreme Court recently established that fish converted to property only when caught. That leaves no room in our State's waters for branded free-swimming private property.

More regulation rumbles, legislative battles, and court contests to establish special interest ownership we do not need.

I thank you again, Senator, for permitting us this opportunity here in Seattle.

Senator MAGNUSON. The State law doesn't allow it now.

Mr. SUTHERLAND. We're just doing our best to make sure it doesn't

happen, sir, in this particular direction, and we anticipate it could have been overriding.

Senator MAGNUSON. I said the State law doesn't do it now, and we want to be very careful that we don't preempt State laws in the broad bill. That distinction is very clear, as I told Paul, and we're making that clear now. The State doesn't allow it now.

Mr. SUTHERLAND. I understand that.

Senator MAGNUSON. I used to be in the State legislature, but I'm not now.

Mr. SUTHERLAND. My anticipation is where the Federal law might.

Senator MAGNUSON. Who is next?

Ed, do you want to add anything?

Ed Manary, for the record, Washington State Charter Boat Association. Go ahead.

#### STATEMENT OF ED MANARY, WASHINGTON STATE CHARTER BOAT ASSOCIATION

Mr. MANARY. Members of the committee, ladies and gentlemen, my name is Ed Manary, and I'm employed by the Washington State Charter Boat Association.

Like the others, Senator, I'd like to thank you for the opportunity to appear here today, and further thank you for the interest on your part in coming to Washington State to meet with the user groups on this subject.

Here in Washington State, ocean ranching is the second most controversial issue facing the salmon industry today. It ranks second only because we still have not found the solution to the treaty Indian fishing rights problem.

In order to clarify my testimony, I would like to preface my remarks by saying that our organization is not opposed to aquaculture per se. Instead, we are concerned with those sections of the bills which would allow ocean ranching—that is, the release and recapture of salmon by private industry—for the purpose of making a profit.

On the surface, ocean ranching seems to present an honorable objective, more fish in the water. However, at second glance it becomes obvious that there are many problems connected with the ocean ranching program, and that is what I would like to discuss with you today.

In order to be brief, I will paraphrase these, Senator, with your permission.

First of all, it has been mentioned, the treaty Indian problem. How are the fish to be released, and how do they fit into the division of a catch?

Second, as Mr. Sandison has pointed out several others, we are in the midst of a massive enhancement program. The competition for water sites is supreme. The coordination of the enhancement program is a necessity.

Third, there is a great deal of speculation, as has been pointed out by Director Sandison, as to the ability to raise fish in the ocean, the open ocean. It would seem to us that it would be best that we proceed in a reasonable manner.

And fourth, which has not been mentioned today, is that all of us at this table are greatly concerned by the activities we have seen in the

last couple of years in ocean ranching in Oregon, trying in many cases for all practical purposes, to circumvent the law for the purpose of obtaining chum eggs for the Oregon operation. It was touched on a little bit yesterday, Senator, the controversy that is fast coming between hatchery and wild fish in this State. Massive introduction by private enterprise into this area is going to precipitate that problem before we are ready for an answer.

And finally, our overriding concern is that if ocean ranching appears in this State, it is only going to be a matter of time down the road before we get to a point in the program of conflict between public and private resource. That we do not feel is in the best interest of the public resource, the producer groups, or the people of this State.

I would like to point out that the last two sessions of the State legislature, we have been able to barely overcome the efforts of private industry. If this bill is passed, as written, including ocean ranching, it is highly doubtful whether the user groups in Washington State will be able to further stall the efforts of private industry.

In closing, I would like to say we do appreciate the efforts of Congress see the needs of seafood in this country and protein needs of the world. We do not feel that the advent of ocean ranching in this State for salmon is in the best interests of any parties concerned.

Senator MAGNUSON. I see what you mean in your next to last paragraph. Unless we do something specifically in this particular bill, it might enhance the possibility of having some State legislation passed.

Mr. MANARY. I would prefer we did something to deenhance the possibility of this happening.

Senator MAGNUSON. I left a few things on the burner.

All right. What about Mr. Heckman, is he here?

#### STATEMENT OF JIM HECKMAN, NORTHWEST INDIAN FISHERIES COMMISSION

Mr. HECKMAN. Thank you, Senator. I'll try to make this quick, and give another speaker a chance to get on before you leave.

Like the others, Northwest Indian Fisheries Commission is a party to the telegram requesting this hearing, and we want to thank you for taking these special efforts and making yourself available today.

I am James L. Heckman, executive director of Northwest Indian Fisheries Commission, speaking in behalf of the commission and its 19 member tribes. The Columbia River Intertribal Fish Commission also concurs in this testimony.

The intention of H.R. 9370 is to establish and implement a national aquaculture policy and to encourage increased aquaculture development. The tribes support the general intent of this aquaculture legislation. They feel it is important—

Senator MAGNUSON. I can understand that, they have been engaged in it for some time.

Mr. HECKMAN. They feel it is important that the purpose of the bill—

Senator MAGNUSON. And I help them to get funds once in a while.

Mr. HECKMAN. I'm aware of that, and they are appreciated and they benefit everybody.

They feel, the tribes feel, that it's important that the purpose of the bill be amended to show that it will not alter existing fisheries and Indian treaty fishing rights. The tribes feel that ocean ranching, a form of aquaculture, for salmon and steelhead by governmental agencies, should be encouraged and permitted where the profits for such ventures are reinvested into the management of fisheries.

Precautions should be taken to insure that private ocean ranching will not adversely affect public production and harvest schemes established through comprehensive planning by Federal, State, and tribal governments. Private ventures should not be allowed which preempt selection of project sites and development by governmental entities, including tribes.

We note that section 5 of H.R. 9370 provides for the selling of seed stock by the Federal Government to private industry whenever private industry is otherwise unable to obtain seed stock. This is of great concern to the tribes.

In relation to salmon and steelhead, paragraph (A) (3) should be amended to say that "such sale will take place only after review by and in accordance with a plan that should include priority use of the egg supplies by the tribes and the State."

Since tribal governments have been recognized as having special treaty fishing rights which must be protected—

Senator MAGNUSON. Now, this section applies to seed stocks of all species. It isn't just salmon. It relates to shellfish, catfish, anything you say, it's all seed stock. We'll talk about making exemptions to it, but I wouldn't want to take that out. You want to eat some catfish once in a while, don't you?

Mr. HECKMAN. Obviously, the bulk of the people, those seated at the table, are concerned about salmon and steelhead, and this is what we're referring to mostly.

Since tribal governments have been recognized as having special treaty fishing rights which must be protected as a matter of law, the following changes to insure such recognition and status are suggested:

Section 4(a)—

Senator MAGNUSON. We will take a look at these suggested changes. We'll put them in the record, and I'll take a look at them.

Mr. HECKMAN. I didn't intend to read each one of them.

Senator MAGNUSON. All right.

Mr. HECKMAN. Except to note—

Senator MAGNUSON. I appreciate that. That's why we're having this hearing, to get suggestions.

Mr. HECKMAN. I just have three of them.

Senator MAGNUSON. Well, go ahead.

Mr. HECKMAN. Section 4(a) (1)—

Senator MAGNUSON. I can come back this afternoon, if you want me to.

Mr. HECKMAN. This will be brief. It provides for consultation with numerous governmental agencies. This section is deficient in that it does not provide for consultation with recognized Indian tribal governments which also have significant functions related to aquaculture, and I've suggested the language to you in my written statement.

Section 4(f) (1) of the act provides for consultation for the development of aquaculture development programs. For the same reasons

as above, federally recognized Indian tribal governments should be consulted in such development, and I suggest that in my testimony, the language.

The third one, section 7(a), provides for grants and contracting to certain entities. This section, as drafted, does not allow for direct grants or contracts to Indian tribes but appears to provide that such grants or contracts would have to be approved by a State government. Since Indians have independent functions to carry out with regard to fisheries matters, direct grants or contracts with such tribal governments should be allowed, and I've provided you with suggested language to change that.

And that's it, Senator. I want to thank you.

Senator MAGNUSON. That is 7(a) ?

Mr. HECKMAN. Yes.

Senator MAGNUSON. And you said to add "any affected federally recognized Indian tribal government?"

Mr. HECKMAN. That's correct. And again I want to thank you.

Senator MAGNUSON. Thank you.

[The changes referred to follow :]

(1) Section 4(a)(1) provides for consultation with numerous governmental agencies. This section is deficient in that it does not provide for consultation with recognized Indian tribal governments which also have significant functions related to aquaculture.

Suggested language :

Amend S.4(a)(1) (at page 7) to read as follows :

Before the close of the one-year period beginning on the effective date of this Act, the Secretary, after consultation with the Secretary of the Interior, the Secretary of Agriculture, and the Chief Executive Officer of any other federal agency, any appropriate Regional Fishery Management Council established under S. 302 of the Fisheries Conservation and Management Act of 1976, *any affected federally-recognized Indian tribal government*, and any state agency which has significant functions which relate to aquaculture, shall by regulation \* \* \*

(New language italicized.)

(2) Section 4(f)(1) of the Act provides for consultation for the development of aquaculture development programs. For the same reasons as above, federally recognized Indian tribal governments should be consulted in such development.

Suggested language :

Amend S.4(f)(1) to read as follows :

The Secretary, in consultation with the Secretary of the Interior, the Secretary of Agriculture, and the Chief Executive Officer of any other Federal agency, any appropriate Regional Fishery Management Council, *any affected federally-recognized Indian tribal government*, and any state agency which has significant functions which relate to aquaculture, shall review on an annual basis \* \* \*

(New language italicized.)

(3) Section 7(a) provides for grants and contracting to certain entities. This section, as drafted, does not allow for direct grants or contracts to Indian Tribes but appears to provide that such grants or contracts would have to be approved by a State government. Since Tribes have independent functions to carry out with regard to fisheries matters, direct grants or contracts with such tribal governments should be allowed.

