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HYDROPOWER RIVER MANAGEMENT AND SALMON RECOVERY ISSUES ON THE COLUMBIA/SNAKE RIVER SYSTEM

FIELD HEARING

BEFORE THE

COMMITTEE ON RESOURCES
HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTH CONGRESS

SECOND SESSION

APRIL 27, 2000, PASCO, WASHINGTON

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CONTENTS

	Page
Hearing held April 27, 2000	1
Statement of Members:	
Chenoweth-Hage, Hon. Helen, a Representative in Congress from the State of Idaho	4
Prepared statement of	6
Doolittle, Hon. John T., a Representative in Congress from the State of California, Prepared statement of	2
Hastings, Hon. Doc, a Representative in Congress from the State of Washington	8
Prepared statement of	11
Nethercutt, Hon. George, a Representative in Congress from the State of Washington	14
Prepared statement of	16
Simpson, Hon. Michael K., a Representative in Congress from the State of Idaho	8
Statement of Witnesses:	
Anderson, Dr. Jim, Associate Professor, Columbia Basin Research, University of Washington, Seattle, Washington	84
Prepared statement of	86
Bogert, Michael, Counsel to Governor Kempthorne, Boise, Idaho	113
Prepared Statement of	116
Hagerty, Dean, Commissioner and President, Public Utility District of Grant County, Ephrata, Washington	132
Prepared statement of	134
Ilgenfritz, Ric, Columbia Basin Coordinator, National Marine Fisheries Service, NOAA	137
Prepared statement of	140
Johansen, Judith, Administrator, Bonneville Power Authority, Portland, Oregon	49
Prepared statement of	51
Mantua, Dr. Nathan, Associate Professor of Atmospheric Science, Joint Institute for the Study of Atmosphere & Oceans, University of Washington, Seattle, Washington	73
Prepared statement of	75
Minthorn, Antone, Chairman, Board of Trustees, Confederated Tribes of the Umatilla Indian Reservation, Portland, Oregon	182
Prepared statement of	185
Mogren, Col. Eric, Deputy Commander, Northwestern Division, U.S. Army Corps of Engineers, Portland, Oregon	59
Prepared statement of	61
Morton, Hon. Bob, State Senator, Washington State Senate	21
Prepared statement of	25
Roby, Dr. Dan, Assistant Unit Leader, Oregon Fish and Wildlife Cooperative Unit, Oregon State University, Department of Fisheries and Wildlife, Corvallis, Oregon	125
Prepared statement of	128
Skinner, Michael K., Director, Center of Reproductive Biology, Washington State University, Pullman, Washington	169
Prepared statement of	172
Swartz, Don, Science and Policy Advisor, Northwest Sportfishing Industries Association, Portland, Oregon	181

HYDROPOWER, RIVER MANAGEMENT, AND SALMON RECOVERY ISSUES ON THE COLUMBIA/SNAKE RIVER

THURSDAY, APRIL 27, 2000

HOUSE OF REPRESENTATIVES,
COMMITTEE ON RESOURCES,
Pasco, Washington.

The Committee met, pursuant to notice, at 10 a.m., in the Theatre, Columbia Basin College, 2600 N. 20th Avenue, Pasco, Washington, Hon. Helen Chenoweth-Hage presiding.

Mrs. CHENOWETH-HAGE. The hearing will come to order. Can you hear me back there? Is this microphone picking up our voices? It's not. Well, we'll have to wait.

OK, I guess we're ready. I want to thank all of you for joining us here today for this Congressional Hearing. Congressman, Don Young, the Chairman of the Resources Committee, has sent the entire Committee out, absent Don Young, but we are here today and there is a very, very important issue that we are going to be discussing today.

I do want to thank Congressman Hastings for inviting us into his District. As we traveled in last night I was just amazed at the beauty and productivity of this area, and it's quite amazing the development that has occurred here and it's quite beautiful and very, very productive.

I also want to thank Congressman George Nethercutt for his joining us today. This issue is exceedingly important to these two gentlemen and they have been stellar in their leadership on making sure that we maintain the proper kind of control on our Snake River and our Columbia River.

I am very, very happy to welcome my colleague from Idaho, Mike Simpson, who is a member of not only the Resources Committee but also the Water and Power Subcommittee and we join each other in sitting on that Committee. I think we all expected John Doolittle, who is the Chair of the Water and Power Subcommittee to be here today, but due to a death in the immediate family Congressman Doolittle is unable to join us today and we certainly extend to him our condolences and our best wishes to Mr. Doolittle and his family.

[The prepared statement of Mr. Doolittle follows:]

Statement

John T. Doolittle, Chairman
Subcommittee on Water and Power

Oversight Hearing on:

River Management, and Salmon Recovery Issues
on the Columbia/Snake River.

April 27, 2000

Today we are here to hear testimony on the options that exist for salmon recovery in the Columbia River Basin. We will hear how science can be used to plot a course for future salmon recovery. This hearing is designed to highlight the status of information in the freshwater and marine environments and to help determine if the correct questions are being asked, or if all of the relevant issues are being evaluated. Such steps must be taken before disastrous actions are taken that may adversely affect both the salmon and the human environment. As of April 20, this year 5551 chinook were counted at Bonneville Dam, in comparison to 649 in 1999 and the ten year average of 1838. These are the highest numbers since 1986. The question remains, are these numbers the result of new government programs, changing ocean conditions, or is this an anomaly?

While improving the salmon runs is our shared goal, achieving it must take into consideration all the factors involved in the life of a salmon and the social and economic impacts on the region. The enormity of the decision involving the dams demands that we use high quality science rather than speculation. History has shown us that designing recovery plans based on speculation may not only be costly to the human environment and ineffective for target species, it may even be harmful to the species we are trying to save. And finally, once we have good science we must carefully weigh the hypothetical gains against the known costs.

Reasonable observers agree that there is no silver bullet when it comes to restoring salmon runs. How do we account for the decline in salmon runs in streams where there are no dams? What role do predators like the Caspian terns, seals, and sea lions play? Can we do more with habitat improvement? Can we do a better job with hatcheries? Should we continue to destroy "non-native" adults in streams after they have made it past the dams? And to what extent have hatchery fish and native stocks interbred?

There has been a widespread assumption that because the ocean is large it is a more stable habitat for salmon than the freshwater environment. We now know that the assumption of a relatively benign and unchanging ocean habitat for salmon is untrue. There have been reductions in ocean survival of many species of Pacific salmon. Dr. David Welsh had testified to the Senate Committee on Energy and Natural Resources that in the early 1990's essential plant nutrients began to disappear within the surface layer of

the ocean, toward the end of each summer. He indicated that this phenomena is something never before observed in the Eastern Pacific. He estimates that this reduced new biological production by 40% in 1994 relative to what was possible in the 1980's.

Eight years ago it was fashionable to believe that most of the fish died in the first reservoir. When scientific research indicated otherwise, the criticism was shifted to the dams and turbines. Additional research indicated that the cumulative hydro effects are not what was initially imagined. Most recently the issue was the mortality rates from barging. Current indications are that survival by barging exceeds that of in river passage.

Clearly all the answers are not in. Equally clearly, several of the hot theories for why salmon populations have declined have proven incorrect. With this uncertainty in the evidence and the analysis, this is not the time to make some grandstand decision to remove the dams and devastate the people of the northwest.

Before looking to singular measures, we must look very closely at all the causes and solutions. The science must be subjected to peer review. We need to spend our time looking at the real causes for salmon population declines. Then we can put our resources to work taking advantage of the most promising alternatives we discover. The region has spent over 3 billion chasing this problem in the last 20 years with little success to show for the money that has been spent. Some of the witnesses today will be discussing what we can do in the next 5-7 years to make real and sensible improvements in the system.

The ratepayers, the taxpayers and people on all sides of this issue deserve better information than they are currently receiving.

OPENING STATEMENT OF THE HON. HELEN CHENOWETH-HAGE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IDAHO

Mrs. CHENOWETH-HAGE. We are here today in the Tri-City area to hear testimony about an issue that could very well determine the future of this lush valley and many other such areas up and down the Columbia and Snake Rivers. That issue is the recovery of the salmon. The agency in charge of this effort, The National Marine Fisheries Service, is on the verge of issuing a plan that will have major implications for the States of Idaho, Washington and Oregon.

Today, we as Congress, are asserting our critical role in this process. These not decisions that should be made without the awareness and the actions of Congress.

As we approach this issue we must first determine whether the focus is truly on the salmon or some other agenda. I firmly believe that when the true focus is on the salmon the battle will be mostly won. The science does exist showing all of the factors detrimental to the fish, some which are caused by man and some which are nature's fault, and realistic and efficient solutions to these problems are available if we only choose to use them. Instead, those who have a different agenda other than saving salmon hijacked these issues. Rather than hone in on the real problems of salmon decline and real solutions to recovery of that species, these groups have instead sought to fulfill their own purposes, whether it be returning the River system to its pre-Columbian condition or thriving on the cash cow of resource and grant dollars that depend on the problem really never being solved.

Now, make no mistake about it, this is an unrealistic unachievable and costly goal that is causing economic and ecological confusion, harming not only our economy and not laws and but the salmon as well.

While billions of dollars have been diverted to endless studies on highly experimental measures, such as flow augmentation and nonstarters, such as dam breaching doable measures such as predator and harvest controls, innovate fish green devices and even modification to the dams remains on the shelf gathering dust.

Today, we hope to win back this issue, steer it back on the course that it belongs; that is, which is to recover the species while at the same time respecting the laws already in place and the way of life that has made spectacular agricultural valleys such as this one prosper so well.

We will be hearing from witnesses, both in and outside the Federal agencies about all of the factors affecting salmon and what can be done in the short term to deal with these factors. We will be examining the process the agencies are using to determine salmon recovery policy.

I would like to make a special note of a witness here today from my State of Idaho, Michael Bogart, who is representing Governor Kempthorn. Mr. Bogart will be present perfect example of what is wrong with current salmon policy. Idaho, our State, is being asked to make tremendous sacrifices at immense financial cost, even though the actual biological conditions in the State have little to do with the salmon problems.

Farmers well into the upper Snake River valley, hundreds of miles away from salmon habitat are being asked to give up water that adds virtually no real scientific value to the recovery effort, and at the same time real problems, such as the taking of an estimated 600,000 wild salmon smolts by the terns in the Columbia estuaries is being virtually ignored.

As long an this imbalance of focus persists we will really never recover the salmon.

In closing, before I recognize the other members for their statement, I do want to say that Congress John Doolittle and I have spoken at length by phone. He does have a statement that will available to all of you. It is an exceptionally good statement and I would urge you to pick it up and examine it.

[The prepared statement of Mrs. Chenoweth-Hage follows:]

Statement of U.S. Representative Helen Chenoweth-Hage
Hearing on River Management, and Salmon Recovery Issues on the Columbia and Snake Rivers
House Committee on Resources
Pasco, Washington, April 27, 2000

We are here today in the Tri-City area to hear testimony about an issue that could very well determine the future of this lush valley and many other such areas up and down the Columbia and Snake Rivers – the recovery of the salmon. The agency in charge of this effort, the National Marine and Fisheries Service is on the verge of issuing a plan that will have major implications for the States of Idaho, Washington and Oregon. Today, we as Congress are asserting our critical role in this process. These are not decisions that should be made without the awareness and blessing of Congress.

As we approach this issue, we must first determine whether the focus is truly on the salmon, or some other agenda. I firmly believe that when the true focus is on the salmon, the battle will be mostly won. The science does exist showing all of the factors detrimental to the fish, some which are man caused and some of which are nature's fault. And realistic and efficient solutions to these problems are available, if we only choose to use them

Instead, those who have a different agenda other than saving salmon have hijacked this issue. Rather than hone in on the real problems of salmon decline and real solutions to recovery of the species, these groups have instead sought to fulfill their own special purposes -- whether it be returning the river system to its pre-Columbian condition, or thriving on the cash cow of research and grant dollars that depend on the problem never being solved. Make no mistake about it, the goal of these extreme groups is not to recover salmon, but to destroy the facilities and systems currently in place on one of the last great rivers of commerce in the nation. Theirs is an unrealistic, unachievable and costly goal that is causing economic and ecological confusion, harming not only our economy and laws, but the salmon as well. While billions of dollars have been diverted to endless studies on highly experimental measures such as flow augmentation and non-starters such as dam breaching, doable measures such as predator and harvest controls, innovative fish screen devices, and even modifications to the dams remain on the shelf gathering dust.

Today, we hope to win back this issue – steer it back on the course it belongs, which is to recover the species while at the same time respecting the laws and the way of life that has made spectacular agricultural valleys such as this prosper. We will be hearing from witnesses both in and outside the federal agencies about all of the factors affecting salmon, and what can be done in the short term to deal with these factors. We will also be examining the process the agencies are using to determine salmon recovery policy.

I would like to make special note of a witness here today from my State of Idaho, Michael Bogart, who is representing Governor Kempthorne. Mr. Bogart will present a

perfect example of what is wrong with current salmon policy. Idaho is being asked to make tremendous sacrifices, at an immense financial cost, even though the actual biological conditions in the state have little to do with the salmon problem. Farmers well into the Upper Snake River Valley, hundreds of miles away from salmon habitat, are being asked to give up water that adds virtually no real scientific value to the recovery effort. At the same time, real problems such as the taking of an estimated 600,000 wild salmon smolts by the terns in the Columbia estuaries is being virtually ignored. As long as this imbalance of focus persists, we will never recover the salmon.

I want to thank all of the witnesses, who have all made a special effort to be here today, and look forward to hearing from you.

Mrs. CHENOWETH-HAGE. So with that I would like to recognize Mr. Simpson for an opening statement.

OPENING STATEMENT OF THE HON. MICHAEL K. SIMPSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IDAHO

Mr. SIMPSON. Thank you, Madame Chairman. I appreciate the opportunity to be here in Washington and to discuss this issue that is going to be obviously very important to the Pacific Northwest and extremely important to the State of Idaho and the District which I represent, the southeastern portion of the State of Idaho.

Some of the most contentious debates we've had while I have served in the State Legislature in Idaho were over the issue of water and augmenting flows and the legislature, as most people know in the State of Idaho, has approved over the past several years additional flow augmentation of 427,000 acre feet, which has an impact on irrigated land in southeast Idaho. While that ran out last year the legislature again approved an extension of that for 1 year.

Those impacts that flow augmentation have on southeastern Idaho the potential of the decisions that are going to be made relative to recovery of salmon and how we go about that, have an enormous impact in my District on the people of my district as well as the entire Pacific Northwest.

So I am very pleased to be here today to participate in this hearing and receive the testimony input from those that are going to be presenting their testimony today on this critical issue in the Pacific Northwest. Thank you.

Mrs. CHENOWETH-HAGE. Thank you Mr. Simpson.

Mr. Hastings.

OPENING STATEMENT OF THE HON. DOC HASTINGS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. HASTINGS. Thank you, Madame Chairwoman. I want to welcome all of you on the panel here to my district and I thank you for coming. I might add by way of introduction this district you're really into health, an apple a day keeps the doctor away and we lead the country in apple production, but if you are in to what I might say junk food and I don't want to say it quite that way.

Mr. SIMPSON. Be careful.

Mr. HASTINGS. Be careful. We are a major producer of processed potatoes in this district, but if you're into the higher life we lead the country in production of premium wine grapes, not the country but we certainly lead the Nation in the quality of wine that's produced in this area. I don't want to let that one go.

If you're really into health food during the season we lead the country in production of asparagus, and at the final part of the day you want to have a nice cold beer, we lead the production in the country of hops, which is an integral part of beer, and finally, if you want to cleanse your palate you use the mint that is grown in this area in Creme d'Mint or whatever you want.

So welcome to probably the most diverse agricultural area save for the central valley of California in the county.

So I want to thank you for being here. The reason for this hearing is to look at really some near-term recovery efforts and explore some of the activities that are going on because the debate is going on and we will hear later on obviously about the dams and maybe some changes in how we should pursue that.

But I have to tell you that I am very troubled by reports last week that indicated that the Clinton-Gore Administration intervened with the Corps of Engineers on its position in the Draft Environmental Impact Statement regarding the four lower Snake River dams.

Instead of recommending additional fish passage improvements, it appears that the Corps last fall was compelled to issue a draft with no preferred alternative. Now, the stated reason for this was to allows for a more comprehensive review of the factors in packing fish in the All-H Paper process that goes forward, and the idea was to allow that to go forward without prejudice, which certainly sounds to me to be a reasonable expectation.

However, I would point out that within this Administration that line of thinking apparently did not apply to the U.S. Fish and Wildlife Service, which did recommend dam breaching. Now, the Senate is already investigating this dilemma and I have asked this Committee, as you know, and the Committee on Transportation to look into it.

But either way, I think that what we have to do is look at all factors, and I know all the members on this Committee were cosponsors of my Concurrent Resolution 63 that passed this Committee last July to look into all factors rather than just the issue of dam breaching.