Suggested language :

Amend S.7(a) to read as follows :

The Secretary \* \* \* may carry out any function relating to any aquaculture development program which he is specified to implement under the plan, through grants to, or contracts with, any other Federal agency, *any affected federally-recognized Indian tribal government*, any agency of any State and, subject to the approval of the State, any agency of any political subdivision thereof, any regional commission, and educational institution, or any other person.

(New language italicized.)

Thank you for the opportunity to testify on this very significant legislation affecting the valuable fisheries of the Pacific Northwest.

Senator MAGNUSON. Our next witness is Mr. Chuck Judkins. Is he here?

**STATEMENT OF CHUCK JUDKINS, PRESIDENT, NORTHWEST  
STEELHEAD AND SALMON COUNCIL**

Mr. JUDKINS. Thank you. My name is Chuck Judkins. I'm president of the Northwest Steelhead and Salmon Council, and I'm here speaking on their behalf today, and I'm speaking primarily for salmon and steelhead.

The Northwest Steelhead and Salmon Council oppose legislation that would allow ocean ranching for the following reasons:

Enhancement of another user group until final settlement of the controversy surrounding the *Boldt* decision.

Two, the increased competition with existing native and resident stocks in the streams during spawning.

Three, the rearing area at sea belongs to us all, along with the food source, should not be used for rearing private stock.

And four, the possibility of spread of disease could destroy existing stocks.

And five, it is a harvest problem. As area closures reduce limits, reduce seasons, and so on.

And six, possibility of mixed stock interception.

In conclusion, we oppose at this time any legislation that would allow aquaculture ocean ranching prior to full settlement of the *Boldt* controversy, and until such time as our objections are answered.

Thank you.

Senator MAGNUSON. You're talking about steelhead and salmon?

Mr. JUDKINS. Right.

Senator MAGNUSON. Off the record.

[Discussion off the record.]

Senator MAGNUSON. All right. Mr. Marincovich?

**STATEMENT OF CLEMENT ADY, THE COLUMBIA RIVER  
FISHERMEN'S PROTECTIVE UNION**

Mr. ADY. My name is Clement Ady. I'm representing Mr. Marincovich.

All the views have been expressed by the fishermen today, and I see no need to continue. I would like to point out the Columbia River, the unique position that we have both Oregon and Washington fishermen involved, and we're involved in a compact situation, since Oregon has—

Senator MAGNUSON. When you have two different laws, it does make it difficult.

Mr. ADY. The Washington fishermen are the ones that suffer when Oregon votes to shut down fishing times so that they can gather enough eggs to supply Oregon operatives so that it affords their functions which amount to millions of eggs and at the same time the State of

Washington supplies to Oregon Aqua-Foods, an Oregon corporation, millions of eggs to promote their private industry, so Washington suffers even though they don't have an aquaculture bill.

There should be something done about either preventing the sale of Washington eggs to Oregon corporations for the production of seafood or maybe we need in Oregon to prevent aquaculture from being private enterprise.

The Columbia River suffers under the same type of legal decision under the Malone Act although it was a settlement rather than a judicial order. We have a greater problem in that we have dams upon the river, hundreds if you count all the tributaries, and we have the Idaho difficulties, but the Columbia River is important to Washington fishermen, and that is a depressed enterprise there.

Senator MAGNUSON. All right. Thank you.

Ed Rydman. He's not here.

Steve Mathews.

#### STATEMENT OF STEVE MATHEWS, WASHINGTON TROLLERS ASSOCIATION

Mr. MATHEWS. Thank you.

Your committee is devoting a lot of time lately to fisheries matters and the industry is grateful.

I am Stephen B. Mathews. I'm speaking for the Washington Trollers Association. I'll summarize my remarks, since I think a lot of them will be repetitive.

The trollers' main concern is, I believe in addition to the quality aspect and egg sales problems mentioned is the likelihood, or the perceived likelihood of ocean ranching firms becoming so large as to be able to bend the political system to reduce ocean harvest rates. They would pressure the States or the council to reduce the harvest rates and get more fish back inside.

I'm quite familiar with recent returning rates on salmon hatchery production. Considering the fish that get back to the hatchery, I don't think there's much profit potential right now because of the high intensity fisheries that we have in our hatchery stocks. Since the *Boldt* and *Belloni* decisions the fishing pressure is becoming intensified, and the agencies are just getting enough back for the eggs.

The only way an ocean rancher can make a profit it seems is to improve the survivability of the stock which is, of course, a hopeful but problematical end point, and two, somehow manage to reduce the harvest rates in existing fisheries. This latter point is the major concern.

I don't want to be totally negative on private ocean ranching. Although this may not be the opinion of all trollers, I think there may be some place in the scheme for private salmon ocean ranching and perhaps Federal legislation should fairly clearly address this question.

Ocean ranching could, for example, be limited to small scale family farming type operations whereby no firm would be large enough to politically bend the existing management allocations system. Here I'm speaking perhaps of the larger firms—potentials may exist for cooperative arrangements between private ocean ranchers and Indian tribes or between ocean ranchers and commercial fishery groups.

In such arrangements, the cooperative entities would share the costs as well as the benefits. Enabling charters would explicitly insure that the benefits would accrue to both the private investors and the fishermen in some fair and equitable apportionment, so that neither could achieve or want to achieve a political edge in catch distribution of the other.

I urge you to consider how Federal legislation could perhaps be worded or amended to allow limited opportunities for private investment in ocean ranching without creating—clearly, this is the major concern of the Trollers Association—the opportunity to transfer a public resource with benefits reaped by the public at large to a private one with benefits being reaped primarily by the few.

Senator MAGNUSON. Thank you very much.

[The statement follows:]

#### STATEMENT OF STEPHEN B. MATHEWS

I am Stephen B. Mathews, Associate Professor of Fisheries at the University of Washington. My home address is 2403—25th East, Seattle, Washington. I own a commercial salmon troller which I operate in the summer non-teaching months. I am a member of the Washington Trollers Association and am testifying for that organization.

Your committee is devoting a great deal of time lately to fishery matters, and the salmon fishing industry is grateful for your concern.

As a fishery professor, I am aware of and excited about the tremendous potential of aquaculture to create new food products, new jobs, new technology and improved biological understanding. At the same time I am concerned that the living marine resources in our public waters remain as common property resources and not fall into private ownership. I am referring primarily to private ocean ranching for salmon and other anadromous species.

The profit making potential of private ocean ranching of salmon is very great. Our public hatcheries are currently yielding benefit: cost ratios of 3:1. What other business opportunities offer the likelihood of returning \$3 of revenue for every dollar spent? This favorable potential has attracted the interest and with it substantial investments by private companies and, in Alaska, fishermen's cooperatives.

However, since such high fractions of the salmon are presently being caught in existing salmon fisheries, private ocean ranching can expect a profit only by improving technology to increase survival, which is a hopeful but problematical endpoint, or by pressuring the councils and state agencies to reduce present harvest rates. It is the latter possibility which concerns the salmon industry. For example, one ocean ranching firm is attempting to place a representative on the Pacific Regional Council.

The addition of private ocean ranchers intensifies the salmon allocation squeeze. It has only been with extreme difficulty that we are beginning to make progress in solving the allocation problems among the historical users created by the Boldt and Belloni decisions. Another player in the game—the ocean rancher—makes the shoe fit tighter.

There are no guarantees that private ocean ranching can or will enhance the salmon cheaper or more efficiently than the public hatchery systems. I have seen no evidence that salmon reared in private hatcheries are a better product than those from federal and state hatcheries. I continue to be vastly impressed with the public hatchery programs in California, Oregon and Washington. These have doubled chinook and coho salmon catches over the past 20 years in face of declining environmental quality. From such an outstanding record do we need to turn to private ocean ranching for the future? Washington State has a new, massive enhancement program funded from licenses and other user fees, and the federal government plans on adding more to offset the burden to non-Indian fisheries of the recent Indian fishery rights decisions.

Will our coastal waters be productive enough for public enhancement programs—intended for common benefit—as well as private enhancement efforts for corporate benefit?

If there is a place for private salmon ocean ranching, this should be very clearly spelled out in any federal legislation. Ocean ranching could be limited to small scale "family farm" types of operation, whereby no firm would be large enough to politically bend the existing management-allocation system. Also, potentials may exist for cooperative arrangements between private ocean ranchers and Indian tribes, or between ocean ranchers and commercial fishery groups. In such arrangements the cooperating entities would share the costs as well as the benefits. The enabling charters would explicitly ensure that benefits would accrue to both the private investors and the fishermen in some fair and equitable apportionment, and that neither could achieve or would want to achieve a political edge in catch distribution over the other.

I urge you to consider how federal legislation could be worded or amended to allow limited opportunities for private investment in ocean ranching, without creating the opportunity to transfer a public resource with benefits reaped by the public-at-large to a private one with the benefits being reaped by the few.

Senator MAGNUSON. Thank you all. I notice one statement here that I feel kind of good about. Public hatcheries programs in California, Oregon, and Washington have doubled chinook and coho salmon hatches in the past 20 years

Mr. MATHEWS. That's one thing we overlook. We're always knocking Federal expenditures of money, but this is one industry that it's very clearly paid off highly.

Senator MAGNUSON. It's suggested I get a dollar value for a dollar spent.

Mr. MATHEWS. You get more than a dollar value; you get \$3.

Senator MAGNUSON. That's a good investment.

Thank you all very much. I appreciate it, and I'm sorry I do have to run. I'd like to discuss it further, but I think you've made your point as far as the testimony is concerned. Thank you all very much.

[Whereupon, at 11 :45 a.m., the hearing was adjourned.]

## ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

U.S. DEPARTMENT OF COMMERCE,  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,  
NATIONAL MARINE FISHERIES SERVICE,  
Washington, D.C., May 12, 1978.

HON. DANIEL K. INOUE,  
U.S. Senate,  
Washington, D.C.

DEAR SENATOR INOUE: This responds to your request of April 17, 1978, to Senator Warren G. Magnuson, Chairman of the Senate Committee on Appropriations, for answers by the Department of Commerce to certain questions relating to aquaculture. It also responds to a request made by telephone by Dr. John Belshe of your staff for a summary of grant and loan programs administered by the Department of Commerce to indicate the organization in the Department already established to handle such programs.

*Question 1.* Would you please enumerate the most important species of finfish and shellfish to the aquaculture industry, and indicate if their rearing is in fresh, brackish or saltwater.

Answer. See below:

MAJOR SPECIES RAISED BY AQUACULTURE IN THE UNITED STATES

Species	Metric tons	Percent	Pounds
<i>Marine, estuarine, and anadromous:</i>			
Salmon (public).....	27,000	34.8	59,400,000
Salmon (private).....	450	.6	990,000
Oysters.....	9,070	11.6	19,954,000
Clams.....	1,180	1.5	2,596,000
Shrimp (marine).....	200	.2	440,000
Shrimp (macrobrachium).....	2	-----	4,400
Subtotal.....	37,902	48.7	83,384,400
<i>Freshwater:</i>			
Trout.....	13,600	17.5	29,920,000
Catfish.....	21,800	28.0	47,960,000
Crawfish.....	4,500	5.8	9,900,000
Subtotal.....	39,900	51.3	87,780,000
Total.....	77,802	100.0	171,164,400

Source: Data from the NOAA Aquaculture Plan, 1977.

*Question 1a.* Which of these species is being researched or investigated by the Department of Commerce exclusive of the Sea Grant Program, and by what office or laboratory?

Answer. National Marine Fisheries Service Laboratories Performing Aquaculture Research, and Species Under Study

*Salmon.*—Manchester, Washington; Seattle, Washington; Auke Bay, Alaska; and Portland, Oregon.

*Oysters and Clams.*—Milford, Connecticut.

*Shrimp.*—Galveston, Texas and College Park, Maryland (Charleston, South Carolina).

*Catfish.*—Little Rock, Arkansas (marketing) and St. Petersburg, Florida (contract with Dept. of Interior).

*Question 1b.* Which of these species is being researched or investigated under a Sea Grant Program, and at what institution?

Answer. Sea Grant Program on Aquaculture—category and institution.

## CRUSTACEANS

*Lobsters*.—University of Maine/University of New Hampshire, Woods Hole Oceanographic Institution, University of California.

*Marine shrimp*.—Texas A&M; University of Houston; University of Arizona; and Groton Associates.

*Giant prawns (Macrobrachium)*.—Hawaii Department of Land and Natural Resources; Auburn University; Rutgers University; Clemson University; South Carolina Marine Resources Research Institute; and University of Hawaii.

*Crayfish*.—Louisiana State University.

## FINFISH

*Salmon*.—University of Washington; Oregon State University; University of Alaska; University of California; University of Maine/University of New Hampshire; University of Rhode Island; and University of Idaho.

*Eels*.—University of North Carolina.

*Yellow perch and walleyes*.—University of Wisconsin Cornell University.

*Fish (other)*.—University of Minnesota Oceanic Institute.

## MOLLUSKS

*Mussels*.—University of Maine/University of New Hampshire.

*Oysters*.—University of Maine/University of New Hampshire; University of Washington; University of Delaware; Woods Hole Oceanographic Institution; University of Maryland; Virginia Institute of Marine Science; Oregon State University; and George Mason University.

*Clams*.—University of Washington and Woods Hole Oceanographic Institution.

*Rock scallops*.—University of California.

*Abalones*.—University of California.

## OTHER SPECIES

*Bullfrogs*.—Louisiana State University.

*Seaweeds*.—University of California; University of Washington; University of Hawaii; California Institute of Technology; University of Florida; University of Maine; University of Delaware; University of Maine/University of New Hampshire; and University of Rhode Island.

## OTHER PROGRAMS

*Thermal effluents*.—University of California.

*Artificial upwelling of the sea*.—University of Texas.

*Production and marketing*.—Oregon State University.

*Pathology and disease*.—University of North Carolina; Louisiana State University; University of Rhode Island; State University of New York; University of California; and Oregon State University.

*Economics*.—Texas A&M; University of Hawaii; University of Delaware; and Clemson University.

*Law*.—University of California.

*Engineering*.—Texas A&M; University of Hawaii; and University of Delaware.

*Seafood technology*.—University of Washington and University of Rhode Island.

*Waste water utilization*.—Woods Hole Oceanographic Institution.

*Pollution*.—University of Wisconsin.

*Environmental modeling*.—University of Wisconsin.

*Course development*.—University of Alaska and State University of New York.

*Information (bibliography)*.—Virginia Institute of Marine Science.

*Extension (Marine Advisory Services)*.—University of Alaska; University of Washington; University of Maine; University of New Hampshire; Oregon State University; University of Florida; University of California; Texas A&M; University of Wisconsin; and Hawaii Department of Land and Natural Resources.

*Question 2*. Does NOAA have any mandate to support freshwater biological program, and does it have any employees so engaged?

*Answer*. Following is a partial listing of legislative authorizations which generally or specifically authorized freshwater aquaculture activities of the National Marine Fisheries Service and Office of Sea Grant.

(1) (NMFS) Joint Resolution N- 22, 41st Congress-Original Act of February 9, 1871, Office of Commissioner of Fish and Fisheries Established-Propagation of Food Fishes and Investigations to Ameliorate Predator Damage. 16 USC 744-745.

(2) (NMFS) Public Law 203-Act of April 28, 1922, Propagation of Mussels. 16 USC 750-751.

(3) (NMFS) Public Law 502-Original Act of May 11, 1938, Columbia River Basin Fishery Development Program (Mitchell Act). 16 USC 755-757.

(4) (NMFS) Public Law 1024-Original Act of August 8, 1956, Fish and Wildlife Act of 1956. 16 USC 742a-742k.

(5) (NMFS) Public Law 85-342-Act of March 15, 1958, Fishery Research and Experimentation (Reservoirs and Flooded Rice Lands). 16 USC 778-778c.

(6) (OSG) Public Law 89-688-Act of October 15, 1966, National Sea Grant College and Program Act of 1966. 33 USC 1121-1124.

#### NOAA ACTIVITIES IN FRESHWATER AQUACULTURE

##### *Catfish*

(1) Little Rock, Arkansas, Marketing and Statistical Office.

(2) Contract to Fish and Wildlife Service of the Dept. of the Interior to conduct biological research and water quality research (\$157,000 per year since 1972.)

##### *Crayfish*

(1) Sea Grant support of project at Louisiana State University

##### *Yellow perch and walleyes*

(1) Sea Grant support of project at University of Wisconsin

(2) Sea Grant support of project at Cornell University

##### *Bullfrogs*

(1) Sea Grant support of project at Louisiana State University.

*Question 3.* Could the Department of Commerce cite any loan programs, or similar financial support, for small business which it administers and which might be suitable for family for types of aquaculture enterprises.

*Answer.* The Department of Commerce administers a considerable number of loan and financial aid programs, which are summarized briefly below. Most of these are not applicable directly to support family type aquaculture enterprises. However, this array of programs illustrates the existence of a large and well established infrastructure in the Department of administering financial aid programs.

##### *National Marine Fisheries Service*

(1) *Long-term Debt Capital.*—The Fishing Vessel Obligation Guarantee program (under Title XI of the Merchant Marine Act, 1936) guarantees private capital financing up to 87½ percent (for up to 20 years) of the cost of constructing, reconstructing, or reconditioning fishing vessels. All financial and economic feasibility analysis, as well as loan closing and servicing, is done by NMFS (which also serves as mortgagee). Private sector lenders serve as a capital conduit. No appropriated funds are involved in NMFS administration of this program (both are funded by guaranteed obligors' user fees.) The program's statutory authority is in all essential respects the same mechanism as the guarantee provisions of the aquaculture bill. The Fishing Vessel Obligation Guarantee program mainly finances small, independent, owner/operators.

(2) *Equity Capital.*—The Fishing Vessel Capital Construction Fund program (under Section 607 of the Merchant Marine Act, 1936) defers Federal taxation of fishing vessel income when that income is, under agreement with the Government, reserved for future vessel construction or reconstruction. Deferred taxes are recaptured through reduction in the basis for depreciation of vessels acquired with tax deferred funds.

(3) *Intermediate-term Debt Capital.*—The Fisheries Loan Fund (Section 4 of the Fish and Wildlife Act of 1956) makes direct Federal loans for purchasing, constructing, repairing, equipping, maintaining, or operating new or used fishing vessels or gear. This program mainly finances small, independent, owner/operators. This program is presently under administrative moratorium and about a dozen bills now before Congress would revise and reauthorize it.

(4) *Short-term Debt Capital.*—The Fisheries Gear Damage Compensation Fund (Section 10 of the Fishermen's Protective Act of 1967) makes direct Federal loans for the replacement or repair of fishing gear lost, damaged, or destroyed by foreign fishing vessels in the Fishery Conservation Zone.

(5) *Casualty Insurance.*—The Fishermen's Guaranty Fund program (authorized by Section 7 of the Fishermen's Protective Act of 1967) indemnifies against certain costs and losses resulting for the seizure of domestic fishing vessels by foreign vessels by foreign governments (loss of income; damage, destruction, or confiscation of vessels or gear; spoilage or confiscation of fish; and other incidental costs or losses). Program funded by user premiums.