Why ought we to look beyond dams? Well, the practical fact is that fish passage improvements and transportation systems frankly have worked. And it seems to me we ought to focus on different areas. For example, common sense would dictate that if we want to increase our fish populations you have to look at other areas besides just the dams, and we have to come to grips with the fact that it's not only humanity that eats the fish. There are others that eat the fish. In fact, in the Corps Draft Environmental Statements they said, and I quote,"10 to 30 percent of a 20 to 30 percent of all potential smolts that would otherwise be found below Bonneville dam were consumed by birds." Yet Corps of Engineers began to remove the colony of Caspian Terns that are on Rice Island they were prevented to do so by a environmental group through a lawsuit.

Let's put this into perspective. The Caspian Terns are protected under the Migratory Bird Treaty Act, but they are not endangered or threatened. At times when Federal agencies are telling northwest residents that the Endangered Species Act supersedes State water rights and perhaps even their constitutional right to private property, shouldn't we at least harass a few birds to save an endangered species?

That hasn't really been addressed, it seems to me when you look at the overall scope of what we're all about. I might add, too, that hatcheries have been a vital part in this whole process. There's been some innovated work that has gone on and I think that ought to be pursued.

Also, when we look at ocean conditions; I think too often the ocean is dismissed. I know we're going to have testimony regarding that later on, but it seems to me whatever decisions we make and not take into the data that we collect on ocean conditions make it impossible for us to determine what a proper course in the future would be if we don't take that aspect into consideration.

If the area of habitat is a very critical area, I think that we ought to look at some local success and local efforts that are going on that can, in fact, increase habitat. And I'd like to cite just a couple of them.

First, here within the Tri-Cities, Helen, when you flew into the Tri-Cities and, Mike, when you flew in you probably saw those ugly levees that were there that were left over from the results of the great flood of 1948, but within the 1996 WRDA Act that I authored was a chance to transfer those lands to the area here, and there are certain local agencies that are trying to improve the fish habitat utilizing those levees. Hopefully, we can have success on that, but this is an example of local people getting together to try to come up with solutions.

Second, there are two irrigation districts that right now primarily draw their water from the lower Yakima River. I have introduced a bill that would allow them to draw the river, draw the water out of the Columbia River where there is much, much greater flow. This is agreed upon, I might add, by virtually everybody in involved. It makes common sense, but I want to emphasize this is a decision that could be made at the local level given the opportunity to make that decision at the local level.

Finally, there is a proposal from the snake river Irrigators, Snake and Columbia River Irrigators. Obviously, they have a great deal at stake in this, and they are suggesting that rather than just flush water down and there is some data that proves that hasn't had fish runs, we ought to allow that water to go dams and create power and with the excess of that use it for habitat recovery as one example. That to me seems like a common sense approach to what we want to do, and these are all near-term solutions to what our problem is.

Finally, maybe what we ought to focus on more than anything else is a solution to the problem that is facing us rather than just trying to deal with the political issue. I think if you drive the decision back here more to people that are involved we can arrive at a decision in that regard.

So Madame Chairwoman, I look forward to the testimony that's going to be given from the people. I think we have a very good assortment of people on the panels and I look forward to their testimony. Thank you.

[The prepared statement of Mr. Hastings follows:]

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Congress of the United States
House of Representatives

Testimony of Congressman Doc Hastings
On Near-Term Steps to Achieve Salmon Recovery
House Resources Committee Field Hearing
Pasco, Washington
April 27, 2000

I would like to begin by thanking the members of the Committee for coming here to Central Washington. I'm pleased that you will have the opportunity today to hear how the people of the Pacific Northwest are already working to recover our threatened and endangered salmon and steelhead. And make no mistake, we are committed to saving these fish.

The focus of this hearing is on the practical and incremental steps that can be taken over the near-term to recover endangered salmon. This is where we should be concentrating our efforts. We shouldn't miss the opportunity to make real progress toward salmon recovery now, while we wait months or years for the outcome of the debate on dams. Nor is it clear that we should trust the recommendation of our federal agencies on the dams once it is made.

I am deeply troubled by reports published last week indicating that the Clinton-Gore Administration put pressure on the U.S. Army Corps of Engineers to change its position in the Draft Environmental Impact Statement on the four lower Snake River dams. Instead of recommending additional fish passage improvements, it appears that the Corps was compelled to issue a draft with no preferred alternative. The stated reason for this was to allow the more comprehensive review of factors impacting fish in the All-H Paper to go forward without prejudice. I would point out that this line of thinking apparently didn't apply to the U.S. Fish and Wildlife Service, which did recommend dam breaching. The Senate is already investigating this matter, and I have asked this Committee—and the Transportation Committee—to look into it as well.

Regardless of the ultimate recommendation of the agencies, it is clear that an approach that considers all the factors impacting the fish is required. This is exactly what I asked for last year when I introduced H.Con.Res. 63, a resolution calling for a more comprehensive approach to salmon recovery instead of dam breaching. This Committee endorsed that position when it passed my resolution on July 21st of last year.

Why do we need to look beyond the dams for solutions to the problems facing the salmon? Because, for the most part, fish passage improvements and the transportation program are working. A study by the National Marine Fisheries Service from January of

1999 revealed that survival rates for migrating juvenile salmon are already as high as they were before the four lower Snake River dams were built. Incremental improvements can certainly continue to be made, and more can be done to help returning adults. However, it is increasingly clear that the dramatic improvements in salmon survival needed to achieve recovery will have to be found elsewhere.

Common sense dictates that if we want to increase the populations of these fish, we should start with the cases where we know they're being killed. Federal fisheries policies must be subjected to greater scrutiny, to ensure that the impact of harvest on endangered stocks is minimized or eliminated. And we must come to grips with the fact that humanity is not the only species that consumes salmon. We already know that, quoting from the Corps' draft EIS, "10 to 30 percent of all potential smolts that would otherwise be found below Bonneville dam were consumed by birds." Yet when the Corps began efforts to move a colony of Caspian Terns on Rice Island—one of the biggest culprits, consuming up to 20 million juvenile salmon each year—they were prevented from doing so by a lawsuit filed to protect the birds.

The Caspian Terns are protected under the Migratory Bird Treaty Act, but they are not endangered or threatened. At a time when federal agencies are telling northwest residents that the Endangered Species Act supercedes state water rights and perhaps even their Constitutional right to private property, shouldn't it allow us to harass a few birds to save an endangered species?

Questions have also been raised, and I know we will hear more about this later today, about the killing of returning hatchery salmon. Hatcheries have been a vital part of the management of these species, and in some cases it has been hatchery stocks that have prevented extinction. Innovative work is already underway in the region to improve hatchery management, such as the work undertaken by the Yakama Nation in my own district. Federal agencies should be working to implement the recommendations in the Northwest Power Planning Council's Artificial Production Review so that hatcheries can help us reach our salmon recovery goals.

One area that has received inadequate attention from federal agencies, but which has been acknowledged to be a significant factor in the health of salmon populations, is ocean conditions. Too often, the ocean is dismissed because it can't be controlled by human actions. However, unless we have sound data on the impact of ocean conditions it will be impossible to determine whether the measures we do take are effective.

But it may be in the area of habitat that we have the most opportunity to successfully undertake the kind of near-term measures that will lead to salmon recovery. I would like to briefly highlight two examples from right here in the Tri-Cities. First, following legislation I authored in the 1996 Water Resources Development Act, the Tri-Cities Rivershore Enhancement Council is working to make the current stone and earthen levees along the Columbia River here in the Tri-Cities more accessible and hospitable for both salmon and humans. I believe the federal government should support this locally driven

effort, and I am working to ensure that federal funding is made available to support these habitat enhancements.

Second, the Kennewick and Columbia Irrigation Districts here in Kennewick have developed a proposal to exchange their gravity fed systems using water from the lower Yakima River, for a system that would use water pumped from the much larger Columbia River. This exchange would increase the amount of water in the lower Yakima River—where it is needed the most for fish—without adversely impacting the flows in the Columbia or the irrigators themselves. I have introduced legislation, H.R. 3986, which would authorize a feasibility study of this proposal using funds already available in the Yakima River Basin Water Enhancement Project. This proposal is supported by the water users, the Bureau of Reclamation, and theYakama Nation. I look forward to its swift consideration and passage by this Committee.

Finally, we should consider proposals like the Columbia Snake River Irrigators Association's water management proposal. This plan, developed within the region, would reduce the amount of water flushed down the river and use the revenue that would result from additional power generation to finance habitat enhancements. There is little or no evidence to suggest that more water in the Columbia and Snake has, or will have, a positive impact on salmon. Moreover, the resulting changes to the flow of the Columbia River are negligible, while the costs to power generation, irrigation, and navigation are significant. I have additional information on this plan, and I ask that it be included in the record.

Mr. Chairman, I would again like to thank the Committee for coming to Central Washington to discuss these issues of vital importance to the people of the Pacific Northwest. We are already moving forward to recover our region's salmon and steelhead runs, and will continue to do so regardless of the agencies' recommendation on dam breaching. However, I think it will be clear after today's hearing that there are significant opportunities for progress that don't require us to sacrifice our livelihoods or our quality of life.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Hastings.

Mr. Nethercutt is recognized for 5 minutes.

OPENING STATEMENT OF THE HON. GEORGE NETHERCUTT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. NETHERCUTT. Thank you, Madame Chairwoman. We are grateful to you and Representative Simpson for coming into our State and especially to Eastern Washington. Congressman Hastings and I have a great friendship and great interest with respect to this issue and I'm especially delighted to be in the 4th Congressional District, which neighbors the far superior 5th Congressional District to the east.

Salmon restoration and the issue of dam removal is a vital issue to this region, Congressman Hastings' District and mine, most especially in our State.

I think for so long all of us have sat back and listened to the disputes over, do we take out the dams or do we keep the dams in, and we need to have that debate most definitely. But we also need to think carefully about other options that we all have and local efforts that are being undertaken to improve the salmon habitat and improve the likely recovery of species that are either threatened or endangered.

I'm glad that this particular hearing will be focused more on that, rather than the contentious issue of dam removal, an issue that I have spoken out and Congressman Hastings has spoken out very forcefully on and we are very much opposed to the breaching of the dams in the lower Snake River and in the river systems in the west.

I am especially delighted that these panels have been convened today by the Committee. They are excellent panels and I'm especially proud of those witnesses from my own district; Senator Bob Morton who will testify here in a moment and Dr. Mike Skinner from Washington State University and Mike Pelissier, who is not here I understand. Also Les Wiggan, Commissioner of Whitman County is submitting testimony. Skip Meade and others will submit testimony as well while the record remains open. We are grateful to have that testimony and that information.

I think it's critically important that we focus, too, on what can be done now to make improvements in salmon restoration. For members outside our region it's very easy to make a decision on whether or not to support dam removal without fully understanding the impacts of that decision and the efforts being done to restore salmon. That's why I think it's so important that we're looking here today and elsewhere as we go through this debate on the focus being on what can be done, not only from the perspective of Federal agencies and tribal interests, but from those people most directly impacted in the local communities.

So I'm hopeful that these discussions and the record that's being created will add to the positive solution for salmon restoration, and as we also carefully watch what happens on this dam removal issue, especially by the Federal agencies who have jurisdiction over it.

There are many folks here today who are working very hard to make a difference, no matter how large or how small, in helping restore wild salmon runs. In my own district efforts by the Walla Walla Conservation district to restore habitat at Nine Mile Ranch, is a great project. I commend it to you. I look at it and see what they've done and why they're doing it and doing it quietly, but it's for a good purpose of restoring on the ground salmon runs.

Planet CPR is an outfit, a localized effort to protect storm drains from runoff that could be damaging to salmon. It's a small effort but it's a significant effort and it's part of this great puzzle that we're trying to put together.

So I think there are effective pieces of this salmon restoration puzzle that can be looked at and appreciated by local input. Protecting these runs in my judgment must be based not only on the best available science but we must take into consideration all the impacts on salmon and the multiple uses of this river system.

We can't destroy river transportation, agricultural and recreational industries that have been created over the last 40 years as we address the solution to fish problems. Again, I don't believe dam removal is the silver bullet answer. I won't support any proposals from the Appropriations Committee standpoint, the Committee on which I serve, that restores salmon on the backs of our local people, the people here in this region who depend on this system, the agriculture, natural resources and the small communities and residences of Eastern Washington and my district in particular.

So we convened a group of activists in the 5th District to talk about this and look at small steps that we might able to take on a proactive basis, not just be against dam removal but to look at what we can do locally to try to improve the situation, and that's going to yield, I think, very, very positive results.

So we are making progress in respect to local input and that must be considered by the Federal agencies as they struggle with this issue as well. Perhaps the most environmentally sound solution to this, if you look at the broad environmental solution, is to keep these dams in place because we have to look at the consequences of removing those dams on the environment.

The evidence I've seen is that 700,000 trucks transporting our commodities of wheat from Eastern Washington to market would have to traverse our highway systems that are inadequate to provide that transportation. What happens with all the smoke and vehicle emissions that go into the air from 700,000 trucks a year as opposed to the clean renewable resource that comes from the river barge transportation system?

The loss of our power resources on the dam, although they're relatively small, they are still critically important. We're facing gas price increases and fossil fuel energy shortages and yet we are thinking or considering getting rid of the most clean and renewable resource that we have for power generation.

I thank you, Madame Chairwoman, for the opportunity to speak here and be participant in this hearing and I welcome the testimony.

[The prepared statement of Mr. Nethercutt follows:]

GEORGE R. NETHERCUTT, JR.
5TH DISTRICT, WASHINGTON

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NATIONAL SECURITY

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Statement of Representative George R. Nethercutt, Jr.
April 27, 2000
House Resources Committee Hearing

Thank you Madame Chairwoman for holding this hearing on an issue that is very important to me and my constituents of the 5th Congressional District. Salmon restoration and the issue of dam removal is a vital issue in this region. With so much of the focus on dam removal, I am especially pleased to see that the committee is taking in interest in what we can do now to help restore salmon runs. For so long, we've sat back and argued about dam removal that I think many of the creative ideas that our local communities have come up with have been stymied by this discussion. That is why I am pleased to see that this hearing is not focused on the contentious issue of dam removal but on an issue that I think we can all agree on - how to make a difference in restoring salmon. Whether we support dam removal or not, action on that decision is not going to be made for years - therefore, I believe we must work together to find areas that we can agree on and where we can make a difference.

I'd like to especially welcome my constituents who are participating in today's hearing, Senator Bob Morton, Dr. Mike Skinner and Mr. Mike Pelissier.

THIS STATIONERY PRINTED ON PAPER MADE OF RECYCLED FIBERS

I'm looking forward to hearing your testimony today and am happy that you could join us.

I appreciate my colleagues spending this morning to listen to experts in the Pacific Northwest discuss what can be done right now to make improvements in salmon restoration. For members outside of our region, it's been very easy to make a decision on whether or not to support dam removal without fully understanding the impacts of that decision and the efforts being done to restore salmon. That's why I think it is so important for us to focus on what can be done - not only from the perspective of federal agencies and tribal interests, but from those people most directly impacted in the local communities. I'm hopeful that by our having these discussions for the record in the House Resources Committee, a good source of information will be developed for my colleagues in order to learn about an issue so important to this region.

Madame Chairwoman, no one, including me wants to see wild salmon go extinct - - we all are concerned about recovery of these runs and I think there are many folks here today who are working hard to make a difference, no matter how large or small, in helping the restoration of wild salmon runs. I am pleased to see that there is such a movement in the local communities to come together and work to restore salmon. Efforts such as those by the Walla Walla Conservation district to restore habitat at Nine Mile Ranch, and by Planet CPR, a localized effort to protect storm drains from runoff that could be damaging to salmon. These are local and in some cases small, but effective pieces of the salmon restoration puzzle, that I believe will help us address salmon recovery issues. No piece of the puzzle is too small in this situation and there are several pieces we must consider.

As many of you know, I have been a strong voice stating that protecting these runs must not only be based on the best available science, but must take into consideration *all* impacts on salmon and the multiple uses of this river system. We cannot destroy our river transportation, agriculture and recreational industries that have been created over the last 40 years as we address solutions to fish problems. **I do not believe that dam removal is the silver bullet answer, and I will not support a proposal that restores salmon on the backs of those who depend on the system - the agriculture, natural resources, small communities and residents of my eastern Washington district.** For that reason I have convened a group of local activists in the 5th Congressional District to come together and act as advisors on salmon recovery efforts. I have met with farmers, local elected officials, environmental activists, scientists and many others in order to hear what needs to be done by the Federal Government to help. I want them to tell me what will work and what won't work- and where there have been successes. We cannot underestimate that this is a tough road ahead of us, but we must move forward.

While I am pleased with many of the efforts that have been made so far, I am also concerned that these efforts are not being recognized by the Federal Government. Whatever the recommendation is needs to take into consideration the impacts on the local communities and what they have done to help in this matter. I'm afraid that the heavy hand of the federal government will discourage other local efforts such as those I mentioned earlier and am eager to talk with the federal representatives about how they are going to accommodate those concerns.