Programs (1), (2) and (3) above are mainly used by small, independent, owner/operators and programs similar to them would be suitable for family types of aquaculture enterprises.

#### *Economic Development Administration*

(1) Grants and Loans for Public Works. This program was authorized by the Public Works and Economic Development Act of 1965 as amended. The basic goal is to assist in the construction of public facilities needed to initiate and encourage long-term economic growth in designated areas where the economic growth is lagging. State and local governments, Indian tribes and private and public non-profit organizations may apply for grants or loans. FY 77 grants and loans amounted to \$145 million.

(2) Business Development Assistance. This program was authorized by the Public Works and Economic Development Act of 1965 as amended. The purpose of the program is to encourage industrial and commercial development in designated high unemployment areas by providing financial assistance to business for the creation of permanent jobs. During FY 77, Direct loans and Guaranteed loans totaled \$41 million.

(3) Public Works Impact Projects. This program was authorized by the Public Works and Economic Development Act of 1965 as amended. The purpose of the program is to construct public facilities to provide immediate jobs to the unemployed in the project area. The program is joint funded with the local jurisdiction in most cases. During FY 77, \$22 million was allocated to this program.

(4) Economic Adjustment Assistance. This program was authorized by the Public Works and Economic Development Act of 1965. The goal of the program is to provide special programs to help state and local areas meet special problems arising from actual or threatened unemployment as a result of severe changes in economic conditions. During FY 77, grants totaling \$92 million were issued.

(5) Trade Adjustment Assistance.—This program was authorized by Title II of the Trade Act of 1974. The goal is to provide adjustment assistance to firms and communities adversely affected by increased imports. The program provides both direct and Guaranteed loans to eligible firms or communities. During FY 77, \$35 million in assistance was given.

#### *Office of Coastal Zone Management*

(1) Coastal Zone Management Program Development.—This program is authorized by the Coastal Zone Management Act of 1972 as amended. This program provides grants to states for assistance in the development of a management program for the land and water resources of its Coastal Zone. FY 77 grants awarded were \$10.4 million.

(2) Coastal Zone Management Program Administration.—This program was authorized by the Coastal Zone Management Act of 1972. The objective of this program is to provide grants to states, which have developed acceptable Coastal Zone management plans, the funds to implement and administer the plans. The FY 77 grants were \$8.8 million.

(3) Coastal Zone Energy Impact Fund.—This program was authorized by the Coastal Zone Management Act amendments of 1976. The goal of this program is to provide loans, loan guarantees and grants for projects which are required as a result of energy exploitation in the Coastal Zone. The program was just beginning in 1977 and therefore data are not available.

#### *Maritime Administration*

(1) Construction Differential Subsidies.—This program is authorized under Title V of the Merchant Marine Act of 1936 as amended. The goal of the program is to provide subsidies (grants) to private operators of certain types of merchant vessels to make up the difference between domestic shipbuilding cost and costs of construction at foreign yards. During FY 77, \$264.8 million was slated for CDS contracts.

(2) Federal Ship Financing Guarantees.—This program is authorized by Title XI of the Merchant Marine Act of 1936 as amended. The purpose of the program is to promote construction of U.S. flag vessels by providing guarantees of construction and permanent financing to make credit more readily available. During FY 77, outstanding guarantees available were \$6.6 billion.

(3) Operating Differential Subsidies.—This program was authorized by Title VI of the Merchant Marine Act of 1936 as amended. The goal of this program is to provide subsidies to operators of certain merchant vessels along certain shipping routes to offset the differential in operating costs between U.S. and foreign flag vessels. During FY 77, there was \$388 million involved with this program.

*Office of Minority Business Enterprises*

Minority Business Assistance.—This program was authorized by Title III of the Public Works and Economic Development Act of 1965 as amended. The goal of the program is to promote and assist the expansion of minority enterprise in the U.S. Assistance includes project grants and contracts are made available to private organizations to promote this goal. Contracts and grants in FY 77 totaled \$48 million.

*U.S. Travel Service*

This program was authorized by the International Travel Act. The goal of the program is to encourage foreign residents to visit the U.S. Matching grants are available for development of area special travel programs. During FY 77, \$9 million was involved with this program.

*Summary*

The Department of Commerce as a whole administered \$7.6759 billion in assistance programs during FY 77. Additionally there are several programs which involve owner-operator funds such as insurance schemes or tax deferral programs which provide an additional \$1 billion in assistance.

Sincerely,

(For TERRY L. LEITZELL, Assistant Administrator for Fisheries).

ROUTE 4, Box 152,  
Coos Bay, Ore.

HON. WARREN G. MAGNUSON,  
Senate Committee on Commerce, Science & Transportation, Russell Senate Office  
Bldg., Washington, D.C.

DEAR SENATE MAGNUSON: The purpose of this letter is to enter testimony on H.R. 9370, the new aquaculture bill being considered by the Senate.

I am an individual, not a large corporation. I live on a 22 acre farm on a branch of the Coos Bay estuary called Cateleing Slough. I have applied for and received a permit for a drum salmon hatchery at my place. I have developed the water supply and have hatched and released experimental quantities of salmon from my site for the past 2 years. I am on the salmon egg allocation list of the Oregon Department of Fish and Wildlife, and it looks like it could be an 8 or 10 year wait for egg stocks to start my program unless something other than the present program is done.

H.R. 9370 is needed by the small private hatchery owners in Oregon. Please do what you can to help us get our programs going and strengthen the fishery resources of the Oregon coast.

Please forward to me the most recently revised copy of H.R. 9370.

Very truly yours,

CALVIN W. HECKARD.

ALL COAST FISHERMENS MARKETING ASSOCIATION, INC.,  
Charleston, Ore.

Senator WARREN G. MAGNUSON,  
Oversight Hearings—P.L. 94 265,  
Joint Venture/Aquaculture.

HONORABLE SIR: I was unable to testify today because of a time problem. The issues under discussion are of great importance to me and the men and women of my organization. All Coast Fishermens Marketing Assn., Inc. of Charleston, Oregon.

P.L. 94-265—Fishery Conservation & Mgmt. Act.

Since the majority of my constituents—approx. 575 commercial fishing vessel owners of Oregon, are salmon fishermen, I speak to this issue with concern.

The Pacific Fishery Management Council is clearly having difficulty with the language of the Act., to wit: Salmon “hall manage, where practicable, through its range; fair and equitable allocation of impact; etc..

With one working fisherman at Council, and lately defined council jurisdiction from 3 to 200 miles and *not* inside three miles, Chairman McKean’s concern for wild salmon, while commendable, is beyond the scope of council jurisdiction clearly, and yet it is this attitude of inside involvement that creates much of the confusion. *State* jurisdiction addresses wildfish via habitat enhancement . . . it is *not* Council’s concern just as it is not their concern on treaty tribe allocation inside 3 miles.

The Act suggests that there will be fair and equitable allocation of impact to all users, and yet U.S. fishermen above Tillamook Head in Ore. thru to the Canadian Border must take *only* 28” chinook, while right across the border, Canadian may take 26” chinook from the identical run. While U.S. fishermen are being cut back, the State Dept. proposes an increase of Canadian salmon fishing privileges despite language in the Act which says “there is no foreign allocation of salmon.”

With *one* working fisherman at Council, representation is difficult. The East-land Resolution recommended a cooperative management relationship of 50% fishermen. This has been largely ignored much to the sorrow of the U.S. industry in Oregon who saw the E.R. findings as a guidepost to mark the way for what was hoped to be the future of U.S. Fishery Policy. We earnestly entreat you to resolve the ambiguous language in the Act and bring a fair re-apportionment to the voting balance of the Council. We would be pleased to assist however possible.

#### JOINT VENTURE

The U.S. has claimed territory offshore outward to 200 miles and the resources that lie therein. The U.S. processor must be in a priority access status. However, failing this, the U.S. fleet must be allowed to fish these stocks first—be it through Joint Venture or however.

#### AQUACULTURE

The involvement of multinational corporations could spell the end of the highly intensive (Labor) U.S. Salmon fleet. Checks and balances insuring that this does not come to pass must be implemented to guarantee the survival of the high seas salmon fleet.

Just as in Joint Venture—the comparatively small U.S. processors ask protection and priority claim on whiting stocks—the U.S. salmon fleet asks priority claim on the salmon of the Pacific Coast over the huge conglomerates that signify intent to get involved.

I apologize for the rough and hasty nature of this presentation, but there was not time for me to testify June 5th. Thank you for your time and concern.

Very respectfully,

BOB HUDSON,  
General Manager.

---

THE POGGIE CLUB OF WASHINGTON,  
Seattle, Wash., June 7, 1978.

Senator WARREN G. MAGNUSON,  
U.S. Senate Commerce Committee, U.S. Senate,  
Senate Office Building, Washington, D.C.

DEAR SENATOR MAGNUSON: We send you these three copies of this letter and ask you to include it as part of the public participation in the aquaculture bills public hearing conducted yesterday here in the U.S. Courthouse.

We question all three of these bills and ask you to remove, delete, salmon as included in or affected by any or all of them. We are opposed to the opportunity these offer for bigger industries to do with the fisheries resource that they have done with timer and other resources—monopolize it for private profit of a few rather than most public good—often to export it abroad—logs, fish other.

We have as an infant program capable of great growth our \$90,000,000 salmon enhancement program for this state as an estimated cost of \$30,000,000 for the

project—and another \$60,000,000 as bond interest. This will be paid for by sportsmen who number 600,000 in Washington—most of whom are registered voters—and 2,000 major commercial fishermen.

We do not think a new plan to guarantee major resource-using industries against every loss of every kind either is needed or would be compatible with resource sharing we now have or are working to achieve. To add these aquaculture bills will simply add to the injustice and citizen inequality provided by the Boldt decision, naming John Tanner as federal judge, and more.