I also have concerns regarding the status of the Caspian Terns on Rice

Island. The problem there is obvious when thousands of nesting terns are feeding on juvenile salmon. While it may be a small piece of the puzzle, it is a piece on which we can make an impact, and I am disappointed to see that there has been such a problem addressing this issue. It is my hope that we can have clear evidence on how much of an impact the terns have on juvenile smolts. Last year, I authored report language in the House Interior Appropriations bill that requires the U.S. Fish & Wildlife Service to report biannually to Congress on the status of the Caspian Tern, since they have jurisdiction over the bird under the Migratory Bird Treaty Act. And, earlier this year the Director of the Service, Jamie Rappaport-Clark told the Subcommittee on Interior Appropriations that the responsibility of managing the Caspian Tern problem lies with her - and as the Vice-Chairman of that committee, I intend that she meet these responsibilities.

Finally, while this is not the topic of our discussion today, I deeply regret that the Army Corps of Engineers has let this vitally important and contentious issue of dam removal become even more politicized by an Administration that I believe has one thing on its mind - dam removal. For many of us in the Pacific Northwest, it has been obvious that this Administration would be honored to be the Administration responsible for tearing down the four Lower Snake River dams. However, I am deeply upset by the tactics of this Administration in pressuring the Army Corps of Engineers to ignore the scientific work it had done and ignore one of its options. Not only is it a shame that the federal government and the ratepayers of the Pacific Northwest have spent more than $20 million on the draft Environmental Impact Statement, but that the money was spent with a predetermined outcome in mind. This isn't leadership by this administration, this is politics. It is more clear to me than ever that if a sound scientific decision is to

be made on this issue, it will have to be made by the people furthest removed from political influence and closest to the impact of the decision - the people we in the Pacific Northwest represent.

As we move toward a recommendation by the Army Corps of Engineers sometime this year, the Corps must ignore the political influence of an Administration that has its mind made up, and *thoroughly* explore the science behind impacts that their recommendation will have on the people who depend on this system. They must work with the Members who represent this area and their constituents to develop a viable solution to restoring salmon.

Madame Chairwoman, I am very pleased that we are spending time today talking to scientists from Universities throughout the Pacific Northwest, Conservation districts, State elected officials and tribal interests who are looking for solutions. I look forward to hearing the testimony this morning.

Mrs. CHENOWETH-HAGE. Thank you, Congressman Nethercutt, and now it's my privilege to be able to introduce our first panel; the Honorable Bob Morton, State Senator, Washington State Senate, Olympia, Washington; Mrs. Judith Johansen, Administrator, Bonneville Power Authority, Portland, Oregon and Seattle, Washington; Colonel Eric Mogren, Deputy Commander, Northwest Division, United States Army Corps of Engineers, Portland, Oregon; Dr. Nathan Mantua, Associate Professor of Atmospheric Science, Joint Institute for the Study of Atmosphere and Oceans, University of Washington in Seattle, Washington; and Dr. Jim Anderson, Associate Professor, Columbia Basin Research, University of Washington in Seattle, Washington.

As customary of this Subcommittee to place all witnesses under the oath I would like to ask this panel if they would stand and raise their right hand to the square.

Do you promise and affirm under the penalty of perjury that you will tell the truth, the whole truth and nothing but the truth so help you God?

PANEL. I do.

Mrs. CHENOWETH-HAGE. Thank you. Senator Morton, I understand that you have, as part of your testimony, you have brought a film that you would like to show; is that correct?

Mr. MORTON. That's correct.

Mrs. CHENOWETH-HAGE. Would you like to introduce the film?

Mr. MORTON. Thank you, Chairwoman, and thank you for the rest of you being here. Go ahead. In the interest of time let's get started then. This is a videotape that we've taken, and the Congressmen when I was in Washington DC asked me if we could display it.

Mrs. CHENOWETH-HAGE. Thank you, Senator Morton. Before you're recognized for your oral testimony I do want to remind the witnesses of some of the Committee rules. There's a bank of lights in front of you. I view them like traffic lights. Green means go and yellow means wind up or step on the gas, I guess, and red means stop. So we are under a time constraint and the hearing is just going to go right on through until we've finished. So, Senator Morton, you're recognized for your testimony.

STATEMENT OF HON. BOB MORTON, STATE SENATOR, WASHINGTON STATE SENATE

Mr. MORTON. Thank you very much, Madame Chairwoman, and again thank you for the others for being here. It's a delight to share with my two Congressmen for my district encompasses a great portion of both of theirs.

This is the packet that I will be referring for you who are on the Committee. This is the handout here for the general public that's up here on the floor, which is basically the same material and they can pick that up later. I also have before you a three-ring notebook that I put together which I will not testify on. That's merely information I had in my files pertaining to the dams. I thought that might be helpful.

I'm just a little farm boy and so I would like to take you on a little journey. I'd like to talk about the salmon, per se. Let's go back to 1994, and we had two proud salmon go way up in my dis-

trict and Doc Hastings district up into the upper Methow. There they laid their eggs, they fertilized those eggs and the next spring.

Let's use one as an example, Jack was hatched. Jack the salmon was hatched. And he started his journey from the hatchery. From the hatchery, this is important down the Methow River. And he went down and he tumbled over the first dam and there he ended up in the pool behind the Rocky Reach Dam, and there he met Jill and Jill had come down from the Antiach (phonics) Hatchery and the two of them started their journey down the mighty Columbia River.

They tumbled over or went through perhaps the turbines of nine dams. Finally, they reached the salt waters of the Pacific, 515 miles they traveled as just little guys. Fortunately for them they arrived there at night, and the key being at night they were able to navigate past Rice Island, that was referred to by Congressman Nethercutt, where the birds could not get at them in the night. They went out into the mighty Pacific Ocean, and as they turned they were able to escape from the seals and the sea lions, and they started up the coast on the arch of the salmon.

As they made their way up the coast of Washington, the coast of British Columbia, the coast of Alaska, and finally on down the Aleutian chain growing as they went and they arrived in the far eastern area of the Korean and Japanese waters.

By this time it was probably about 1995 '96, 1997, and they were about half grown, delicious at this time, and their comrades were caught in the 30-mile long nets that are there in that area, which we have tried to do something about but which our coast guard still has information that those 30-mile long nets exist.

Some way they navigated those and they started the return back as nature beckoned them to go back to their spawning area. We're now in 1995, 1996, maybe even 1997, and they go back up the coastal area of Alaska, past the sport fishermen, past the commercial fishermen there. They escape all of this and they arrive back down again at the mouth of the Columbia, having come down the coastal waters of British Columbia and Washington.

Here, again, they have to navigate somewhere between 400 to 800 seals and sea lions at the mouth of known predators that we're not doing anything about is my point. Then they come up back past Rice Island and up the fish ladders of the mighty Bonneville, and there from Bonneville to Umatilla they encompass in 1998, if they came, on September 2nd, when I flew those waters they encompassed 400 tribal nets, perfectly legal, according to treaty, according to judicial rulings, perfectly legal, 400 nets on both sides of the river approximately 400 feet long with a mesh of approximately seven inches, sometimes now BPA is going to put it out there, I understand, at nine inches for experimental reasons.

Some way they get by those 400 nets. In 1999, on September 2nd, the same day, the Indians had reduced it to 350 nets. My appreciation for them doing that. They continue on. 515 miles they have to go over the fish ladders of eight dams and just before they get to the ninth dam, a major decision.

Let's go back to Jack and Jill the fish. Jack turns to Jill and says we've traveled all this distance and I understand without being too personal that, Chairwoman, you may be familiar with this love fac-

tor now. They fall in love, and Jack says, Come on to my house. You were raised in the Antiact but the waters of the Methow are marvelous. Please journey with me on up there. We'll find the nice gravels of the Methow and we'll be able to make our spawning bed there.

So they start over the last dam and up over the fish ladders and there at Rocky Reach they go into the ponds and the channels of our good Washington State biologist.

Now, what's happened in the meantime? Two things have taken place. The Federal Government has said with different rulings those salmon that did not return to their waters of origin are destroyed.

Jill, Jill came out of Antiact. She is now going with Jack up the Methow, naughty, naughty. She should have stayed in her waters of the Antiact. She did not. I say to you, whoa, wait a minute. She spent 5 years, 80 percent of her life in the mighty Pacific. She returned to the waters of her origin when she came to the Columbia River. That's the drainage. Whichever creek she went up, I say biologists are being too finicky here, but because she came from the Antiact in her spawning years hatchery and she's now over the dam (making noises) she is destroyed, along with her eggs.

Now, Jack, Jack remains and what happens to Jack? Uh, oh, you spent too much time downstream courting Jill. If you had been here last week we were under quota. Now, we're up to our quota. I'm sorry, Jack (making noises) and he's destroyed.

As the film portrays, I'm saying we must stop this. The information here—I notice the amber light—I would like you to turn to the back of it where I have six suggestions I would like to share with you and then I'll conclude, Madame Chair, and thank you for the time.

Number 1, I want to read them so that the public can also hear them. They may want to make some comments later.

1. The Federal Government must enact legislation to designate one lead Federal agency for States and other local government to contact for providing information for salmonids upon written request that we write and ask for. We need one agency not conglomerish and goolosh which we now have.

2. The Federal Government must enact legislation that will allow balance in regulating no known salmonid predators currently protected by Federal regulations.

3. Washington, Oregon, Idaho, Montana, California, collectively needs to study the high seas. Thank you for being here, Dr. Mantua, I'll leave that up to you to cover. I mention your studies of the PDO for consideration.

4. Washington, Oregon, Idaho collectively need to obtain core samples, which incidently were done in the early 1990's in the upper Columbia when we had a health hazard up there on the pollutants coming out of Canada, core samples that will show us the bottom of the river of the Snake and the Columbia so we can see the strata of what's happened from the bones of the fish through the years and also the pollutants. We need those cores. I can't locate the ones that were taken now by WSU and Eastern Washington. We need new ones for our scientists to do.

Mrs. CHENOWETH-HAGE. Senator, I'm going to have to ask to you to conclude.

Mr. MORTON. To minimize the harm to listed species of the Columbia. This is, let's consider putting back into force the fish wheels for our tribal people. Then our scientists and our tribes without the nets that damage them will be able to use whatever they need for their meat and also be able to use scientifically those salmon uninjured and let the rest go on, and that all fish finally returning to the fresh waters of the State of Washington can go wherever they please to do their spawning, rather than be corralled into one riverlet over another. Thank you very much.

[The prepared statement of Mr. Morton follows:]

Before the Subcommittee on Water and Power
Committee on Resources
US House of Representatives
Testimony of Washington State Senator Bob Morton
April 27, 2000
Pasco, Washington

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Before the Subcommittee on Water and Power
Committee on Resources
US House of Representatives
Testimony of Washington State Senator Bob Morton
April 27, 2000
Pasco, Washington

Chairman Young and committee members:

Thank you for the privilege to share with you a sampling of information and data I have collected on in-river nets, commercial sales, and destruction of returning hatchery-origin adult salmon.

Last fall, the National Marine Fisheries Service (NMFS) ordered the destruction of salmon who came to spawn in our state rivers. As a member of the Senate Natural Resources committee, a committee charged with helping restore our state's dwindling salmon runs, I was appalled at the callous way in which we handle our precious salmon species. It's no wonder we're having problems! Let's consider what those murdered salmon had to go through before their lives came to this tragic end.

In 1994, some Chinook spring-run salmon hatched in the upper reaches of the Columbia River. Some were hatched in natural gravel in the stream and some others were hatched and controlled by the hatchery. They made their way down the Columbia River, over nine dams, and past many predators who would have loved to make a meal of them.

Finally, they reached the mouth of the Columbia River at Rice Island, which is a man-made island created from the dredges of the Columbia. At that point, they faced a great test of their survival as they passed by thousands of protected Caspian Terns and Cormorants who feast off fry by the tens of thousands.

Then the salmon entered the mighty ocean where they faced even more natural predators. Seals and sea lions eat our salmon by the hundreds of pounds a day. They traveled up the Washington coast, the British Columbia coast, and into what I call the "Arch of the Salmon." They went along the Alaskan coast, down the Aleutian chain, and finally they ended up in Chinese, Japanese, or Korean waters.

By then, the salmon were a fair size. Soon they were beckoned back home to spawn, so they turned around and started to return home along the "Arch of the Salmon," traveling past foreign nets as long as 30 miles. The US Coast Guard admits these nets still exist despite the fact that we have an

international agreement banning the use of them. Our salmon negotiated these nets and all the other predators until they ended up approaching the mouth of the Columbia again.

Finally, they started back up the fresh waters of their origin, the Columbia watershed. As they began their journey back to spawn in the upper reaches of the Columbia, they successfully navigated again nine hydroelectric dams. They also had to make it past roughly 350 tribal nets, between Bonneville and Umatilla, some as long as 400 feet, stretched from each shoreline and which I personally counted on September 2, 1999, along with pilot Gene Cada and state photographer, Dick Baldwin. The previous year, September 2, 1998, on a similar flight, pilot Cada, Rep. Cathy McMorris and myself counted 400 gill nets. I compliment the tribes of the Columbia on reducing the nets by 50 in that one-year span.

Once they got past the remaining dams, they came to rest in a pool behind one of these dams: Let's choose the Rocky Reach Dam. At this point, the salmon were getting anxious to get up to their spawning grounds. Nature just directs them that way. A buck salmon fell in love with a doe and said, "It's beautiful up in the Methow. Come on to my house." He talks the doe into doing that and, while she may have originally come from the Entiat, the Icicle, the Snake, or another tributary, she followed her partner.

Unfortunately, after all their travels, this couple ran into trouble at the Wells Dam. Because she originated in a sub-watershed, the doe was regarded as a stray, then destroyed. The buck was also destroyed because the hatchery had already met NMFS' quota for the number of hatchery fish allowed to return to that sub-watershed.

In the attached exhibit, page 3, is the data from USFW, NMFS, and the Washington Department of Fish and Wildlife showing 183,000 salmon murdered by the very agencies charged with protecting them.

Washington taxpayers pay millions of dollars thinking our salmon will be allowed to return to the natural waters of the state. We also have utility ratepayers who receive their power from the Bonneville Power Administration (BPA), and, for those of the Okanogan Public Utility District (PUD), they pay $13.80 for every $100 of their electricity bill for salmonid restoration. Then, at the PUD facility at Wells Dam, they see these salmon killed and not allowed to spawn in their native waters.

This is wrong - and it's going on throughout the Northwest. That's why I have sponsored Senate Bill 6320 to return some accountability to our state's salmon restoration efforts and to attempt to increase accountability from the federal government.

When you consider what our mighty salmon have survived through their long and hard migration routes over five years, when you consider all the obstacles and predators they must overcome, by the time they come back to their native watershed of origin, I regard them as one tough fish. Their offspring ought to be allowed to hatch and survive. To allow the continued massacre of these returning salmon is a tragedy.

Attached in the exhibit, page 19, are six proposals which I offer for your consideration.

My deepest appreciation for this honored privilege to share.

Senator Bob Morton

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TABLE OF CONTENTS

APRIL 20, 2000

Researched Information on Salmon Recovery

Headlines/Facts 1

Documentation of Fish Destruction 2

Known Salmon Predation 4

Water Flow Data 6

Columbia River History 8

Tribal Gill Net Count 10

Inverse Relationship of Fish & Water 12

Historical Quotes 14

Ocean Influence on Salmon Migration (PDO)..... 15

News Article – "Killing Salmon to Save Salmon"..... 16

News Article – "Agencies Manufactured Salmon Crisis"..... 17

Salmon Recovery Costs 18

Salmon Restoration Proposals..... 19

Committees: Environmental Quality & Water Resources, Ranking Republican Member
Agriculture & Rural Economic Development • Natural Resources, Parks & Recreation • Transportation

OREGON

20,708

returning salmon

Killed!

(page 2)

WASHINGTON

183,609

returning salmon

Killed!

(page 3)

Killing salmon to save salmon (page 16)

A manufactured salmon crisis (page 17)

349 Tribal Fish Gill Net Count McNary to Bonneville on Columbia River (130 miles of River) (page 11)

$29,000,000

spent annually for salmon restoration, charged on utility bills to ratepayers of Grant County. ***$420 p.p.*** during 2000 for every individual in the county. (page 18)

- **FISHING CLOSED** (by the Legislature) **on the Columbia and three miles out in the Pacific.** *1901 State Archives*
- **"Evidence of a decrease in the [salmon] run is apparent"** Washington State Governor, John Rankin Rogers, *1899 State of the State Address*
- **"Salmon have now become scarce"** General Sherman, *1883 Congressional Record*
- **"My people have not been able to lay in stock enough salmon for their winter food."** Chief Spokane Gerry, *1877 Congressional Record*

(page 14)

Where's the logic in killing salmon that you are raising?

Spring Chinook collected in the Columbia River Basin (Washington Tributaries) in 1999

U.S. Fish and Wildlife Service facilities: **Federal Hatcheries**			
Hatchery	***Total Collected***	***Spawned***	***Destroyed***
Entiat NFH	724	459	265
Leavenworth NFH	1,744	1,000	744
Little White Salmon NFH	4,264	804	2,702
Carson NFH	3,728	955	2,773
Washington Department of Fish and Wildlife facilities:			
Methow SFH/ Winthrop NFH	371	332	39
TOTAL Washington State Columbia River Basin FISH KILL in 1999			**6,523** (Federal Hatcheries)

Source: *NMPS, US Fish and Wildlife Service, and WA Department of Fish and Wildlife.*

Stephen Smith, regional hatcheries chief for NMFS, stated: "[Smith] doubts any Northwest salmon are genetically pure after so much hatchery influence" *March 26, 2000 Spokesman-Review*

Oregon Agencies killed 20,708 salmon in 1998!

During 1998, According to Oregon Fish and Wildlife and NMFS: **20,708 "surplus" salmonids were killed**. This resulted in 19,389 pounds of wasted eggs – or **48,472,500 eggs that did not get fertilized**. At a hatchery fertilization rate of 90% (10-15% in the wild) that would be 43,625,250 baby fish. With an ocean return of just 1%, **returning fish would have been 436,252.**

THE AGENCIES DECLARE hatchery fish inferior, so they must be destroyed before spawning in the wild, BUT the agencies are releasing 600,000 unmarked hatchery fish to "rebuild the wild runs" in Idaho.

THE AGENCIES ALSO STATE that the 2nd generation offspring of hatchery fish allowed to spawn naturally are not genetically any different from "wild fish".

STOP KILLING THE RETURNING SALMON!

In 1999, Washington State Hatcheries killed 177,086 returning salmonids

The eggs and sperm were destroyed

Returning Adults	Purpose of Kill	In the Round Eggs & sperm not used for spawning	Spawned Eggs taken for hatchery purposes or natural spawning
Ceremonial & Subsistence for Tribes			
1,399	Native Religious Purposes. Most of the net fishing by the tribes is commercial.	1,399	---
Disposal or Nutrient Enhancement			
111,717	Volunteer Groups pick up carcasses to place in streams for nutrient enhancement.	4,500 approx.	107,217
Donation to Food Banks			
54,793	Fish used for food banks are generally high quality.	42,428	12,365
Transferred to Tribes for Consumption			
268	Donated to the Tribes in an attempt to reduce harvest in a particular watershed	268	---
Transfer to Government Agency			
1,237	Research	?	?
Sold to Contract Buyer			
185,097 *	Contract buyers must provide a % of fish as finished product for state institutions (mostly prisons). In 1999, contract buyers supplied 200,000 pounds of fillets and 50,000 pounds of canned salmon.	128,491	56,606
Passed Upstream			
104,280	Passed upstream to spawn naturally, both wild and hatchery fish.	---	104,280
TOTALS:			
458,791	Washington State Fish and Wildlife U.S. Fish and Wildlife	**178,323** **6,523**	**280,468**
	Total salmon killed in Washington State	**183,609**	

Source: Washington State Fish & Wildlife
U.S. Fish and Wildlife
NMFS

* reflects adding error in original statistics received from Department

Ocean conditions overwhelm
all other factors in salmon survival!
Plankton, the main staple of this salmon's
diet, declined by 70% when the ocean
surface temperature increased.
In 1977 the sea surface temperature suddenly jumped, immediately weakening the food chain. Since then,
average ocean temperatures have remained about two degrees warmer than averages prior to 1977.
Pacific Ocean
Caspian Terns from Rice Island consume
as many as 25 million salmon smolts
each year. That's nearly 30% of the total
population of salmon smolts in the river.
Caspian Terns
Pacific Pompano (Carangoides caballus)
Sand Bass (Paralabrax nuchalis)
Bat Ray (Myliobatis californica)
Pacific Sardine (Sardinops sagax)
Jackass Penguin (Spheniscus demersus)
Cape Fur Seal (Arctocephalus pusillus)
Cape Gannet (Morus capensis)
Cape Cormorant (Phalacrocorax capensis)
Bank Cormorant (Phalacrocorax neglectus)
Kelp Gull (Larus dominicanus)
Hake (Merluccius spp.)
Sardine (Sardinops sagax)
Anchovy (Engraulis encrasicolus)
Cape Hake (Merluccius capensis)
Cape Horse Mackerel (Trachurus capensis)
Cape Fur Seal (Arctocephalus pusillus)
Cape Gannet (Morus capensis)
Cape Cormorant (Phalacrocorax capensis)
Bank Cormorant (Phalacrocorax neglectus)
Kelp Gull (Larus dominicanus)
Cape Fur Seal (Arctocephalus pusillus)
Cape Gannet (Morus capensis)
Cape Cormorant (Phalacrocorax capensis)
Bank Cormorant (Phalacrocorax neglectus)
Kelp Gull (Larus dominicanus)

4

Known Predation

Caspian Terns on Rice Island consume as many as 25 million smolt annually.

This accounts for up to 25% of the total population.

The Rice Island tern population has increased 600% in the past 12 years.

Whales, shark, sea lions, and seals all consume large numbers of salmon.

Pacific Harbor seals and Sea Lions are protected species.

Sea lions eat up to 100 pounds of food per day and seals eat up to 30 pounds per day.

About 400 harbor seals inhabit the mouth of the Columbia.

"Herschel" alone ate 1,100 steelhead one season.

Columbia River Annual Flow

(Cubic Feet per Second)

At The Dalles

Calendar Year	CFS	Calendar Year	CFS	Calendar Year	CFS
1889	133,800	1926	118,100	1963	174,100
1890	196,100	1927	206,100	1964	184,200
1891	165,400	1928	231,200	1965	224,500
1892	197,800	1929	132,800	1966	162,000
1893	219,200	1930	131,400	1967	191,300
1894	313,600	1931	121,900	1968	165,700
1895	194,000	1932	185,500	1969	205,800
1896	229,200	1933	198,000	1970	166,500
1897	242,800	1934	211,500	1971	226,400
1898	230,500	1935	170,200	1972	244,100
1899	234,400	1936	158,900	1973	136,100
1900	224,400	1937	128,700	1974	237,700
1901	218,700	1938	190,200	1975	187,000
1902	197,400	1939	149,700	1976	220,300
1903	210,900	1940	148,500	1977	120,400
1904	242,100	1941	130,000	1978	170,500
1905	139,900	1942	178,600	1979	152,500
1906	156,700	1943	207,300	1980	159,000
1907	229,100	1944	119,600	1981	187,400
1908	196,200	1945	150,800	1982	228,900
1909	189,700	1946	196,100	1983	216,600
1910	212,800	1947	193,700	1984	211,500
1911	187,700	1948	235,500	1985	165,100
1912	182,600	1949	180,100	1986	190,100
1913	213,000	1950	217,100	1987	145,100
1914	186,900	1951	226,400	1988	135,800
1915	146,800	1952	198,200	1989	165,900
1916	238,100	1953	179,300		
1917	208,500	1954	209,100	1990	184,500
1918	204,700	1955	179,000	1991	203,400
1919	172,000	1956	243,400	1992	143,400
1920	156,800	1957	194,100	1993	155,200
1921	230,100	1958	180,700	1994	135,400
1922	183,200	1959	211,600	1995	185,100
1923	179,400	1960	195,300	1996	243,800
1924	136,800	1961	189,000	1997	266,600
1925	201,400	1962	169,300	1998	184,800

Columbia River Flow History

The average flow of the Columbia River 1990-1998
is higher than 49 of the previous 100 years (1889-1989).

Note: shaded box indicates low flow year

Source: US Geological Survey

Columbia River Watershed Data at the Dalles (Bonneville Dam)

After irrigation, hydro power, flood control and recreation, the Columbia River flow at the Dalles is:

180,000 cubic feet per second (annual average)
OR
23,320 gallons per day for every person in Washington State
OR
21 ½ gallons per day for every person in the world

Less than 3% of the Columbia's flow is used for human use or by agriculture for vegetation.
- Data from U.S. Geological Survey

WITH A FLOW OF 180,000 CUBIC FEET PER SECOND:

- It would take one day for a hose delivering 180,000 cfs to fill a tank one mile square with walls 560 feet high.
- It would take 6.2 minutes to completely fill the Seattle Kingdome.
- One gallon could be provided every 1 hour 9 minutes to each person in the world (est. world population of 5.4 billion).

How much water does the Columbia River provide? At the Dalles alone, fresh water is measured at running 1400 gallons per day for each citizen in the entire United States. The fact is that Washington State generates a HIGH quantity of fresh water on a consistent basis, so we need to be storing MORE of our water instead of salting it.

The fact is that Washington is among the leading states in the union in high quantities of fresh water **storage**. There are over **7 trillion gallons** (7,339,994,382,600 gallons, to be exact) of water stored behind the dams of Washington State. This amount of water could fill **14, 617 Seattle Kingdomes**.

Key Events in Columbia River History

1800s	An estimated 16 million salmon and steelhead return each year to the Columbia and Snake Rivers (Northwest Power Planning Council estimate).
1855	Treaty signed with northwest tribes, guaranteeing "The right of taking fish at usual and accustomed grounds..."
1859	First irrigation project established in the Columbia River basin.
1866	First salmon cannery established in lower Columbia. Washington passes first gear restriction.
1878	First fish hatchery established in Columbia River basin, located on Clackamas River.
1880-90s	Mining, logging, farming, and fishing increase in basin.
1887	Congress directs the U.S. Army Corps of Engineers to investigate causes of declining salmon runs.
1899	Joint Committees of Oregon and Washington legislatures meet and agree to coordinated Columbia River fishery management.
1902	Federal Reclamation Act authorizes federal aid to irrigate arid lands.
1912	Ocean commercial trolling for salmon begins off Columbia River.
1910-20	Columbia River canneries reach peak production.
1918	Congress ratifies the Columbia River Compact between Oregon and Washington, addressing joint jurisdiction of Columbia River fisheries.
1927	Federal Rivers and Harbors Act directs the Army Corps of Engineers to conduct comprehensive studies of 200 waterways, including the Columbia. The "River 308" report on the Columbia proposed ten dams to from Bonneville to Grand Coulee to assist power, navigation, irrigation, and flood control.
1933	Rock Island Dam completed (Chelan County PUD).
1936	Congress passes Flood Control Act of 1936, making nationwide flood control a federal responsibility.
1938	Bonneville Dam completed (Army Corps of Engineers); and joint fish counts begin. Mitchell Act passed by Congress to fund state and federal hatcheries on the lower Columbia, and require irrigation screens and other structures to facilitate fish migration.
1941	Grand Coulee Dam completed (Bureau of Reclamation).
1948	Flooding in the lower Columbia destroys 38,000 homes — national attention to flooding increases focus on multi-purpose river planning.
1953	McNary Dam completed (Army Corps).

1955	Chief Joseph Dam completed (Army Corps).
1957	The Dalles Dam completed (Army Corps).
1958	Brownlee Dam completed (Idaho Power Company).
1959	Priest Rapids Dam completed (Grant County PUD).
1961	Rocky Reach Dam (Chelan County PUD), Oxbow Dam (Idaho Power), Ice Harbor Dam (Army Corps).
1963	Wanapum Dam completed (Grant County PUD).
1964	Columbia River Treaty with Canada put into effect, coordinating flows for power and flood control.
1967	Wells Dam completed (Douglas County PUD), Hells Canyon Dam completed (Idaho Power Company).
1968	John Day Dam completed (Army Corps).
1969	Lower Monumental Dam (Army Corps).
1970	Little Goose Dam (Army Corps).
1975	Lower Granite Dam (Army Corps)
1980	Northwest Power Planning Council created by Congress.
1982	Northwest Power Planning Council finalizes the first *Columbia River Fish and Wildlife Program*, including 220 actions to improve fish and wildlife habitat in the basin. Plan was updated most recently in 1994. "Water budget" is initiated to provide additional flows in the spring for juvenile migration.
1988	Vernita Bar Agreement signed to provide certain flows below the Priest Rapids Dam to facilitate salmon spawning.
1990	"Salmon Summit" is convened by Sen. Mark Hatfield in Oregon, to look at regional solutions to declining salmon runs. No conclusions are reached.
1991	Snake River sockeye salmon listed as endangered species.
1992	Snake River chinook listed as threatened species. Northwest Power Planning Council finalizes the *Strategy for Salmon* with a goal of doubling the salmon populations with no loss of biological diversity. Moratorium on withdrawal of Columbia River mainstem waters imposed by Washington Department of Ecology.
1995	National Marine Fisheries Service issues Salmon Recovery Plan for Snake River salmon.
1997	Federal judge affirms National Marine Fisheries Service Salmon Recovery Plan. Washington moratorium on withdrawal of waters from the mainstem of the Columbia lifted.

Oregonian 8/26/96

We carry on a tradition

(You carry home dinner)

The Yakama, Nez Perce, Umatilla, and Warm Springs tribes invite you to come to the river—where, for a limited time, you can buy freshly caught salmon directly from tribal fishers. Participate in the region's traditional economy—salmon, the shared heritage of the Pacific Northwest. Call 1-888-BUY-1855.

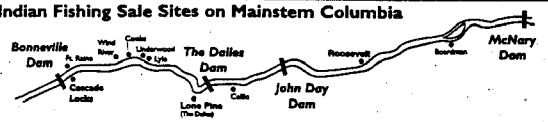
Fish sales are scheduled for **Wednesdays** through **Saturdays** from **August 26** until **September 19**. Sales times are **10 am to dusk**. The main sales locations are **Cascade Locks** and **The Dalles, Oregon** and **Roosevelt, Washington**. You might find sales at other times, locations, and dates. Call **1-888-BUY-1855** for information.

Specials events: August 29 and September 5 in Cascade Locks, 1-3 pm. September 12 in the Dalles and Cascade Locks (times to be announced). Call 1-888-BUY-1855.

Buyers should bring sufficient ice and coolers (preferred) or plastic bags to keep fish fresh.

SALES ARE CASH ONLY

Indian Fishing Sale Sites on Mainstem Columbia



Salmon Direct-to-the-Public Sales is a project of the Columbia River Inter-Tribal Fish Commission (CRITFC), a not-for-profit organization. CRITFC is the coordination and fisheries technical agency of the Yakama, Warm Springs, Umatilla, and Nez Perce tribes.

Tribes are selling fish until Sept. 13

The Columbia River Inter-Tribal Fish Commission will be selling fish to the public in Roosevelt and The Dalles at Lone Pine from now until Sept. 13.

There will be chinook, steelhead, walleye, coho and other varieties of fish available for $2 per pound.

For more information about fish sales, dates, times and directions, call toll-free at 1-888-BUY-1855.