We ask you to note, too, that the only sports fishing representative heard yesterday by you speaks for a group termed a "steelhead-salmon council" of 27 chapters but two of which are predominantly salmon anglers and which as a totality number between 2,000 and 2,400 total membership—against the half-million-plus salmon fishermen who were not included and not given time to testify during your brief 90-minute hearing on this multi-million-dollar thing which so greatly affects us all.

We as the Seattle Poggie Club, Senator Magnuson, will note our 50th birthday in a moment of time. The salmon are a major state economic asset and tourist magnet. Salmon value as a sports fish varies from four-to-one to seven-to-one more than as a commercial taken fish. To permit commercial industrial salmon raising of fish which will not take commercial or sports hooks and lures and open the door for such operators and their political influence out of proportion to their numbers or public service is unthinkable.

These aquaculture bills and the \$500,000,000 fund to be publicly provided can only be termed by some as "Weyerhaeuser Welfare"—one more corporate profit, one more punish-the-public monopolization of a natural resource as timber companies and railroads took over our forests and public lands.

Your truly,

JAMES LONE,  
*Chief Poggie.*

---

LUMMI INDIAN TRIBAL ENTERPRISES,  
*Marietta, Wash., June 7, 1978.*

To: Senator Magnuson, Chairman, Commerce Committee.

MR. CHAIRMAN: AS the manager of one of the original Indian operated ocean ranching ventures in the United States, I am very interested in the present Aquaculture bills in congress, especially as to the final statement pertaining to the ocean ranching of anadromous fish.

You have on record a written testimony from one regarding the high contribution (10-11%) of our reared fish to the Washington commercial and sport fishery. After attending the hearing yesterday in Seattle, and listening to the rather one sided testimonies from various user groups, I felt it necessary to provide further comments regarding some of the obvious advantages of ocean ranching programs to the fish as well as the fishery.

Commercial ocean ranching ventures must strive to achieve the highest possible fish survival rates possible, both in the rearing phase as well as adult survival. This means using new and different rearing and releasing schemes. I feel some of the high survival rates experienced at Lummi (some groups of Coho show survival over 20%) reflects the use of short term salt water rearing prior to their release into Lummi Bay. It is necessary for ocean ranching ventures to utilize salt water release and trap sites in order to maintain high adult return quality, thus what we have experienced at Lummi is probably somewhat applicable to other ventures.

By eliminating the downstream smolt (outmigrating young salmon) phase of the salmon's life cycle and moving the release site to a salt water location, several advantages to fish survival become apparent to me. The young hatchery reared salmon are protected during the transition to salt water rather than facing a number of predators which inhabit the river mouth and estuary feeding upon outmigrates.

Often-times, large hatchery releases of salmon temporarily exceeds the carrying capacity of a river. Hence, young salmon are forced to make the journey to the sea under less than the best conditions. If, for a number of reasons (photo-period, flow, air pressure, size), the released fish don't rapidly migrate out of the river system, survival of both the hatchery stock as well as native anadromous and resident fish suffer tremendously. It is easy to appreciate the effect of

releasing large yearling coho or steelhead into a system full of young salmon fry but many times it becomes rule rather than exception. Hence, salt water release makes good sense not only for hatchery survival but also for native stocks.

Managing the harvest of hatchery and wild salmon stocks is often times very difficult. Many river systems which once supported large runs of native salmon are now totally dependent upon hatchery produced fish. In many cases, it is impossible to harvest the optimum number of the numerous hatchery returns without overharvesting the declining native returning adults. Hence, over a relatively short time, the system supports only hatchery fish and we have lost another self sustaining population.

Imprinting and releasing fish from salt water sites (again an ingredient of ocean ranching) would certainly reduce, if not eliminate, this impact upon native runs. Harvest management plans would now be able to direct the fishery in such a way to harvest each stock at its optimum yield.

The question also arose at yesterday's hearings regarding the role genetics and fish stock selection would play in the ocean ranchers program. Certainly there exists a tremendous opportunity to manipulate the genetic make up of a particular fish stock to optimize size, survival and run timing. Larger fish and higher survival would benefit the commercial fishing industry as well as the ocean rancher. Changing run timing and stock selection may, for a short term, allow a greater escapement to the ranchers traps, necessary at the early stages for egg production. I do find it difficult to believe, being a past commercial fisherman myself, that when a fish stock becomes available in sufficient numbers to warrant commercial fishing interest that the appropriate gear changes and season adjustments will not quickly follow.

Another fear often expressed in opposition to the ocean ranching bill is the high competition for salmon eggs. Presently, if I am correct, the Washington Department of Fisheries dictates harvest rates necessary to catch all returning hatchery fish except what is needed for their present state programs. Since forecasting adult returns is a little better than guesswork, safety margins are built into escapement goals. Hence, many times egg surpluses are inevitable. If these surplus eggs were not sold to other rearing programs I doubt if they would be reared at all. So, we are faced with the decision either to reduce the margin for error in estimating escapement, and possibly end the reason with insufficient eggs for state programs or continue the present policy and sell the surplus eggs. I feel the answer is obvious, especially since those surplus eggs may go into an ocean ranching program, whereby the fish generated from the egg sale are released into public waters for harvest to all. Also, remember that adult migrational patterns take many fish released from present Oregon and California sites into Washington, Canada and Alaskan waters and are contributing to the area's commercial fishery.

An often expressed view regarding ocean ranching fish regards their poor quality. Let me assure you that adult salmon trapped at salt water sites are of highest quality ever returning to Puget Sound locations. An added advantage of this trapping method is the option left to the rancher whether or not he wishes to market the fish or hold it for spawning about one month later. This option is not available to typical freshwater hatchery locations or the commercial fishing industry.

Finally, the problem of overtaxing the ocean carrying capacity must be faced. I feel this is not only the problem of the would be farmer but of all agencies involved in enhancement programs. It is well past the time to begin developing technique to measure and quantify the various parameters affecting carrying capacity, cyclic survival, and foreign fishing impact.

I thank you for this opportunity to express my feelings regarding the salmon industry.

Sincerely,

STEVE SEYMOUR,  
*Fishery Manager.*

SWECKER SALMON FARM,  
*Rochester, Wash., June 10, 1978.*

HON. WARREN G. MAGNUSON,  
*Russell Senate Office Bldg., Washington, D.C.*

DEAR MR. JOHNSON: Thank you for meeting with us on Thursday, June 8 in Seattle. In this letter we will summarize our position regarding National Aquaculture Legislation and salmon ocean ranching.

Opposition to ocean ranching.—Current opposition to ocean ranching by commercial fishermen is based primarily on fear of large corporate involvement and their eventual domination of the salmon resource. Legislation being considered by the Washington State Legislature, which we and the American Salmon Growers Association support, limits corporations and individuals to one site and one permit. This would give small growers equal access to sites and ample opportunity to develop ocean ranching ventures without fear of domination by large corporations.

Washington's refusal to permit ocean ranching simply penalizes the small grower who can't afford to move to other states and countries for their releases. Corporations such as Weyerhaeuser and Union Carbide have located in Oregon and Chile and are exploring alternatives in Alaska and Canada.

National aquaculture legislation.—It is imperative that salmon ocean ranching not be singled out as exempt from programs proposed by this legislation. If excluded from national legislation, our efforts to work through our state legislature on ocean ranching would be crippled. In addition, should ocean ranching ever pass, National Legislation would benefit small growers who could then afford to construct the more expensive facilities required to rear Chinook and Coho salmon. Rearing these species would in turn enhance the commercial and sports fisheries. Without such legislation small growers would be limited to Chum Salmon which are less expensive to rear but do not contribute significantly to most sport and commercial fisheries.

Competition for eggs.—Public fisheries enhancement programs are required each year to take extra eggs and to have them available should any particular hatchery be struck by a disaster such as disease, flooding, siltation or equipment failure. Once these eggs are declared surplus, they are then sold to the private sector. Because Washington does not allow ocean ranching, most of these eggs must then be exported to other states where they are reared and released to contribute to their fisheries and their economies. Last year Washington sent over 25,000,000 eggs to Oregon. If ocean ranching were legal in Washington these eggs could be kept at home, reared, released, and would contribute to Washington's fishery and economy instead of competing with it.

Competition for sites, public vs. private.—The ocean ranching legislation being considered in Washington limits private release/recapture facilities to "waters within tidal influence". This means essentially right on or near saltwater. There are few if any public facilities existing or planned in this area. In addition the legislation precludes private facilities on rivers or tributaries with planned or existing public hatcheries. This effectively precludes private releases from competing with public releases.

It is to the ocean ranchers best advantage to insure that his fish avoid any competition with other fish because such competition would limit his return. The private concept is to rear fish in fresh water, preferably well water because it is disease free, then truck the fish to the release point. This allows the ocean rancher to manage the transition to saltwater and saltwater feeds, and to avoid the predators and the competitive environment of the rivers and estuaries. The fish are released directly into saltwater when their migratory instinct is at its peak and when they are ready to move rapidly to the ocean pastures.

Increased difficulty in managing the resource.—Those who oppose ocean ranching maintain that private interests would unnecessarily complicate an already overburdened management system. However, the biggest problem faced in the management of the resource is the shortage of fish! The private sector is ready to bring private capital, expertise, and technology to bare on the problems of a diminishing resource. Most important, this is available through ocean ranching at no cost to the taxpayer!

We speak from experience when we say that no amount of delay will result in understanding and a change of mind by the commercial fishermen. We have been facing their opposition in the state legislature for four years and their position has only become more entrenched. Fortunately many legislators are also tired of listening to their emotional and illogical arguments and waiting for them to realize that ocean ranching is in their own best interest. It is our hope that your decision will not exclude salmon ocean ranching from the national legislation. Ocean ranching would be in the best interest of the ocean rancher, the commercial and sports fishermen, the taxpayer, the consumer, and the state's economy!