TRIBAL FISH GILL NET COUNT
McNARY to BONNEVILLE on COLUMBIA RIVER
SEPTEMBER 2, 1999

	WA STATE	OREGON	TOTAL
McNary to John Day Dam	52	53	105
John Day to The Dalles Dam	47	49	96
The Dalles to White Salmon Bridge	48	32	80
White Salmon Bridge to Cascade Locks/Bonneville	40	28	68
COLUMN TOTALS	187	162	

GRAND TOTAL OF GILL NETS = 349

Gene Cada,
Pilot
Rice, WA

Sen. Bob Morton
115 Newhouse Bldg.
Olympia, WA
360/786-7612

Dick Baldwin
Senate Photographer
Olympia, WA
360/786-7568

INVERSE RELATIONSHIP OF WATER FLOW & FISH RUNS AT ASTORIA

CFS = Cubic Feet per Second

	1941	1947	1952	1966	1970
Low Flows (CFS)	179,000	273,000	276,000	220,800	238,800
Highest Fish Runs	2.4 Million	2.1 M	1.6 M	2.0 M	2.3 M

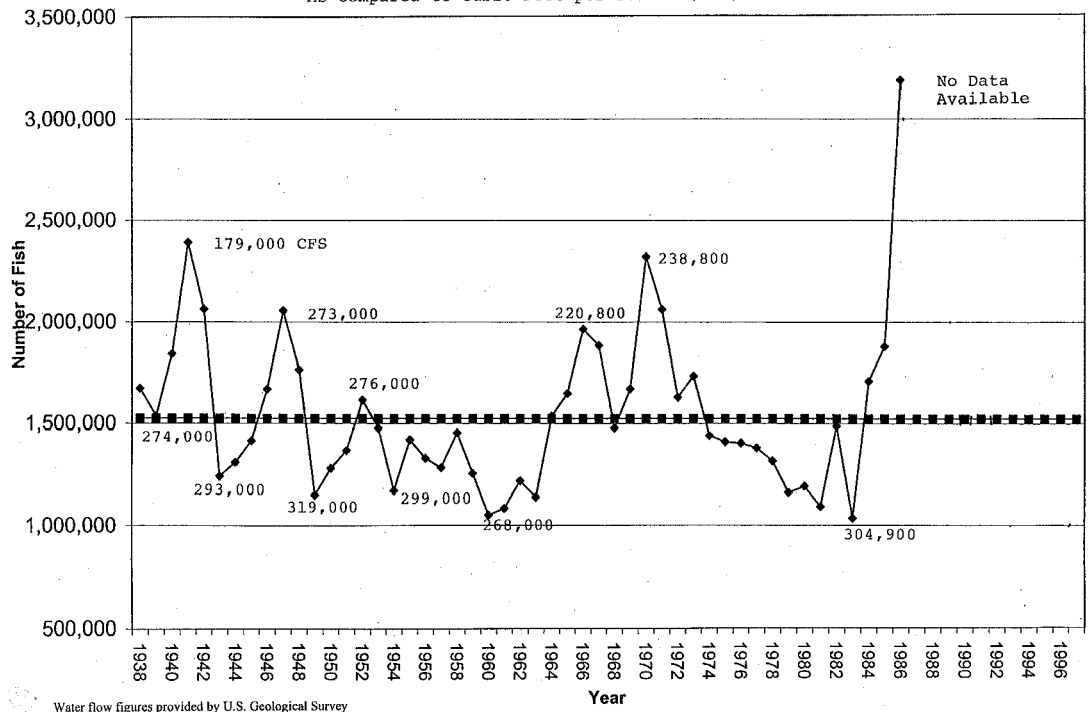
	1943	1948	1954	1960	1983
High Flows (CFS)	293,000	319,000	299,000	268,000	304,900
Lowest Fish Runs	1.3 M	1.2 M	1.2 M	1.1 M	1.0 M

This data shows that
High flow years = low salmon runs
Low flow years = high salmon runs

Water flow figures provided by U.S. Geological Survey
Fish run figures provided by U.S. Army Corps of Engineers, Portland District Operations
Compiled by Senator Bob Morton

Salmon and Steelhead Entering the Columbia River

As compared to Cubic Feet per Second (CFS) Flow at ASTORIA



Water flow figures provided by U.S. Geological Survey
Salmonids figures provided by U.S. Army Corps of Engineers, Portland District Operations

Over 100 years ago
before any dams were built
fish went in cycles

In the summer of **1877**, General Sherman met with Chief Spokane Gerry at the Chief's request, and the following was reported in the Congressional Record:

> "I seek a larger reservation for my people. I complain of the use of nets in the lower Columbia. Much suffering will ensue because my people have not been able to lay in stock enough salmon for their winter food."

On August 7, **1883**, General Sherman spoke again on the topic, as reported in the Congressional Record:

> "The Kettle Falls River of the Columbia River from time in Memorial has been the place for fishing for the Indians. Salmon have now become scarce because of the canneries at the mouth of the Columbia"

By **1899**, John Rankin Rogers, then Governor of Washington State, Spoke to the issue in his State of the State address:

> "The salmon fisheries of this state have, in the past, been wonderfully productive. Of late, however, evidence of a decrease in the run is apparent, and all are agreed that something ought to be done to prevent the final extinction of a great industry."

In **1901**, the Legislature closed fishing on the Columbia and three miles out in the Pacific from March 1-April 15 and Aug. 15-Sept. 10 to protect the major fish runs.

ALSO:
Ocean temperatures have a tremendous influence on fish runs

The Ocean's Big Influence Over Salmon
Pacific interDecadnal Oscillation (PDO)

"While everyone tries to figure out how to save the salmon, the ocean remains a black hole, not often considered in management decisions."

University of Washington **atmospheric scientist Nathan Mantua** *and Oregon State* **climatologist George Taylor,** *and many other scientists have been studying the northern El Nino pattern and its relationship to the abundance of salmon in the Pacific Northwest and Alaska.*

The following are excerpts from their findings. The complete findings can be found at **http://www.tidepool.org/pdo.html**

- PDO can be seen as an El Nino-like event that just takes place over a much longer period.
- El Nino North runs in streaks of 10-20 years and is known by the name Pacific interDecadnal Oscillation (PDO)
- Evidence is mounting that the boom and bust cycles of salmon in the Northwest are influenced by the long-term 10-20 year "Northern El Nino" patterns.
- PDO's influence, according to Mantua, Taylor and scientists in a number of disciplines, over long-term climate patterns of the northern Pacific ocean are the driving changes in salmon populations.
- For the past 100 years, history shows the net result of these patterns through commercial fishing records. When fishing has been good in the Columbia River it has been lousy in Alaska and vice-versa.
- Because these patterns persist over the past 100 years, before dams on the Columbia and habitat and hatchery influences, the shifts in abundance appear to be natural.
- Understanding climate shifts are important because they play so large a role in determining if there will be food enough for young salmon to survive. A critical factor for salmon survival is the timing of smolt migration with the climate conditions that produce plankton blooms for them to eat.

Agencies kill fish in the interest of helping their survival

'Because they're the non-native stock, we can't plant those back in the streams'
—Brian Cates hatchery official

By Bill Stevenson
Chronicle staff

Numerous salmon were recently destroyed by government agencies in a quest to save endangered species by keeping genetic purity among spring run Chinook salmon in the Methow River.

National Marine Fisheries Service determined that to save spring run Chinook salmon from extinction, agencies are to separate the hundreds of genetically different types of Chinooks, and isolate and protect only the variations found native to each area.

Hatchery salmon, born of eggs from salmon native to areas surrounding hatcheries, are not counted when taking stock of endangered species and are not to be used for further creation of salmon due to their "impurity," according to federal authorities.

"Intermixing of (genetically different salmon) caused the fitness of natural fish to be lessened and is the reason these runs are declining," said U.S. Fish and Wildlife project leader Brian Cates, who runs the federal hatcheries in Leavenworth, Entiat and Winthrop. "Because they're the non-native stock, we can't plant those back in the streams."

Spring run Chinook salmon returned this year in higher numbers than federal and state agencies expected, but far below average for counts at Wells Dam and Priest Rapids Dam.

"It's much higher than expected, but not a big run," said Joe Foster, state Department of Fish and Wildlife regional fish program manager. "We did not expect more than 600 to 1,200 fish this year. What actually came back this year was, at Priest Rapids Dam, 4,100 fish."

Foster said the returning number of fish is much higher, but less than half of the 10-year average of 9,800 returning Chinook.

Fish traps used in collecting salmon for eggs resulted in Wells Dam netting 340 spring run Chinook, the Entiat hatchery taking 221 and about 50 strays caught at the junction of the Loup Loup Road and the Methow River, said Cates. Many salmon missed the traps and continued up river to spawn.

"Just over 50-54 were strays and a good portion of those had tags from the Entiat hatchery," said Cates. "Entiat raises a fish that is not native to the area."

Strays are salmon that return to spawn in a different area than that in which the were raised. Cates said salmon from Entiat and as far as the Snake River were located in the Methow catch.

Since the fish are not native to the area, they are caught. Policies of both federal and state agencies are to record where they are from by either removing a coded wire tag from the fish with clipped fins or reading scale patterns before destroying the salmon and any eggs removed for hatchery use.

"To find out where the fish are from, you have to kill them," said Cates, who added that the salmon are then "given to the tribes for consumption."

The process of killing the fish to retrieve eggs and record spawning patterns

(Continued on Page A10)

. . . Salmon killed to save salmon

(Continued from Page A1)

follows the natural life cycle of salmon, said officials. Salmon die soon after releasing eggs or sperm when returning to spawn.

Cates said all eggs from strays were destroyed to prevent placing the wrong version of Chinook salmon into local streams, except those from eight to 10 hatchery-bred females. They were accidentally mixed with native sperm and will be reared and released in the future.

"Half of their parents were the Methow stock," said Cates. "We didn't want to lose any of that because they are our endangered fish."

Federal policy is to ship strays back to the hatcheries from which they originated to use their eggs. Cates said the excessive number of returning salmon meant strays did not need to be shipped.

"We would have shipped those fish back down," said Cates. "But this year we had a larger run of fish at the Entiat hatchery and didn't have room for them."

State officials follow the policy of destroying all strays and eggs from strays to follow ESA guidelines and if the federal agencies do not want them.

"We don't allow strays into the Methow basin and we destroyed the eggs," said Foster. "About 25 percent go up the wrong river. We wouldn't take the strays, even if we didn't have enough fish."

Policies on the number of strays and hatchery fish allowed to spawn in areas of endangered salmon are set by NMFS and carry over toward which eggs are used and which are destroyed.

"NMFS doesn't want to see more than 5 percent strays in a native population," Cates said.

"Sometimes removing them from the gene pool is the best thing to do," said Janet Sears of NMFS. "This is a policy that fish and wildlife agreed to previously. These are not the fish that are listed (as endangered species), these are hatchery fish straying out of their area . . . fish straying has been a way to increase their range and diversify their stock, but we need to keep them out of there."

NMFS seeks to move out the hatchery fish to leave behind only genetically native salmon, said Sears. The removal of non-native fish would give more habitat for the endangered species to thrive and increase in numbers.

The federal agency deemed fish reared in hatcheries are less desirable than native stock salmon, and listed several types of salmon as endangered and threatened with extinction under the 1973 Endangered Species Act.

"It is essentially a genetic issue and this genetic stock is a mix of mid-and upper Columbia and Snake River spring run Chinook salmon," said Sears. "These are foreign fish when you get down to it."

Hatcheries were originally built in the 1940s to offset losses of salmon by use of hydroelectric dams along the Columbia River.

Spring run Chinook salmon from the Entiat hatchery originally were brought in from the lower Columbia River area to seed the hatchery when it returned to rearing Chinook salmon in the 1970s, said Cates. The hatchery had changed to another variety for numerous years.

Nearing the end of the 1999 spring Chinook run, both federal and state agencies found encouraging numbers of returning male Chinook salmon and predict the high return this year will lead to another high run next year.

"We're expecting better runs next year," said Cates. "We saw a lot of jacks this year, 3-year-old males, and when you see a lot of jacks that means you're pretty much going to have a good year."

The 10-year average of jacks returning each year is 150, said Foster. This year 760 were counted passing up river.

"We're on the upswing because of better environmental conditions," said state Department of Fish and Wildlife regional director Jeff Tayer. "More water and cooler ocean conditions make for better survival. We can expect to see increasing returns."

Tayer, Foster and Cates all said cooler ocean waters following El Nino, a weather condition that warms cold ocean waters causing a disturbance in weather patterns, and a wetter weather cycle both contributed to a higher return and a better run next year.

"As far as the ESA is concerned, one good year or two doesn't mean anything," said Foster about restoring endangered species. "It is a long-term thing."

Straying salmon will continue each year as will the eggs being destroyed by state and federal agencies to further protect genetically native endangered salmon as they have for years, said officials.

"We had some (strays) like that last year. We saw a few from the Snake River," said Cates. "We don't actually know why fish do that."

THE CHRONICLE
Sept. 22, 1999 Serving Okanogan County since Great Maps, Since 1912

CAPITAL PRESS Jan. 14, 2000

Suits allege agencies manufactured ongoing Oregon salmon crisis

Hearing to review discrepancies in court, legislative testimony

By ED MERRIMAN
Capital Press Staff Writer

SALEM — The Pacific Legal Foundation and Alsea Valley Alliance are charging the National Marine Fisheries Service and Oregon Department of Fish and Wildlife with "manufacturing a salmon crisis" in lawsuits filed in state and federal courts.

Oregon Circuit Court Judge Robert Huckleberry and U.S. District Court Judge Michael Hogan refused to grant injunctions sought by the foundation last fall to stop ODFW from exterminating native Oregon salmon bred in hatcheries. Nevertheless, both lawsuits are proceeding with a goal of overturning wild fish preference policies adopted by the two agencies, said Russell Brooks, an attorney representing the foundation.

Doug DeHart, manager of ODFW's hatchery programs, testified during court proceedings and at legislative hearings last year that hatchery-bred salmon and their eggs are being destroyed to protect the genetic purity of wild fish runs.

DeHart also testified that ODFW's extermination program is also aimed at preventing hatchery-bred salmon from competing with wild fish for food in the ocean or from spawning in streams or rivers where they could compete with wild fish for habitat and spawning grounds.

However, because salmon spawning in the wild in Oregon come from the same ancestors as hatchery-bred fish, and have intermingled and bred with hatchery salmon in the ocean for 50 years or more, Brooks said it's ludicrous for NMFS or ODFW to use the genetic purity argument to justify exterminating runs of hatchery-bred salmon.

"We are continuing to argue the merits of the cases," he said.

In the state case filed in Newport, the foundation is arguing that ODFW's policy of killing the hatchery salmon and destroying their eggs violated Oregon law.

"ODFW has manufactured a crisis. By slaughtering the hatchery coho, the agency has kept the fish population lo . to maintain its listing under the federal Endangered Species Act. The listing, in turn, enables state and federal regulators to place severe restrictions on private land and recreational activities," Brooks said.

The foundation, headquartered in Sacramento, Calif., contends in documents filed in the Circuit Court case that Oregon wildlife laws don't permit ODFW to carry out a wild fish preference policy that includes such drastic measures as exterminating runs of hatchery-bred salmon returning from years at sea to spawn in Oregon rivers.

In the federal case, the foundation contends the NMFS listing of only wild salmon for protection and allowing the destruction of hatchery-bred fish descended from the same bloodlines violates the Endangered Species Act.

Both the state and federal lawsuits focus in part on ODFW's slaughter in 1997 and 1998 of more than 20,000 hatchery-bred salmon returning to spawn in Fall Creek east of Newport in order to protect 108 wild fish.

Similar exterminations of returning hatchery-bred salmon runs took place in other Oregon coastal streams and tributaries of the Columbia River system during the same period, Brooks said.

He argues that ODFW took these steps based on a wild fish preference policy, fostered by Gov. John Kitzhaber and William Stelle, head of NMFS, without first conducting sound scientific research into the matter, including potential methods of using eggs from native hatchery-bred salmon to produce wild progeny in Oregon rivers.

In addition to the ongoing court cases, the ODFW's actions, as well as the merits of the wild fish preference policy, are also the subject of a legislative hearing before the Joint Interim Committee on Water, Agriculture and Natural Resources beginning at 9 a.m. Jan. 19 at the state Capitol Building in Salem.

That hearing will also look at successful salmon recovery efforts conducted by Indian tribes and others, where wild progeny are produced from the eggs of native hatchery-bred salmon.

Also on the agenda are alleged discrepancies between previous testimony at legislative hearings and court proceedings by an ODFW official, Brooks said.

Billions have been spent on "$almon recovery"

2000 Spending for
Pacific Salmon Restoration
$965 million

Breakdown of Federal, State and Private Money
(reported by the Salmon Restoration Task Force to the WA State Legislature)

Federal Programs Affecting Salmon	**$345.1 million annually**
Bureau of Reclamation	$15.2 million
NMFS	$24.4 million
Northwest Power Planning Council	$3.7 million
US Army Corps of Engineers	$121 million
U.S. Fish and Wildlife	$16.5 million
USDA Farm Service Agency	$40.5 million (indirect)
USDA Forest Service	$1.7 million
	$4.4 million (indirect)
USDA Natural Resource Conservation Service	$.3 million
	$22.3 million (indirect)
ESA Funding	$89.3 million
Lead Entity Organizations	$2.5 million
USGS	$3.3 million
State Programs Affecting Salmon	**$310.5 million annual average**
1997-1999 Actual Biennial Expenditures	$621 million 1997-1999 biennium
Direct Salmon Programs	$143 million
Indirect Salmon Programs	$478 million
Bonneville Power Administration	**$310 million annually**
In 1995, BPA signed a 6 year budget with the Clinton Administration for BPA's fish and wildlife program.	
Direct F&W Program	$127 million
Hydro Power Operations (foregone revenues and replacement power purchases)	$183 million

Examples of ratepayer money
charged on utility bills
spent annually on Salmon Recovery:

Klickitat County	$1,400,000
Clark County	$1,500,000
Okanogan County	$1,539,000
Douglas County	$6,713,000
Grant County	**$29,000,000** *averages $420 per person during 2000*

Salmon Restoration Proposals

1. The federal government must enact legislation to designate one lead federal agency (USFW, NWPP, CORPS, NMFS, etc.) for states and other local government entities to contact for providing information on salmonids upon written request. Such information from the lead agency will reflect in total the federal government position.

2. The federal government must enact legislation that will allow balance in regulating known salmonid predators currently protected by federal regulations (i.e., Caspian Terns, Cormorants, seals, sea lions, etc.).

3. Washington, Oregon, Idaho, Montana, and California collectively need to study the high seas impact on salmon from the Pacific Interdecadnal Oscillation (PDO).

4. Washington, Oregon, and Idaho collectively need to obtain core samples from the Columbia and Snake Rivers to ascertain cycles of salmon runs evident in the strata of the river bottoms.

5. To minimize harm to listed fish species, the Columbia River Tribes should be enabled to start selective harvest pilot projects using such things as fish wheels and holding/sorting ponds, instead of indiscriminate harvest by gill nets.