Sincerely,

DAN AND DEBBY SWECKER.

SIUSLAW FISHERIES,  
Eugene, Oreg., 97401, June 19, 1978.

HON. WARREN G. MAGNUSON,  
Senate Committee on Commerce, Science & Transportation, Russel Senate Office  
Building, Washington, D.C.

DEAR SENATOR MAGNUSON: I am concerned that an essential and valid portion of the National Aquaculture Organic Act of 1978 may be eliminated because of a misunderstanding of salmon ranching and the type of business which is engaged in this form of aquaculture.

It is plain to see why you recognize Weyerhaeuser as "the salmon rancher" in our area, but I would like to introduce you and your committee members to the ten other individual private salmon hatchery permit holders.

The #1 permit issued in the state is held by two long time Oregon commercial fishermen and their partner who is a lawyer. As fishermen they realized something had to be done to supplement the diminishing stocks of salmon. They have been in operation for six years with a permit to eventually release 5 million chum salmon fry.

The #2 salmon hatchery permit is actively run by two energetic young men whose only previous salmon experience had been as dedicated recreational fishermen. One, a partner in a record distribution company, the other, a timber cruiser for a small lumber company, have spent their time and money for the past six years to prove that salmon can be harvested more efficiently than expensive troll caught salmon. After a severe drought in 1976 and untimely flooding the following year, they trapped and netted over 200 returning chum salmon this fall. Three and four years previously they had released these fish as fry into a stream whose natural chum salmon run had been almost totally destroyed by logging and agriculture.

They have now incorporated their hatchery operations to include a farmer with the land, water, and pumps necessary to begin a coho and chinook salmon feeding operation. This new hatchery facility, Siuslaw Fisheries, will now accommodate the rearing of over one million eggs to a smolt size salmon which are then ready to go to sea. A period that takes nature 1 to 1 and ½ years is accelerated to 3 to 6 months because of the warm well-water being utilized and high quality feed. The waste water from the hatchery, with its natural fertilizer added via the fish, is then reused to irrigate the farmer's crops.

They have consulted with the best fish culturists in the designing their hatchery, and have hired a well qualified hatchery manager to insure the success of this project.

Siuslaw Fisheries has the capacity to raise up to 5 million coho and chinook salmon, but they lack the financing to expand in this highly speculative business.

Another permit is held by a coastal resident who hopes to replenish a stream that once had been filled with salmon but is now devoid of the species. His permit allows him to release 100,000 fry into this stream in his attempt to renew the salmon run.

An engineer for Pacific NW Bell Telephone Company and his partner, a young farmer who wanted to put to good use the abundant water on his ranch, also have a permit to release 5 million chum salmon fry. They have gained the enthusiastic support of the community at the site of their proposed hatchery because of the greatly reduced state of the salmon runs which had once been the economic base of this area.

Among the other 9 permits for private salmon hatcheries are: 2 commercial fishermen; a lawyer; 2 Oregon coastal residents; a young businessman; a small corporation rearing and releasing 1 million coho salmon; a retired Washington state hatchery manager and his engineering partner who have designed an innovative water reuse system capable of raising 5 million chinook salmon; and Weyerhaeuser as Oregon Aqua Foods; and Union Carbide as Dom Sea.

Eight of the hatchery permits I have cited will only raise chum salmon. Chum, *Oncorhynchus keta*, were chosen because their once abundant Oregon runs have nearly been eliminated and because their lower quality flesh will not compete in the market place with troll caught salmon. Oregon processed 1 to 3 million pounds of chum each year between 1930 and 1955. But today the catch of chum is almost nonexistent. They have traditionally been a canning salmon, a salmon the consumer could afford to buy.

I have lived in Oregon all of my life, I have never been able to afford the commercial fisherman's salmon which this year never dropped below \$5.00 per pound. I do not consider this a legitimate protein source, it is and has been a luxury item. Salmon ranching, if successful, could make salmon as common as beef on our dinner tables—without ever competing with a higher quality ocean caught fish which the commercial fishermen must provide.

Four of these private hatcheries will raise coho or chinook salmon in numbers which will also increase the commercial and recreational fisheries without oversupplying the market with fresh fish. Because of their maturity and readiness to spawn, salmon returning to a trapping facility will never be as high a quality as the fish caught in the ocean. Commercial fishermen can only benefit from the increased number of salmon made available to them at a hatchery's expense.

Opponents of salmon ranching site the large numbers of release as being detrimental to all salmon. Someday, we may reach and be able to establish a critical number of fish the ocean can support, but today these criticisms are unwarranted. The Japanese Islands release over 850 million chum salmon each year, with no noticeable impact on size, quality or in the numbers of returning fish. They continue to increase their percentage of returns through more efficient and effective hatchery and fishing techniques. The Russian fisheries release a similar number of salmon into the Pacific and also achieve good returns to their hatcheries and fishermen.

Our state and private hatchery releases here in Oregon will be under 200 million at some future optimistic maximum point of production. In total, all Oregon hatcheries now release less than 5 million chum salmon fry and less than 10 million chinook and coho. It is no wonder our commercial and recreational fishermen are discontent. It is, however, unfortunate they are opposing the very group and legislation which can eventually help them.

Of these 13 private hatchery permits in Oregon, all but Weyerhaeuser and Union Carbide, are operated and financed by enterprising individuals who saw a need and accepted the challenge to do something about it.

We are not a particularly avarice group of people, although we someday intend to develop a run of fish and show a profit. We are introducing salmon all along the Oregon coast in numbers nature can handle, with 5 million salmon fry released into each stream. At a predicted return of .5 percent, we will market 25,000 salmon at our maximum production. With improved hatchery techniques we may double this number of returning fish. We are, however, guaranteed 5 to 10 years of a large cash outflow with no income. None of us are independently wealthy, we all work for a living and support this dream we call a fish hatchery.

We have been very enthusiastic about H.R. 9370, we feel we qualify as pioneers in aquaculture. We have spent our time and money to develop the technology to someday ranch salmon effectively.

I cannot speak for the Oregon Department of Fish and Wildlife or for their future policy, but if anyone will keep the large corporate hatcheries from dominating legislation it will be these small private hatcherymen who have their roots in recreational and commercial fishing. Each individual permit has as much validity before the state as another and although our hatchery will only raise 5 million chum salmon fry, we will have equal voice with Weyerhaeuser's permit for 40 million chum salmon.

Someone or some agency has got to replenish our diminished salmon stocks. The state has not had the funds (even with extensive mitigation) to re-establish the salmon to former levels, so they have turned to private enterprise to help with this task.

This legislation could greatly aid our small hatcheries which are so vulnerable to nature's whims and financial instability. It could allow commercial fishermen to form cooperatives to establish hatcheries and processing of their own. It could also help the Indian fisheries in their extensive hatchery operations.

A coalition of frightened fishermen are asking you to cut out legislation because of what they fear might happen. We fear it may happen if salmon ranching is not included in H.R. 9370 and if the bill is not then passed and signed into law. Weyerhaeuser and Union Carbide will continue without government aid, the small private hatchery may not weather the adversity without it.

Sincerely,

JON V. JAQUA.

EUGENE, OREG., June 21, 1978.

HON. WARREN G. MAGNUSON,  
*Senate Committee on Commerce, Science and Transportation, Russell Senate  
 Office Building, Washington, D.C.*

DEAR SENATE MAGNUSON: My name is Karl Manseth and along with my partners I operate Siuslaw Fishies, a sea ranching business located on the central Oregon coast. We were the second sea ranch to be licensed in the state when the laws were changed in 1972.

Our hatchery was constructed and started releasing chum salmon in 1973. Since then we have hatched, reared, and released all the available eggs we could get, which in the last six years has been about 1,200,000.

We started out small and invested all the time and money we could find to build and improve both our facilities and knowledge of the business. We believe that sea ranching offers a way of utilizing the vast resources of the ocean in an economical, non-depleting way to produce the high quality protein which the world needs. However, long before those needs can be met, the egg stocks must be increased to allow large enough releases of fish to achieve good survival rates so that the runs can increase in number.

This year we are constructing and are operating an inland hatchery near Eugene, Oregon. We are using warm, deep well water for the production of millions of accelerated growth coho and chinook salmon for ourselves and for other sea ranchers in Oregon.

This type of expansion is necessary, for the knowledge we gain from these early stages of sea ranching is the foundation that will support the highly productive and beneficial sea ranching industry of the future.

There are about a dozen licensed sea ranches in Oregon, all but a few are small, independent operations struggling to obtain eggs and financing to allow them to expand and increase their runs in a logical, business-like manner.

The trouble we all have is that it is a new and risky business. Because it is new, the insurance companies do not have adequate insurance programs for us. Banks are reluctant because we cannot insure ourselves and there is no track record for them to go by in our industry.

There is no program for increased egg supplies, so it is hard to count on surplus eggs being made available to us. Because eggs are essential to our operating, it is difficult to construct long range business plans with this uncertainty.

In addition, we have the risks which nature provides us each year in the form of flooding and drought.

For these reasons we have been supporting the aquaculture bill H.R. 9370. We believe that our representative leaders finally see the values and problems inherent in this new industry. It is well designed to give a boost to make sea ranching successful for the independents, who are the pioneers of this industry. It would allow us to compete against the large conglomerates, which in the last few years have seen the future of the business and are expending huge amounts of money and could take control of the industry if the independents are not given the support they need.

I understand that there is opposition to the sea ranching portion of the bill by some Indian, sportsmen and commercial fishermen from Washington state, where salmon ranching is not yet legal. In Oregon, where the public has become accustomed to the idea of sea ranching over the years, we have the support of the sportsmen who see more fish to catch. Many fishermen now see the increased supply of salmon as being more advantageous than offsetting effects of any decrease in price that may or may not result. The Commercial Boat Owners Association (All Coast Fisheries) has applied for a sea ranching permit in Oregon because they see it as a better way of harvesting salmon themselves. The Quanalit Indian tribe in southern Washington has been sea ranching for a number of years now.

I personally do not see many conflicts between these parties as to sea ranching, other than someday perhaps a slight reduction in the cost of salmon. But

I feel a better supply of protein at a possible lower price to consumers is in all the public's best interest.

I feel that the only real fear that could exist, would be that a few huge companies could gain control of this industry. That is what will happen if the sea ranching part of this bill is eliminated, but the independents can balance that power if they are supported by this bill.

If I can be of any assistance to you or supply you with any further information I will be glad to do so. I will even come to Washington, D.C. if I could be of any help in informing others of the status and needs of the sea ranching industry.

Yours truly,

KARL MANSETH,  
*President, Siuslaw Fisheries,  
Chairman, Oregon Chum Growers Association.*

CHEMICAL-PROOF CORP.,  
*Woodinville, Wash., July 9, 1978.*

SENATE COMMERCE COMMITTEE,  
*Senate Office Building,  
Washington, D.C.*

Attention: Mr. Douglas Anderson.

Subject: National Aquaculture Organic Act of 1978.

GENTLEMEN: Regards the above proposed act, we encourage the development of aquaculture and ocean farming of fish under a uniform national program.

Ocean farming will provide a competitive U.S. fish commerce and have a substantial effect on future food resource. A national program will allow equitable opportunity and will increase employment.

Sincerely,

PETER K. SCHOENING.

MERCER ISLAND, WASH., *July 10, 1978.*

HON. SENATOR WARREN G. MAGNUSEN,  
*U.S. Senate, Russell Building,  
Washington, D.C.*  
Re: H.R. 9370.

DEAR SENATOR MAGNUSEN: I am involved in trying to start a small private hatchery on the Northern Oregon Coast and am interested in the outcome of H.R. 9370.

I understand that there were hearings on H.R. 9370 in Seattle recently but private salmon ranching interests were not well represented. Most of the discussions centered around concerns that large corporations (i.e., Weyerhaeuser, Union Carbide, etc.) will gain control, dominate policy, and force commercial, recreational and Indian fisheries out of the harvest.

I feel that this could well happen especially if competition in salmon ranching is not encouraged. The large corporations are moving into inland rearing and salt water release-recapture. This release-recapture will be centered in a few coastal areas providing an increase in salmon returns in these locations but no increase in salmon runs in other streams. By encouraging small salmon ranching operations, the salmon runs would be increased on many additional streams thereby enhancing fishing prospects for all concerned.

With these thoughts as background I would like to make the following statement:

"I strongly support the aquaculture bill (H.R. 9370) as written. A Federal aquaculture plan would provide coordinated State and Federal support to maximize fisheries resources and increase fish returns. This bill can only improve the fish runs and harvest for all concerned: commercial, recreational and Indian fisheries. By supporting small private hatcheries, salmon runs will be increased on many coastal tributaries with benefit to all. If this support is not provided, the large corporations with large capital resources will concentrate their release-recapture facilities in only a few tributaries (to maximize returns), thereby increasing runs on only a few coastal tributaries.

The small private hatchery operations are at a critical point in time. We do not have the capital resources to build the facilities that new aquaculture technology dictates. Also, there is no central clearing house to provide the latest technical information or results of aquaculture research. H.R. 9370 is needed to improve fisheries resources, provide competition, increase availability, and reduce the cost of this valuable source of protein to the consumer."

ARNOLD E. MANSETH.

## OCEAN RANCHING IN THE STATE OF WASHINGTON

This matter has been reviewed by concerned, intelligent, involved individuals looking at all sides of the issue, namely the Presidential Task Force on the Washington State Fisheries. In their report dated January 16, 1978, page 105, they state they have been asked by both sides of the issue to take positions pro and con on aquaculture or sea ranching in the State of Washington. They also state that their regional team believes that neither their charter nor settlement requires them to take a position on their merits, however, they recommend that the enhance sites and the egg requirements for the recent State Enhancement Program and the Federal Program have priority.

Furthermore, new programs on the carrying capacity of the rivers, estuaries, and salt water, as well as their harvesting impact on managing the resource be fully evaluated before additional private ventures are authorized.

My personal observations on ocean ranching in the State of Washington leave me with three main points that I am concerned about and don't feel can be satisfactorily answered at this time. They are:

1. Will the ocean ranching fish be competing with any other species of salmon which are native to the streams and rivers of Washington, Oregon, and California? If so, then by artificially propagating a strain of fish and releasing them to compete with native fish we would be damaging or even killing more strains of native salmon or steelhead.

2. By allowing ocean ranching in the State of Washington, we would be establishing another user group at a time when the rights of user groups are still being assessed and ways of trying to meet their needs are being studied at the present time.

3. The ocean these fish would be feeding in belongs to Society as a whole and should never be used to support "private fish stocks" at the expense of native stocks.

I would rather see the streams and spawning beds be cleaned up so that natural reproduction could be taking place at its maximum level and that we enhance natural reproduction through the use of spawning channels, hatcheries, or other methods.

With a total enhancement program there will be no room for aquaculture fish in the food chain without direct competition to other runs of fish.

Therefore, in closing, I would ask that you gentlemen do not consider aquaculture and sea ranching in any form at this time.

Respectfully submitted,

CHARLES W. HICKEY, Jr.,  
*Concerned Citizen and Sport Fisherman.*

---

 WASHINGTON STATE SALMON EGG SUPPLY

The following analysis is based on Progress Report No. 30, the 1976 Hatcheries Statistical Report of Production and Plantings by Bob Foster, Vic Fletcher and Bertha Kiser of the Washington Department of Fisheries, July 1977. The analysis is based on data and Tables 2, 3, 4 and 7 of that report.

For the 14 years, 1963-1976, the Department took 965,779 adult Chinook salmon at its hatcheries. Assuming a 50:50 male/female ratio and 5,000 eggs per adult female, this amount of Chinook adults provided 2,414,477,500 salmon eggs. The Department took 1,241,719,727 salmon eggs or 51% of the available salmon eggs over this 14-year period. For the most recent year, 1976, they took 60% of the available Chinook salmon eggs.

For Coho salmon, the total number of adult was 3,259,537. Assuming a 50:50 male/female ratio and 3,000 eggs per female, the total potential number of eggs available was 4,889,305,500. The number of eggs actually taken was 945,600,580 or 19% of the available Coho eggs. For the most recent year, 1976, the number of adults was 226,219 and the percentage taken was 30%.

For Chum salmon over the same 14-year period, the number of adults taken was 137,238. Assuming a 50:50 male/female ratio and 3,500 eggs per adult, the total number of eggs available was 240,166,500. The number of Chum eggs actually taken was 140,553,374 or 58 percent of the available. For 1976 the utilization was much higher—97 percent.

## SALMON—THEIR FIGHT FOR SURVIVAL

Pacific salmon have existed for thousands of years. Wild stocks of salmon still exist in many river systems of the Northwest, but the depredations of man are rapidly wiping many stocks of wild salmon from the face of the Earth.

Mans effects on salmon are of two general sorts which are shown in Figure 1. Man's impacts on the physical and biological environment of the freshwater phase has had a very drastic negative impact upon salmon, while at the same time man as a hunter or harvester of salmon in saltwater is having a similar negative impact. Thus, the salmon is subject to a double whammy.

Recently, this double whammy has taken on some technical implications that are creating an impact greater than the wild salmon can bear. Thanks to farsighted legislation establishing national parks and wild rivers, certain shore-based freshwater environment is now a reasonable refuge for salmon; although, strangely enough, in national parks hunting and carrying of fire arms is prohibited while fishing is encouraged to the extent that state fishing licenses are not required in national parks. This speaks to man's value judgement about the worth of animals. Fury, warm blooded animals—particularly with large brown eyes—are viewed as "good" and are protected; while cold, slimey creatures—such as fish—are not extended similar protection. Even so, the negative depredation of salmon in the freshwater environment is not large in those national parks or along those wild rivers thus the salmon has a sanctuary of sorts and relief from those impacts.

In the saltwater environment, there is no sanctuary. Recent technical breakthroughs add another nail to the casket of the salmon. Let me discuss a number of them:

The electronic and space revolutions spurred by the invention of the transistor, consequent miniaturization and consequent gains in electronic reliability help toll a death knell for the wild salmon. Commercial fishermen have hunted salmon for decades, but they are now armed with the latest technical wizardry. Salmon fishing boats are routinely equipped with various electronic devices which enable them to more efficiently capture salmon.

Today, many salmon fishing boats have radar. Radar is useful to salmon fishermen in that it helps them avoid other boats and rocks that could sink them. However, it is also uniquely useful to the gillnetter. Gillnetters fish at night and can use radar to spot the sets of other salmon fishermen that may have preceded them in a drift. The fishermen can then set his gillnet to avoid the pass of an earlier gillnet and thus more efficiently catch salmon. This was not possible before the invention of radar and its miniaturization and reliability increase with transistors.

Another technology that gillnetters have adopted is twisted monofilament nylon. Monofilament gillnet web has been declared illegal because of its extremely high efficiency—the fish cannot see it. Since it was made illegal, fishermen used standard crystal multifilament nylon nets that are much more visible to the fish and thus less efficient. Test results reported by the Washington Sea Grant Marine Advisory Program show that the new twisted monofilament gear was much more efficient during calm water, daylight and twilight conditions. Meanwhile, salmon near extinction don't need more efficiency in gillnets. They don't even need gillnets.