6. Salmon returning to the fresh waters of Washington state, not needed for hatchery spawning, should continue to be allowed to complete their natural life cycle and spawn in the wild.

Mrs. CHENOWETH-HAGE. Thank you very much, Senator.

Mrs. Johansen, you're recognized for testimony for 5 minutes.

STATEMENT OF JUDITH JOHANSEN, ADMINISTRATOR, BONNEVILLE POWER AUTHORITY, PORTLAND, OREGON

Mrs. JOHANSEN. Thank you, Madame Chair. I'm afraid this is a hard act to follow.

Madame Chair, distinguished members of the Subcommittee, I am Judi Johansen, the CEO and Administrator of The Bonneville Power Administration. I appreciate this opportunity to appear before you today, and I would like to thank you for your support and your attention to these critical issues for our region.

Madame Chair, Bonneville and the region want a comprehensive, integrated fish plan for the Columbia River Basin that can be implemented. We believe that we are coming closer to that goal, but the plan has to meet three criteria:

First of all, as mentioned in many of the members' statements it must be scientifically sound. Second it has to comply with the legal obligations defined under treaties and statutes, not just the treaties of the tribes but also international treaties. Thirdly it must have broad regional support so that it is truly implementable.

Our vision for the plan is that it be broad enough to encompass not only the listed stocks but also the needs of non-listed stocks. I believe that we can achieve the twin goals of recovery of the weakened stocks and at the same time create more financial certainty for this region.

In my testimony today, I would like to make three points about where we're headed with the All-H Approach and where we can look forward.

First of all a durable, unified fish plan should be founded on performance-based standards. You've perhaps heard that phrase in the last few months. We are pressing for objective scientific standards on which our actions can be measured. That is something that's been lacking in salmon recovery efforts over the past decade.

Second, my agency, The Bonneville Power Administration, is fully committed to funding its share of the fish and wildlife program and it's fish and wildlife obligation, we've established a financial strategy which takes us to that objective.

Finally, in echoing the comments of the members here today, this plan has to be developed in close coordination with the States, local governments, and the tribes so that it is truly acceptable and achievable in this region.

In terms of performance standards, let me just say a few words. Performance standards are a means for establishing levels of survival improvements in each stage of Jack and Jill's life. For example, a performance standard could require that a certain percentage improvement in juvenile passage be required through the hydro system.

Performance standards are simply good management. They create clear objectives and they provide flexibility on the part of the local residents and the stewards of the resources to define the most efficient and effective means for achieving those standards. In other words, they increase accountability.

For the hydro system, the performance standards create a clear yard stick against which to measure accomplishments necessary to remove these species from the endangered and threatened list. Moreover, I believe these performance standards can encourage us to talk about tradeoffs and look for the most effective and efficient way to achieve recovery.

For example, we recently were able to work with the National Marine Fisheries Service to revise the spill program at the various Federal projects, using a performance standard basis. We have reduced spill at some projects where it's been acknowledged that the level of spill is killing fish and increased spill in some instances at other projects.

If we stretch our imaginations a little bit, it's possible that with the performance standard approach Bonneville could fund habitat improvements instead of the hydro system changes that others might suggest.

Turning performance standards into a reality is going to be the difficult part, but Federal agencies, working in conjunction with the States and with the tribes have been trying to hone in on the performance standards concept. I think substantial strides have been made in coalescing that concept.

Let me just quickly go now to Bonneville's funding for salmon recovery. Assuming that we develop this regional plan that has some sort of consensus, Bonneville is committed to funding its share. We have complied with the 1995 Memorandum of Agreement and are operating under the recently established fish funding principles, which are set forth more specifically in my written testimony.

Finally, I would like to underscore that it is critically important to the Federal agencies, especially Bonneville, to work closely with the Northwest Power Planning Council to assure that we're coordinated with State efforts, and to work closely with the tribes to make sure that the Federal agency efforts are complimentary to those that are taken by the other entities.

In conclusion, I would like to thank you very much for inviting me to testify before the Subcommittee, I look forward to working with you in developing this fish recovery plan. I believe for the first time we have the chance to have accountability and objective measurements that will get us to the objectives that we all want and that's more fish in the river. Thank you.

[The prepared statement of Mrs. Johansen follows:]

TESTIMONY OF JUDITH JOHANSEN

ADMINISTRATOR AND CHIEF EXECUTIVE OFFICER

BONNEVILLE POWER ADMINISTRATION

UNITED STATES DEPARTMENT OF ENERGY

BEFORE THE

COMMITTEE ON RESOURCES

UNITED STATES HOUSE OF REPRESENTATIVES

APRIL 27, 2000

Introduction

Mr. Chairman, distinguished members of the House Committee on Resources, my name is Judi Johansen. I am the Administrator and Chief Executive Officer of the Bonneville Power Administration (Bonneville). We appreciate this opportunity to appear today and applaud you and the Committee's continued support and attention to Columbia River Basin (Columbia Basin) fish and wildlife.

Mr. Chairman, Bonneville and the other Federal agencies active in the Columbia Basin are committed to working with the region to arrive at a plan for recovering endangered fish. Stabilizing and enhancing salmon and steelhead stocks will require a concerted effort from all interests in the Columbia Basin.

Important Points

The Committee has asked me to testify concerning actions that can be taken to protect salmon stocks in the next five to seven years. You have asked about Bonneville's funding for fish studies, and whether they will help recover the fish. I would like to speak to those questions in the context of three important points that I want to make today:

First, Bonneville is committed to funding its share of the region's efforts to recover endangered fish and wildlife. We have positioned ourselves to perform financially on that commitment. Second, Bonneville ratepayers' dollars must be spent wisely. Our actions to recover the fish must be grounded in the best science available, and they must be focused on results. Third and finally, Bonneville believes funding for fish recovery must be based on a unified regional plan, addressing all four H's—habitat, harvest, hatcheries, and hydropower—for all stocks in the Columbia Basin. We believe that a unified plan has the best chance for enhancing anadromous and resident stocks in our region and creating the certainty necessary for a strong economy.

Bonneville Funding Commitment

Under the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act) and the Endangered Species Act (ESA), Bonneville funds a variety of federal, state, tribal, and local efforts. Since 1980, we have invested close to $3 billion in fish and wildlife restoration, including the financial impacts of operations. Bonneville's fish and wildlife efforts are funded through Bonneville's power rates. Unlike most ESA programs, which are supported by taxpayers, efforts to recover listed fish in the Columbia Basin have largely been funded by Bonneville ratepayers.

In 1992 and 1994, when Pacific Northwest salmon and sturgeon were listed as endangered species, Bonneville's fish and wildlife program expenditures plus the financial impacts of changes in hydropower system operations increased significantly, going from about $150 million to over $400 million per year.

When these costs increased so dramatically, Bonneville's customers began to point to our rising and uncertain fish costs and to consider switching to other power suppliers. For the first time in our history, Bonneville was concerned that it would not be able to sell its power in the region. This put Columbia Basin fish and wildlife recovery at risk as well. Without Bonneville, those programs were not likely to be funded.

In 1995 the Administration and the Northwest congressional delegation agreed to establish a Memorandum of Agreement (MOA) under which Bonneville would make available an average of $252 million per year for fish and wildlife recovery, plus the costs of hydroelectric system operational changes to implement the Biological Opinions on ESA-listed fish. This covers Bonneville's direct fish and wildlife program at an average of $100 million per year, plus reimbursable expenses for fish mitigation efforts undertaken by the Corp of Engineers (Corps), the Bureau of Reclamation (Bureau), and the United States Fish and Wildlife Service (USFWS) and debt service on capital investments, such as fish bypass facilities and spillway modifications. Bonneville's capital funding for the direct program is assumed in the budget to be $27 million per year. In large part due to the MOA, Bonneville was able to establish competitive wholesale electric rates for the five-year period 1996-2001 and to renegotiate its existing contracts with its customers and stabilize our revenues through 2001.

Fish Funding Principles

Most of Bonneville's current power sales contracts expire in 2001. In the fall of 1998, to help lay the groundwork for Bonneville's new power contracts and rates for the 2002-2006 rate period, Vice President Gore announced eight Fish and Wildlife Funding Principles. They were developed through an extensive public process, involving nine months of discussions with Federal and State agencies, public interest groups, Northwest tribes, and customers.

The goal of the Principles was to achieve common understanding of how to address the uncertainty of future fish and wildlife costs in Bonneville's power rate case. They were designed to keep the options open for the outcome of the Northwest Power Planning Council's (Council) Fish and Wildlife Program amendment process and future Biological Opinions on Federal Columbia River Power System (FCRPS) operations.

The Principles established the costs and the cost recovery goals that Bonneville is to use to set rates. These funding assumptions were needed because Bonneville must set rates and initiate its power sales contracting process in advance of decisions on system reconfiguration for the benefit of endangered fish—including the decision on whether to breach the four lower Snake River dams. The Principles help ensure that Bonneville's rates and contracts will provide adequate revenues to cover a wide range of fish and wildlife costs and do not prejudge or prejudice future decisions.

Funding for a Range of Fish Recovery Alternatives

The Principles call on Bonneville to design measures to mitigate financial risks and set rates to achieve a very high probability of recovering all costs. In particular, Bonneville is to set rates to achieve up to an 88 percent probability of recovering all Treasury payments over the fiscal year 2002-2006 rate period. In addition, the Principles call for Bonneville to incorporate the full range of 13 system reconfiguration alternatives (including five sub-alternative schedules) in its revenue and expense forecasts and risk management strategy, and to assume that each alternative is equally likely to occur. The range of fish and wildlife costs, including foregone revenues, is estimated in the Principles to be $438 million to $721 million per year.

Responsible Use of Ratepayer Dollars

Our expenditures to date on studies such as survival research have significantly increased knowledge about the actions that will best help the fish. Today, with the potential for increased requirements in the next rate period, we continue to be concerned that those dollars be put to good use. We are strong supporters of the Independent Scientific Review Panel (ISRP) that Congress established in 1997. With its emphasis on clearly defined objectives and the monitoring and evaluation of results, the ISRP has brought a stronger scientific basis to the Council's program. We heartily supported Congress' move last year to extend the ISRP review to include the capital construction program for fish passage improvements at the dams.

Bonneville also applauds the growing attention to careful scientific analysis in the Council's program. We believe the Council's Ecosystem Diagnostics and Treatment (EDT) method, with its ecosystem-wide view and its look across the salmon's full geographic range and complex lifecycle, has already yielded encouraging results in weighing the cumulative effect of alternative approaches. The Council has proposed to use a sub-basin planning approach as a basis for its Fish and Wildlife Program amendment process. Bonneville is very supportive of that approach, and we are encouraging active links between the habitat approach in the All-H Paper and the Council's program. Projects such as National Marine Fisheries Service's (NMFS) Cumulative Risk Initiative (CRI) also provide a significant measure of confidence to our funding. The CRI uses current survivorship data for each life stage and each "H" to evaluate potential management actions.

Prioritization Funding Process

To date, under the MOA, the Council, working with other Federal agencies, states, and tribes has developed and used a prioritization process to identify, scientifically evaluate, and recommend projects for Bonneville funding. We divide our funding under the MOA into three categories: (1) Bonneville's direct fish and wildlife program, now budgeted at $100 million per year, (2) reimbursable expenses for operations and maintenance of fish mitigation projects undertaken by the Corps, the Bureau, and the USFWS, at about $22 million per year, and (3) debt service on capital investments, such as fish bypass facilities and spillway modifications, which have averaged about $50 million per year under the MOA.

In this third category, Bonneville repays the U.S. Treasury with interest for Corps and Bureau appropriations that are used for capital improvements among the 28 federal dams in the Columbia Basin in order to improve fish passage. In the FY 2002-2006 rate period, Bonneville's annual repayments to Treasury attributable to fish and wildlife are estimated to average $159 million.

For Fiscal Year 2000, Congress has appropriated $67.5 million to the Corps for these projects, and Bonneville's budget for FY 2001 reflects that amount. Collectively referred to as the Columbia River Fish Mitigation Project, this effort includes capital improvements such as fish screens, surface bypass facilities, and fish ladders as well as numerous studies on the effectiveness of these measures. Each year, the System Configuration Team (SCT) carefully prioritizes the projects in a process established in the 1995 Biological Opinion. The SCT develops its priorities from those submitted each year by teams of federal, state, and tribal fish managers.

Both this year and last, the largest share of the MOA capital budget has been invested at Bonneville Dam, which has one of the highest mortality rates and passes more juvenile fish than any other federal dam in the Columbia Basin. This year's budget for the project is $22 million.

Also embedded in the capital budget, as well as within the Council's Direct Program, is funding for numerous studies, such as dissolved gas abatement research and pit tag data collection. These studies are all aimed at finding ways to help the greatest number of salmon past the dams safely.

Although there are many factors that influence the annual return of salmon, there also is evidence that our long-term efforts may be helping. In 1993, when the federal agencies began investing in major fish passage improvements, juvenile salmon survival through the eight dams on the Columbia and Snake Rivers was about 30 percent. Today, according to NMFS' data, the juvenile survival rate is about the same as it was in the 1960s—before the four lower Snake River dams were in place—about 40-60 percent. Current survival ranges between 42 and 59 percent with an average of about 50 percent. Adult salmon returns are also encouraging. The tally of adult spring chinook at Bonneville Dam is the largest in more than 20 years for this date. This year could be one of the best years for Columbia River spring salmon since the strong returns of the 1970s.

Bonneville Funding Must be Based on a Unified Plan

The improved adult returns are suggestive of the effect that ocean conditions have in the life cycle of the salmon. Scientists say that several El Niño events have warmed the Pacific Ocean in recent years, killing off the plankton and other sea life critically important in the food chain of salmon and possibly impacting their ocean survival. They say those conditions are improving now, however, we shouldn't fool ourselves by thinking nature will do the work for us. The ocean won't yield fish unless we continue to vigorously address the other causes of decline—harvest, habitat, hatcheries, and hydro operations.

Today, important events are coming together that will significantly affect Bonneville's funding for fish and wildlife recovery. Next month, the NMFS and the USFWS will issue their draft Biological Opinions on long-term operation of the FCRPS designed to avoid jeopardy to listed salmon, steelhead, sturgeon, and bull trout. In addition, the Council is beginning a process to amend its Fish and Wildlife Program. Nine Federal management agencies have just finished an extensive public process on a draft All-H paper that describes options for actions to be taken in habitat, harvest, and hatcheries as well as hydropower in order to avoid jeopardy to anadromous and resident stocks, and to aid in their recovery.

All of these processes lay the groundwork for implementation of a unified regional plan. Bonneville believe's it is critical that the Council's program be coordinated with ESA processes to come up with a unified regional plan for fish and wildlife recovery. Bonneville believes funding must be guided by a single plan. This is a critical first step for recovering listed species and identifying Bonneville and others' accountability for future fish and wildlife funding.

For a unified plan to work, it must be grounded in the best science available. It must be based on meeting statutory and treaty obligations. It must also have the broad regional support necessary to make it achievable. We believe that a unified plan must address all four of the "H's." It must also be broadly focused to address all the listed stocks in the Columbia Basin. We believe that a plan that achieves these goals has the best chance for enhancing anadromous and resident stocks in our region and creating the certainty necessary for a strong economy.

A Unified Plan Based on Performance Standards

Bonneville strongly supports use of science-based performance standards in any unified plan. The federal hydro operators proposed the idea of performance standards for fish recovery in their recently completed Biological Assessment. In our recent consultations with NMFS and USFWS in preparation for the draft Biological Opinions, information on performance standards, costs, and biological effects were pivotal in reaching agreement on spill levels for this year's fish migration. These agreements will be incorporated into the draft Biological Opinions for future migration seasons.

Properly designed performance standards can create accountability in terms that measure progress toward the real objective—large numbers of healthy fish returning to spawn. Program results in the past have been only loosely tied to this objective. With performance standards, we want to describe a contribution needed at each life-history stage in order to achieve overall biological objectives for recovering the fish. Habitat and hatcheries are important at the egg and smolt life stage. Hydro and harvest also come more into play in the juvenile and the adult life stages. By looking at the contribution from each life-history stage, we are able to assign standards to individual "H's" to achieve.

The federal agencies and others are currently looking at three levels of performance standards. First, an overall performance standard should be established that is aimed at the cumulative survival level needed throughout the life cycle in order to foster recovery of a population or listed unit. At this level, we might have an overall standard to assure population growth, such as

number of adults returning to spawn. Secondly, we would also set performance standards for each life stage: egg-to-smolt, smolt-to-ocean, ocean-to-maturity, and adult-to-spawning. Performance standards at this level might be a specified egg-to-smolt survival ratio for a specific tributary habitat area.

Finally, the federal agencies would set separate performance standards for each "H's" contribution to improvements at each life stage. Hydro specific performance, for example, would be measured at each dam and system-wide for juveniles and adults. Bonneville also believes that at this performance standard level, some tradeoffs among the "H's" might be possible. For instance, Bonneville may be able to fund habitat improvements that would not otherwise occur as "off site mitigation" of part of hydropower's effect on the fish.

The federal agencies are considering overall performance standards for the hydropower system that range from a natural river survival standard—i.e., zero mortality, net of natural causes, due to the federal hydro system—to improved long-term survival that considers other parts of the life cycle across all of the H's. In the Biological Assessment, the hydro operators presented the example of a performance standard that would specify improvements per dam that would equate to the overall survival rate projected from breaching the four lower Snake River dams. This would result in higher survivals in the Snake and Columbia Rivers than anything we have obtained to date.

The ISRP will review the performance standards approach as well as the upcoming draft Biological Opinions. We would also expect the Biological Opinions to include performance standards for the hydro system.

Unspent MOA Funds Must Await a Unified Plan

Recently, there has been increasing attention paid to the fact that FCRPS capital repayment costs have been lower than forecasted in the MOA. These funds were to be used to repay the U.S. Treasury for capital improvements that the Corps and Bureau expected to make at the federal dams, but for which Congress has not appropriated funds on the expected schedule. While some have asked Bonneville to convene a separate process for the region to decide how to spend this money, we are concerned that an immediate focus on the MOA funds will shift the region's attention away from development of a sound performance based unified plan. We believe that fish and wildlife measures should be funded in the context of a regional plan, which will evolve with the Council's Fish and Wildlife Program amendment process and the Biological Opinions.

Bonneville committed in the MOA, we will keep any funds budgeted but not expended during the term of the MOA available for the benefit of fish and wildlife. We will not re-program them for other uses. However, it should be noted that the MOA does not require that Bonneville make these funds available as an amount over and above the expenditures that we would otherwise be making for fish and wildlife projects. It simply requires that the funds be applied to future fish and wildlife projects, which we fully intend to do.

We do not support convening a separate process for the region to decide how to spend the MOA money at this time. We do, however, recognize that between the time the unified plan is adopted and the expiration of the current MOA, there could be some increased funding needs. Additional actions may be necessary for the protection of ESA-listed species as well as high-priority, immediate actions to benefit fish and wildlife that have regional support and are scientifically sound. We anticipate that any such actions that are appropriately Bonneville funding responsibilities and not in lieu of other government entities' financial responsibilities would be brought through the Council's review process to ensure consistency.

Conclusion

Mr. Chairman, I want to reiterate two key thoughts. First, the region must have a sound unified plan to recover fish and wildlife in the Columbia Basin. Once such a plan is completed, Bonneville is committed to funding our share. Second, we want Bonneville ratepayer dollars to be spent where they will do the most good toward helping the fish. We believe the progress in the region on performance standards, using analytical tools to identify management actions, and a scientific selection and prioritization process are the right steps to get there.

Mr. Chairman, thank you for your attention. I am available now to answer any questions you may have about Bonneville's funding for fish and wildlife recovery.

Mrs. CHENOWETH-HAGE. Thank you very much and the Chair recognizes Colonel Mogren for his testimony.

STATEMENT OF COL. ERIC MOGREN, DEPUTY COMMANDER, NORTHWESTERN DIVISION, U.S. ARMY CORPS OF ENGINEERS, PORTLAND, OREGON

Colonel MOGREN. Before I start, I would like to introduce some other members of the Corps that are here today, the panel, in your letter of invitation, had requested Mr. Doug Arndt from my staff to join us, and Doug is here. We also have Lieutenant Colonel William Bulen, the Commander of the Walla Walla District. Colonel Bulen is charged with preparing the Snake River DEIS. The reason I say this is I listened to your opening comments. Clearly you have interests that have gone beyond those that were listed in our letter of invitation. So as we get into your questions, what I may ask is your indulgence and to call on the staff to assist in answering those questions so we can give you as complete an answer as we possibly can.

Madame Chair, members of the Committee, thank you for the opportunity to testify today. I am Colonel Eric Mogren, Deputy Commander of the Northwestern Division of the U.S. Army Corps of Engineers. I will keep my remarks brief and submit a more complete written testimony for the record. And this may be a little presumptuous, because I do sense your interests have shifted somewhat from the letter of invitation, I'll fly by those things that were in the letter and get your questions so that some of these other things can be answered in perhaps more detail.

Madame Chair, you asked that I address the near-term actions for the salmon, Corps study results, the status of the juvenile salmon transport program and how the Corps plans to use PATH study information. I'll start with near-term actions.

In the coming years we will continue to augment flows, spill for fish and operate the juvenile fish transportation program in accordance with applicable biological opinions on the Federal Columbia River power system. We will continue to make improvements to fish passage facilities including: extended-length screens, juvenile fish collection channel improvements, improvements to adult passage and additional fish passage facilities. We will also continue evaluating surface bypass systems and gas supersaturation and improvements in turbine passage. Of course, we are in the process of completing the lower Snake River feasibility study and phase one of the John Day draw-down study.

The lower Snake Study examines four major alternatives for the dams: existing systems, maximum transport, major improvements and dam breaching. The draft John Day Phase One Study looks at spillway crest and natural river level drawn down options, both with and without flood control.

The Corps released its draft report and based on the estimated cost and biological benefits expected of all four alternatives, the Corps preliminary recommendation is that no further study of the John Day drawdown is warranted.

Other activities the Corps could take in the near term include habitat improvements, such as assisting the fish and wildlife service in long-term planning for addressing the Caspian Tern prob-

lems in the Columbia River estuary in improving wetland conditions in the estuary.

As you may be aware the Corps was prepared to keep the Caspian Tern population from nesting on Rice Island this year. However, a preliminary injunction has put a halt to that effort. We are appealing that injunction and we are hoping to have a decision from the court sometime later this week.

Concerning Corps studies, we continue to fund research and fish passage and survival at the dams, surface bypass technologies, juvenile fish transportation, in river passage, adult fish passage and turbine passage improvements. Based on study results we have developed and refined fish passage facilities and modified our operations. The significant increase in survival rates through the system attests to the success of these improvements. For example, research by the National Marine Fisheries Service indicates that between 50 and 60 percent of juvenile fish that migrate in river successfully pass the Corps dams on the lower Snake and the Columbia. This is up from the 10 to 40 percent survivals we saw back in the 1960's and the 1970's.

Turning to the juvenile fish transportation program, since 1968, the Corps has funded research to find the best methods of transporting juvenile salmon and to assess related survival levels. We have determined that transported fish do not stray any more than non-transported fish and most importantly transport returns significantly more fish than non-transport as measured by smolt to adult return rates. Our research indicates that we get about a two to one ratio of transported fish versus in-river fish returns. We also know that 98 percent of the transported juvenile fish survive to the release point below Bonneville Dam.

One remaining question is the level of delayed mortality for transported and non-transported fish. This is a significant factor in determining the overall benefit of transport. Research is underway utilizing PIT tag technology to answer this critical question. There is much we do not know about salmon and steelhead behavior and what affects their survival. It is not fully understood why these stocks continue to decline. We believe further research is needed to resolve some of these key uncertainties.

Turning to the Committee's question of how current transport research information is dealt with in the PATH analysis. In its first draft biological appendix to the lower Snake River Study, the National Marine Fisheries Service used the plan for analyzing and testing hypotheses or PATH. Responding to concerns from the Independent Science Advisory Board NMFS subsequently introduced an additional tool called the umulative Risk Initiative or CRI to analyze the risks of extinction and to provide a broader analysis of salmon life stages.

These models build on each other and we looked at NMFS to interpret the results. PATH, CRI, as well as additional research information will all be used in the biological analysis for the final EIS.

Madame Chair, this concludes my testimony. I look forward to your questions and I thank you again for the opportunity to be here.

[The prepared statement of Colonel Mogren follows:]

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS

COMPLETE STATEMENT
OF
COLONEL ERIC MOGREN
DEPUTY COMMANDER
NORTHWESTERN DIVISION

BEFORE THE

HOUSE COMMITTEE ON RESOURCES

ON

HYDROPOWER, RIVER MANAGEMENT AND SALMON RECOVERY ISSUES ON THE COLUMBIA/SNAKE RIVERS

APRIL 27, 2000
PASCO, WASHINGTON

INTRODUCTION

Mr. Chairman and members of the Committee, I am Colonel Eric Mogren, Deputy Commander, Northwestern Division, U.S. Army Corps of Engineers. Thank you for this opportunity to discuss the actions of the Corps affecting hydropower operations, river management and salmon recovery issues on the Columbia River system.

BACKGROUND

The Corps constructed and operates twelve major dams in the Columbia River Basin that affect the habitat and migration of anadromous salmon and steelhead and other aquatic species listed under the Endangered Species Act. The dams are authorized under project authorities in the Rivers and Harbors Acts of 1935, 1945, 1946, 1950, and 1962 for multiple uses including flood control, power production, navigation, recreation, fish and wildlife, irrigation and municipal and industrial water supply.

Bonneville, The Dalles, John Day and McNary dams on the lower Columbia River and Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams on the lower Snake River are in the migratory path of several species of salmon and steelhead. Two upstream storage dams operated by the Corps — Dworshak in Idaho and Libby in Montana — contribute to salmon restoration actions through flow augmentation. The remaining two are Chief Joseph and Albeni Falls dams.

The Corps Northwestern Division office in Portland and the Walla Walla, Portland, and Seattle District offices are involved in efforts to improve salmon migration through the Columbia and Snake River corridor.

ENDANGERED SPECIES ACT / BIOLOGICAL OPINIONS

Many Columbia River Basin stocks of salmon and steelhead are in decline. In 1991, the National Marine Fisheries Service (NMFS) listed the Snake River sockeye salmon as endangered under the Endangered Species Act (ESA). In 1992, the Snake River spring/summer and fall chinook salmon were listed as threatened. Over the last several years, other Columbia and Snake River salmon and steelhead stocks have been listed under the ESA. Currently, there are 12 listed salmon and steelhead stocks within the basin. The U.S. Fish and Wildlife Service (USFWS) has also listed two species of resident fish in the basin: bull trout and Kootenai River white sturgeon.

No single factor is solely responsible for the decline of the salmon, and it will require efforts across all life cycle influences to restore listed stocks. Recovery efforts must address four life cycle areas, referred to as the All-H's — harvest, habitat, hatcheries, and the hydropower system. The Corps' primary role in recovery efforts is to implement measures at its dams and reservoirs to assist recovery of salmon and steelhead and other listed fish populations.

The salmon, steelhead, bull trout and sturgeon ESA listings triggered the requirement for Federal agencies to consult with NMFS and USFWS on hydro-system operations and configuration affecting the listed species. Formal consultation begins with a Biological Assessment from the "action" agencies, i.e. the Corps, Bonneville Power Administration (BPA) and the Bureau of Reclamation (BoR), and culminates in hydropower Biological Opinions from the ESA regulatory agencies. The action agencies are currently operating under 1995 Biological Opinions from NMFS and USFWS and 1998 and 2000 Supplemental Biological Opinions to address additional salmon and steelhead species listed since 1995. The Opinions contain measures to avoid jeopardizing the continued existence of listed salmon, steelhead, bull trout and white sturgeon species.

Because the Biological Opinions were written as interim documents pending results of long-term studies, the action agencies transmitted a new Biological Assessment to NMFS and USFWS in December 1999. It addresses proposed operation and a decision process for long-term configuration, of the Federal Columbia River Power System.

The 1999 Biological Assessment incorporates measures that were put into place under the 1995 NMFS and USFWS Biological Opinions, a 1998 supplemental, a 1999 Biological Assessment on listed bull trout and sturgeon, and a 1999 draft Biological Opinion pertaining to listed Columbia River chum salmon. The Biological Assessment identifies both near and long-term actions intended to improve fish passage. Near-term actions include:

- Flow augmentation – Release of water from storage or headwater reservoirs to meet flow targets in the lower river for salmon and steelhead.
- Reservoir operations – Operations of headwater projects to provide for spawning and recruitment of Kootenai River white sturgeon, and minimize rapid fluctuation in both reservoirs and unimpounded river reaches for improved bull trout habitat conditions; and release of water from Dworshak Dam for temperature control.

- Spill measures – Water passed at a dam through a spillway rather than being sent through the turbines to guide fish away from the turbines, thereby reducing the percentage of turbine-related mortality.
- Fish transportation – Juvenile salmon and steelhead collected at dam sites on the Snake and Columbia rivers and placed in specially designed barges to be transported down river and released below Bonneville Dam.
- Predator control programs – Programs intended to help protect juvenile salmon from other species that prey on them, such as northern pikeminnow and Caspian terns.

Long-term actions in the Biological Assessment include:

- Lower Snake River survival improvement study – A feasibility level study to analyze alternatives for long-term configuration and operation of the lower Snake River dams, including breaching..
- Water quality – Studies intended to improve dissolved gas and temperature conditions.
- Passage improvements – Turbine studies to identify operational and structural modifications to make turbine passage less harmful to fish; testing of surface collectors; bypass improvements; and additional fish transport facilities.

We are currently consulting with NMFS and USFWS and expect new Biological Opinions in summer 2000.

The consultations are addressing several operational and configuration actions, including four main issues: breach of four Snake River projects, increased spill, study of potential flood control modifications and addressing water quality. We anticipate that the Biological Opinions will address long-term operations and configuration needed to ensure survival of the listed stocks throughout the Columbia River Basin. Further, we anticipate that a series of performance measures and standards will be fully developed so we can judge the success and end-point of our efforts. The Biological Opinions cover the hydropower projects in the Federal Columbia River Power System and all listed species, and they will be pivotal factors in the Corps long-term decisions for the four lower Snake River dams.

IMPROVEMENTS IN DAM PASSAGE

The NMFS 1995, 1998 and 2000 Biological Opinions identified many near-term actions for the Corps to protect salmon and steelhead, and a long-term plan to investigate and evaluate new ways to operate and configure the dams. In accordance with the Biological Opinions, near-term actions have included increased flow augmentation and spill for juvenile fish; juvenile fish transportation has continued in the mix of measures; adult and juvenile fish passage systems have been improved; powerhouse operations have been adjusted; spillway flow deflectors have been added to more dams to increase fish passage through spill without a resulting increase in gas supersaturation; and research and monitoring facilities have been added.

These actions have been successful in improving juvenile fish survival at the dams. Recent NMFS research on spring/summer chinook indicates that between 50 and 60 percent of juvenile fish that migrate in-river successfully pass the Corps dams on the lower Snake and Columbia Rivers, up from about 10 to 40 percent in the 1960s and 1970s. About 50 to 60 percent of migrating juvenile fish are collected and transported past the dams in barges or trucks. Approximately 98 percent of the transported fish survive to the release point below Bonneville Dam. Therefore, the combined survival of transported juvenile fish and in-river migrants through the migratory corridor of Corps dams is about 70 to 80 percent.

One of the scientific uncertainties that exists is indirect mortality that may occur after juvenile salmon have left the hydropower system or been released from the barges or trucks. This indirect mortality may be a result of passage through the hydropower system, transportation, or other factors. Research is underway to address this uncertainty and obtain better information.

LOWER SNAKE RIVER STUDY

In response to the requirement in the Biological Opinions to evaluate long-term alternatives for the four lower Snake River dams, the Corps initiated the Lower Snake River Juvenile Salmon Migration Feasibility Study. The primary objective of this study is to develop a plan to improve migration conditions for salmon and steelhead in the lower Snake River and to contribute to the recovery of these stocks. This study addresses the four lower Snake River dams — Ice Harbor, Lower Monumental, Little Goose, and Lower Granite. It does not address specific actions on dams and reservoirs on the Columbia River, or other factors in salmon decline besides operation of these projects.

The geographical scope is the lower Snake River, from its confluence with the Columbia River extending upstream approximately 140 miles to the city of Lewiston, Idaho.

The study examines the following four major alternatives for the four lower Snake River dams:

1) maintain the existing fish passage system with current and planned improvements;
2) maximize transportation of juvenile fish;
3) make major system improvements such as surface bypass, gas abatement measures, and turbine passage improvements; and
4) implement permanent natural river drawdown by breaching the dams.

In December 1999, the Corps released a draft Environmental Impact Statement (EIS) on these alternatives for public review. In order to allow all affected parties in the region to address the issues within the broader context of other ongoing regional efforts for Columbia River Basin fish, a preferred alternative was not identified in the draft EIS. In conjunction with the Federal Caucus (nine regional agencies) the Corps held 15 public meetings in February and March 2000 throughout the region (OR, ID, WA, MT, AK). The purposes of the public meetings were to share information and take comment on the draft EIS and the Caucus' All-H Paper: *Conservation of Columbia Basin Fish.* The comment period on the draft Lower Snake EIS was extended by one month, to April 30, 2000.

A final EIS is expected to be published in late 2000. If the recommendations in the final EIS include dam breaching, Congressional authorization and appropriations would be necessary. The other alternatives being considered would require appropriation of funds by Congress, but not specific authorization for implementation.