Another electronic technology adopted by fishermen is sonar. Use of sonar in fishing for salmon is illegal; however, it is extremely difficult to police. Side-scan sonar is now available that can look ahead, behind or at any side direction from a boat. Utilized in purse seiners and gillnetters, it allows the fishermen to spot the salmon and to hunt them down with his nets. This sonar is not cheap, it encompasses solid-state, shock-proof circuitry with a cathode ray tube readout.

Another technology adopted by fishermen is Loran-A. Loran-A allows very accurate navigation under a variety of weather conditions. It allows the fishermen to know exactly where he is at. The result of this is trollers, but more often charter boat operators, when they find a school of salmon can radio their brother fishermen providing their exact location and the other fishermen can pull their lines and immediately race over to the spot where the salmon are in order to capture them with hook and line. Navigational aid is also very useful for tenders or pickup boats that pick up fish from the smaller salmon catcher boats. This navigational aid then increases the efficiency of the fishermen, again at the expense of the salmon.

The communication devices or radios themselves, whether a CB or side-band, also increase the efficiency of fishermen. The invention of the transistor and its availability at a reasonable cost has resulted in their being widely used by fishermen. As described above in the Lorán example, fishermen can utilize the radios to notify their brother fishermen of the location of the salmon in order that large packs of hunters can capture more salmon.

Trollers have adopted another electronic device which is called a black box. The black box imparts a very slight positive electrical charge to the lure of the salmon troller. This slight positive electrical charge then attracts salmon to the lure and causes them to hit the lure, becoming hooked. The trollers use stainless steel trolling lines and apply a 0.3 to 0.7 volt positive charge to the lure. The utilization of this potential, on the line, is especially useful when fishing is slow. Obviously, when fishing is hot the fisherman is limited by his line handling or fish handling speed and not by the number of fish he actually hooks. The black box is, of course, transistorized and was not practically possible before invention of the transistor. Improvement in the catch rate can be as high as 5 percent utilizing the black box.

The final space age technology that salmon fishermen are utilizing in this increasingly unequal contest is a combination of space satellite, computer communications system, and micro processor. It is almost unbelievable what the salmon must put up with, but it's happening. The National Marine Fishery Service, a division of the National Oceanic & Atmospheric Administration of the Department of Commerce, has satellites orbiting the earth and viewing the ocean. Amongst the data obtained by the satellite is the surface temperature of the ocean. Salmon tend to congregate in ocean water of 51° F; thus by viewing the ocean water through satellite, the areas where these salmon are may be located. Presently, two satellites are utilized, a NOAA five-series and a Tyros series. Temperature is gathered by infrared imagery and reported twice a week. Fishermen receive reports at least biweekly. However, these do not see through clouds very well and thus water temperature locations are not available on cloudy days. However, a new high technology satellite called SeaSat-A will be launched in June of 1978 by NASA. SeaSat-A will be able to see through clouds by using a microwave radiometer and thus observes and records water temperatures at all times of the day and night. The information will be telemetered from SeaSat-A to an institution in Monterey, California called Navy Fleet Numerical, where a large computer will analyze the data, digest it and then transmit it back to fishermen. The fishermen will be equipped with a device called a Weather Facsimile which will literally draw a map of the ocean surface showing the location of the various temperature bands of water where the salmon are located. The fishermen will then proceed to the proper band in order to begin his fishing. Meanwhile, the wild salmon are being swept off the face of the earth.

The above-described technologies are all in place and are being utilized by salmon fishermen. What is especially ironic is that the Department of Commerce, through the Sea Grant Marine Advisory Program, actively promotes the transfer of these technologies and the implementation of them by fishermen. The Sea Grant Program runs short courses at which fishermen are taught these technologies and how to understand and operate them. Another arm of the same agency also makes low cost loans available to fishermen so they can buy the electronic hardware necessary to implement the technologies. While all of this is going on, the Pacific Fishery's Management Council, an arm of the Department of Commerce, is studying the status of the wild salmon stocks concluding that they are severely depressed, attempting to reduce the impact on the wild salmon and reduce the amount of fishing gear negatively impacting this salmon through buyback. Does it all make any sense?

---

STATEMENT OF JACKIE PREST, WASHINGTON TROLLERS AUXILIARY, FEDERATION OF INDEPENDENT SEAFOOD HARVESTERS

Mr. CHAIRMAN, committee members, ladies and gentlemen, my name is Jackie Prest and I'm here to speak on behalf of Washington Trollers Auxillary and Federation of Independent Seafood Harvesters. Thank you for this opportunity to bring before you our views of F.C.M.A. I have been involved in the fishing industry for over 25 years. When the foreign fleets first appeared on the West coast off Washington and Oregon in 1966, some of us became totally committed to the protection of our resource and its harvesters. We worked tirelessly and successfully for the 12 mile bill and I was honored to be a member of the first U.S.-U.S.S.R. fishery negotiating team.

Mildred Malchow, here with me today, and myself were among the first to lay on your desk, Mr. Chairman, petitions for this 200 mile legislation. We were pleased and satisfied when you shepherded it through the Senate. We are even now supportive of the original intent of 94-265, but do not recognize the act as it, is being implemented by the management council. The F.C.M.A. is being used as a tool for allocation, when the intent was support for and enhancement of the domestic resource and its harvest.

Allocation is discrimination, taking from some and giving to others. The oversight is, the Council is taking the power to deprive the domestic harvester of the opportunity to make a living—allocation also seems to mean, taking from those harvesters fishing in the conservation zone and transferring the resource to users out of the management area for purposes of archaic treaties and international trade-offs. The main beneficiary of Council actions at this point is Canada. Many times we have heard it said the troller hasn't had any cuts in seasons and it is past time for management. Absolutely not true. The troller once fished 365 days of the year curtailed only by weather. In the late 1940's a six-month season was imposed. In the late 1950's, we lost March and one half of April. In 1976 the P.F.M.C., in a frenzy to manage, cut April completely and one half of June, one of the most productive months. In 1977 they additionally cut the last six weeks of the season for the Northern coast of Washington State. Cuts? This certainly constitutes cuts, added to the days we lose from weather and other natural phenomena, we find it difficult if not virtually impossible to plan for a continuing, economically viable industry.

My especial concern is the total disregard by the Council for input in the management process by our domestic harvesters. The American fisherman is a professional as well as a small business man and he is concerned with his product from egg stage to market. His goal is to deliver a high quality product for the consumer's table. The management council disregards their concern, holding public hearings on the draft plans, but never incorporating suggestions or comments. At some meetings the Chairman's opening remarks declare his intentions to accept comments from the audience, but when you try to be recognized you get a negative reply. And so it goes ad infinitum. Finally to end this critique, the Council continually schedules its meetings on final plans out of the area of impact. This next FY they will be operating with a healthy budget and yet they ask fishermen to travel great distances with heavy out of pocket expenses to hear of our own demise. An example is review of the final salmon plan in San Diego or Idaho. It is interesting to note they are holding meetings in Denver, Colorado in June on limited entry, again inviting little if any harvester expertise. It is difficult to understand how people with good secure jobs can be the ones to plan limited entry that may deny one of us the right to work at our chosen profession. Many of these participants have never been on a boat and really have no practical knowledge about fishing. How can they make decisions without the necessary professional expertise? It is interesting to note that we were urged to upgrade our fleets 10 years ago, now it is limited entry. By mentioning this particular point I want to emphasize that fishermen are professionals, they do know their industry, they can render good decisions; if they could not they would not continue to come home safely, the hazards are too great. It takes a wealth of knowledge and responsibility to be a successful fisherman. I believe we have the best in the world. It has been market conditions in the past and now we have the additional problem of a biased council to deal with that makes viability difficult.

Again I remind the committee that the original intent of P.L. 94-265 was protection for and enhancement of the resource and its harvesters. American fishermen cannot understand or tolerate foreign participation on our fish stocks on the high seas when P.F.M.C. cuts their season continuously. In 1976 Poland permitted three observers aboard three stern trawlers for one month. A catch of 4250 salmon in the area off the Columbia River in August and September was their "incidental catch." (Reference Incidence of Salmon in Japanese, Polish, and U.S.S.R. Trawl Catches off California, Oregon, Washington, and Southern British Columbia, 1976, by Robert French. Resource Ecology and Fisheries. Management Division, Northwest and Alaska Fisheries Center, N.M.F.S., N.O.A.A., 2725 Mountlake Boulevard East, Seattle, Washington 98112, August 1977.) Citing figures from the management plan, white section, Page 44, an average incidental catch of 215 salmon per ton times the total hake catch of 200,000 tons equals 43,000 salmon. We know the foreign trawlers have been reduced to 89,000 tons. This is still a highly significant salmon catch. The transfer of salmon from American trollers to Canadians with the 28" size restriction more than makes up the cut to foreign trawlers.

Our people are concerned for the resource.

The solutions to the manifold problems are simple and basic. You have them readily available in the report to Congress from the Eastland Survey. When people are involved in the planning process from the beginning they are then committed to the course of action they help devise. If we as the harvesters are allowed to participate we will employ sound management principles; it is in our best interests to do so. 50% representation by harvesters is basic to our management concepts and we urge this as a procedural amendment. Our additional recommendations are: only coastal states shall be voting members of the Council. Non-coastal states with a vested interest shall become part of the advisory committee. All language implementing Indian treaties shall be stricken from this act that manages 3-200 miles. All regulations shall be made on the basis of sound biological data, using terms that are operationally defined.

These represent our most pressing concerns with the administration of the law. The concept still has our support, but the way the law has been administered leads us to believe that the intent of Congress is being thwarted.

Thank you for your concern and once again we look to you for resolution of the conflict.