JOHN DAY DRAWDOWN STUDY

The NMFS 1995 Biological Opinion and 1998 supplement called for study of drawdown of the John Day Dam on the lower Columbia River. The Corps recently published its draft John Day Dam Drawdown Phase I Study report. The draft report looks at biological and economic effects of the following four alternatives: natural river level drawdown with and without flood control, and spillway crest level drawdown with and without flood control.

Based on the economic cost and biological benefit expected under any of the alternatives, the Corps' preliminary recommendation is that no further study of John Day Dam drawdown is warranted. The review and comment period extends to May 1, 2000. The Phase I final report to Congress later this year will incorporate any additional information gathered during the comment period.

TURBINE PASSAGE IMPROVEMENTS

The Corps has been involved in a comprehensive program to investigate improving fish passage through turbines since the early 1990s. The investigation consists of both biological and engineering studies. The NMFS 1998 Supplemental Biological Opinion also included a measure to evaluate the new minimum gap runner (MGR) design at Bonneville Powerhouse I.

From November 1999 to January 2000, tests were conducted at Bonneville Powerhouse I to compare results in unit 5, a conventional unit, and unit 6, the MGR unit. Our initial analyses of the test results verify that the MGR turbine is safer for fish. Injury rates were low for both the conventional and MGR units, but the MGR had about half the injury rate of the conventional turbine, plus a better survival rate. Survival rates for fish released at the turbine hub from both the MGR and the conventional turbine was 97 to 100 percent; for mid-blade releases from 95 to 97 percent. Survival rates for fish released from the blade tip of the MGR were about 94 to 97.5 percent compared with survival rates of about 91 to 95.5 percent with the conventional turbine. An added benefit of the MGR turbine appears to be improved operating unit efficiency. This improved efficiency could partially compensate for lost generation due to spill.

The study results are still undergoing detailed statistical analyses and, therefore, initial observations should be considered preliminary and subject to further interpretation. It should also be noted that this study evaluated direct mortality and injury caused by passage through the turbine units and did not evaluate delayed effects in the tailrace (below the dam).

As a result of these encouraging results, we made the decision to incorporate MGR turbines in the remaining rehabilitation of the Bonneville Powerhouse I operating units and to evaluate their use in the other projects of the Columbia River Federal Power System.

HABITAT IMPROVEMENTS / CASPIAN TERNS

Survival improvement in the Columbia River estuary is of particular interest to the Corps. Once the juvenile fish safely pass the hydropower dams, it seems prudent to take steps to see them safely through the estuary. In 1998, Caspian terns nesting on estuarine islands consumed about 11 million of the approximately 95 million juvenile salmon that survived to the estuary. Modifications in the flow regime and in tidal wetlands have further eroded the health of the estuarine ecosystem. We are currently working with Federal, State and local interests to lay out the comprehensive studies, planning and actions needed to improve fish survival through the estuary.

A September 1999 Biological Opinion from NMFS on channel maintenance actions in the Columbia River, called for the Corps to take all necessary actions to prevent Caspian tern nesting on Rice Island in 2000. At this time a preliminary injunction has halted Corps actions on Rice Island, although the Corps has appealed and is seeking emergency relief pending a ruling on the appeal. The Corps continues to work with the Caspian Tern Working Group on a USFWS long-term plan for relocating the birds.

FUNDING: COLUMBIA RIVER FISH MITIGATION AND O&M

Construction activities for fish facilities at the eight lower Columbia and Snake river dams include continuing improvements to juvenile and adult passage facilities, evaluations and studies. These activities are funded with Congressional appropriations through the Columbia River Fish Mitigation Project (CRFM). The estimated total project cost from its start in 1988 to its projected finish in 2007 is $1.4 billion. The FY01 budget request for CRFM is $91 million. BPA repays the U.S. Treasury for the power share (about 80%) of capital costs of fish facilities construction at the Corps projects. The Attachment to this statement provides budget information on CRFM for FY00 and preliminary estimates for FY01.

The Corps Operations and Maintenance program for fish facilities includes operation and maintenance of fish facilities and hatcheries, operation of the Juvenile Fish Transportation Program, and some fish research activities. O&M is funded through Congressional appropriations and by direct funding agreement with BPA (80 percent BPA funding). These costs are about $29 million per year.

FEDERAL CAUCUS AND ALL-H PAPER

Corps activities for fish in the hydropower system and other potential actions to improve salmon survival must be considered in the broader context of the entire Columbia River Basin, for multiple species, and across the salmon life-cycle influences: habitat, harvest, hatcheries and hydropower. To provide this broader context a Federal Caucus was formed to develop a comprehensive strategy for recovery of Columbia River Basin fish. The Federal Caucus includes representatives from NMFS, USFWS, BoR, Bureau of Indian Affairs, Bureau of Land Management, EPA, the Corps, U.S. Forest Service, and BPA.

The Caucus has prepared a draft "All-H Paper" to lay out options for actions in the areas of hydropower, harvest, hatchery management, and habitat improvements to be integrated into a comprehensive strategy for recovery of the listed species. The results of the Corps' Lower Snake River study are integrated into this effort.

The All-H Paper provides a framework for recovery actions. It is a unified Federal approach to look at all aspects of the life cycle in a comprehensive manner. This has created a context and a common operating concept for us to work with the States and Tribes, to coordinate and collaborate on technical and policy decisions for Columbia Basin fish recovery. The Federal agencies have begun a joint consultation with the thirteen Columbia River tribes framed around the All-H Paper as a basis for constructive discussion.

PUBLIC MEETINGS

The Federal Caucus and the Corps of Engineers have recently completed a series of 15 public meetings throughout the Pacific Northwest and Alaska. We presented the results of the Lower Snake River EIS and Phase I John Day Dam Drawdown Study in conjunction with the Federal Caucus Draft 4-H paper to demonstrate that the various aspects of salmon recovery cannot be discussed in isolation. At each meeting we stressed that the purpose of the process was primarily to enhance public understanding of the issue and our range of alternatives and to solicit input on the quality of our analysis. The purpose was to share information from the Federal Caucus "All-H Paper", the Corps' Lower Snake River draft report and EIS, and Phase I John Day Dam Drawdown study; and also to get input from the public.

At the public meetings, we heard from many people in the region — an estimated 9,000 people attended, of which approximately 1,500 provided oral comments either in the meeting sessions or via tape recorders. We have also received tens of thousands written comments.

In spite of our best efforts to include the broader context of salmon recovery, the comments focused on the dam breaching issue. I heard many deeply held and sincere views on both sides of this issue. The meetings were not intended to be a referendum. There seemed to be a broad perception in the region that public comment at the meetings would be taken as a vote on the dam breach issue; it was not.

We listened carefully to what people had to say at these public meetings. What we heard at the meetings was just one part of the input we have received in our overall public involvement process. We have received many comments covering all sides of the issues. We will consider every comment received, and resolve the issues raised in the comments in our final EIS.

I want to stress that the Corps will base its recommendation principally on the science provided by the NMFS and USFWS and the economic impacts as assessed by the Drawdown Regional Economics Working Group. We will also include consideration of a wide range of factors such as cultural issues, social impacts, treaty obligations, and compliance with the relevant laws.

With the listing of 12 species of salmon and steelhead in the basin, it has become increasingly clear that the region needs to shift its focus to the broader perspective. Only four of the twelve listed species are in the Snake River. We need to examine what we can do across the life-cycle influences — habitat, harvest, hatcheries, as well as hydropower — to make the best use of limited resources for the best outcome for fish, wildlife, and people.

NEXT STEPS

The Federal Caucus draft All-H Paper is a good step in creating a framework for recovery actions. It will be a dynamic process. The Federal Caucus team is now sorting through the public comments on the draft All-H Paper and will be producing a final document in tandem with the NMFS and USFWS Biological Opinions.

In May we expect the revised All-H Paper and draft Biological Opinions. The Corps will consider these documents in choosing a preferred alternative in the Lower Snake River EIS. We expect final Biological Opinions in summer 2000. The measures called for in the Biological Opinions will be a critical factor in the Corps' choice of a preferred alternative in the final EIS.

ACTIONS / STUDIES

Mr. Chairman, you have asked that the Corps address actions that can be taken to protect salmon stocks in the next 5-7 years; to describe the results of studies carried out or funded by the Corps; and discuss the current status of barging of juvenile salmon and how recent information relates to that presented in the PATH study.

Near Term Actions

Actions proposed to protect salmon stocks in the coming years at the Corps dams and reservoirs are detailed above in the description of the action agencies' 1999 Biological Assessment for the Federal hydropower system. These include continued flow augmentation, spill for fish, and operation of the juvenile

fish transportation program. Changes in the fish facility and dam structures will also improve salmon survival, such as:

- replacing standard-length guidance screens in the juvenile fish bypass systems with the extended-length screens at Lower Granite, Little Goose, McNary and John Day dams
- additional moorage facilities at Lower Granite Dam for the juvenile fish transportation program
- juvenile collection channel improvements at McNary Dam
- improvements to adult fish passage
- additional flow deflectors at Ice Harbor and John Day dams

We also plan to continue studies of gas supersaturation improvements, turbine passage improvements, and surface bypass options for juvenile fish passage.

Other activities the Corps could take in the near term include habitat improvements, such as moving Caspian terns out of the Columbia River estuary to decrease predation on salmon and steelhead smolts, and improving tidal wetland conditions.

Corps-funded studies

The Corps has sponsored biological studies continuously since 1952 in an integrated, applied research program to better understand and improve anadromous fish passage conditions at its multi-purpose projects on the Columbia and lower Snake Rivers. These monitoring, research, and evaluation studies are managed under the Anadromous Fish Evaluation Program (AFEP). The AFEP is coordinated with Federal, state, and tribal fish agencies who provide both technical and policy level input to the Corps on study objectives, experimental design, and methodologies. A few AFEP studies are funded from project operations and maintenance accounts. Most studies are integral components of elements of the Columbia River Fish Mitigation project.

These studies evaluate passage success, survival, and fish condition for surface bypass technologies, juvenile fish transportation, conventional juvenile fish bypass systems, spill, total dissolved gas, drawdown, adult migration/passage, in-river passage, and turbine passage. Historically, studies have focused on project-specific adult and juvenile fish passage issues. Most of the passage facilities and operations on the river have been developed and refined based on results of these studies. The increased survival rate through the system described in the section above on "Improvements in Dam Passage," attests to the success of these improvements as well as operational changes.

AFEP funded over 40 studies costing about $13 million in 1999, including research contracts, project services and administrative support.

Juvenile Fish Transportation

The juvenile fish bypass systems in the dams guide fish away from turbines by means of submerged screens positioned in front of the turbines. The fish are directed up into a gatewell and pass through orifices into channels that run the length of the dam. The fish are then routed either back out to the river below the dam, or to a holding area for loading onto specially equipped barges or trucks. Four Corps dams are equipped to collect and transport fish: Lower Granite, Little Goose, Lower Monumental, and McNary. All transported fish are released downstream of Bonneville Dam. The operation is funded and staffed by the Corps.

Since 1968, The Corps has funded research to find the best methods of transporting juvenile salmon and to assess related survival levels. It has been determined that transported fish do not stray any more than

non-transported fish, that barging is somewhat more effective than trucking and, most importantly, that transport returns significantly more fish than non-transport as measured by smolt to adult return rates (SAR's). The major issues is whether barge transportation can achieve the SAR needed to halt the population decline and move to recovery. An important question that we are seeking to answer is the level of delayed mortality for transported and non-transported fish. This is a significant factor in determining the overall benefit of transport.

The Corps operates the juvenile fish transport program under a spread-the-risk operation, as prescribed in the NMFS 1995 Biological Opinion and 1998 and 2000 supplements. This operation allows the collection and transport of approximately 50 percent of the Snake River smolts. The remaining 50 percent are left to migrate in-river. This strategy was adopted because of potential uncertainties associated with the transport program. There is much we do not know about salmon and steelhead behavior and what affects their survival. It is not fully understood why these stocks continue to decline.

The analysis conducted by the Plan for Analyzing and Testing Hypotheses (PATH) group of scientists has not had an effect on how we currently operate the hydropower system. The Corps is not relying solely on the PATH results to make decisions on future operations. We are also examining the Cumulative Risk Initiative (CRI) analysis results and past research information on the transportation program, which was conducted by NMFS. The PATH analysis helped raise and focus in on some key uncertainties within the hydropower system, such as: potential differential delayed transport mortality (the "D" value) and other potential extra mortality.

NMFS has conducted many years of research on the transportation program. The majority of this research shows effectiveness of barging smolts. As pointed out in their recent White Paper on this subject, there are also some critical uncertainties, such as: potential delayed mortality, need for better control groups (which NMFS is addressing), and high variability in the research results within and between years. The Corps believes that an aggressive research program with continued transportation is the only viable way to resolve or reduce some of these key transportation uncertainties.

Mr. Chairman, this concludes my testimony. I would be happy to answer any questions.

ATTACHMENT

Columbia River Fish Mitigation Project
System Configuration Team (SCT) Measures Worksheet
Preliminary FY01 Estimates

Activity Type [1]	Activity/Description	FY00 Estimate (000's)	FY01 Estimate (000's)
	LOWER GRANITE		
I	Extended length screens	695	700
I	Juvenile bypass facility	0	75
S	Surface bypass program - Final test of the Lower Granite SBC and BGS in 00.	7,900	13,000
I	Additional barge moorage	175	1,763
I	Auxiliary water supply	195	300
S	Gas fast track	80	675
I	Implement ESBS report actions	25	80
	LITTLE GOOSE		
I	Extended length screens	1,370	620
I	Trash shear boom	2,500	100
I	Auxiliary water supply	195	300
I	Adult PIT detectors - Placeholder. Initiate design.	0	
S	Gas fast track	400	1,600
I	Implement ESBS Report Actions	25	80
I	Juv. fac. PIT tag improve	200	285
	LOWER MONUMENTAL		
I	Auxiliary water supply	765	5,000
I	Adult PIT detectors - Placeholder. Initiate design.	0	
S	Gas fast track	1,250	665
I	Outfall relocation	75	137
	ICE HARBOR		
I/S	Flow deflectors	720	720
I	Auxiliary water supply	715	4,426
	Adult fallback/ juv. Collection channel - Further action on hold pending evaluation at McNary		0
S	AFEP (Anadromous Fish Evaluation Program)	60	
	Replace dewatering screen panels	125	
	McNARY		
I	Extended length screens	960	4,200
	McNary ESBS Miscellaneous Improvements.		205
S	Orifice shelters.	0	
S	Cylindrical dewatering.	1,680	375
I	Juvenile collection channel improvements .	350	560
I	Fish ladder exit mods.	250	370
I	Forebay debris control	380	
I	Adult fallback/ juv. Collection channel	125	100
I	Adult PIT detectors	0	
S	Gas fast track	1,885	430

Activity Type [1]	Activity/Description	FY00 Estimate (000's)	FY01 Estimate (000's)
	McNARY (continued)		
I	Juvenile facility improvements	300	500
I	Juv. Fac. PIT tag improvements	150	
I	Adult collection channel stoplogs	446	1,873
S	Lamprey eval (AFEP)* - Evaluate effects of ESBS's on Lamprey	50	500
I	Trash shear boom design/const*	345	80
	JOHN DAY		
I	Monitoring facility	440	
S	Flow deflectors (navigation impacts).	300	TBD
S	PH surface bypass		
S	Spillway surface bypass	460	1,000
S	Biological studies	2,500	2,500
S	Drawdown study	560	TBD
S	John Day mitigation relocation evaluation (Ringold)	150	150
I	Extended length screens	2,000	3,000
S	John Day ladder jumping and holding (L Col. adult passage improvement)	250	350
	Gas fast track	100	TBD
	THE DALLES		
I	Sluiceway outfall/ emergency AWS	1,500	3,000
I	Adult channel dewatering	620	2,500
S	Spillway and sluiceway survival study.	2,000	2,300
S	Surface bypass	2,170	3,600
I	Juvenile bypass system	0	0
S	Gas fast track		430
	BONNEVILLE		
I	PH2 DSM, monitoring and outfall relocation	2,800	1,725
I	PH1 DSM, monitoring and outfall relocation	2,650	8,300
S	PH2 gatewell debris cleaning	100	610
S	Surface bypass	10,130	2,500
S	PH1 FGE - FGE retests defered until FY00.	1,700	1,000
S	Flat plate PIT tag detector	50	50
S	PH 2 FGE	2,600	4,000
S	Adult fallback	400	1,000
S	PH 2 fish units intake debris (L Col. adult passage improvement)	300	300
S	PH 2 AWS (L Col. adult passage improvement)	250	500
I	B1 FV1-1 automated screen cleaning (L Col. adult passage improvement)	150	
S	Spillway efficiency/survival studies	500	500
S	Gas fast track	460	510
I	Implement gas fast track		150
	SYSTEM		
S	Gas abatement study	950	192
	Lower Snake River Juvenile Fish Facility Improvements	200	320
S	Gas fast track- physical injury studies -	0	100
S	Turbine passage survival	2,955	1,660
S	Adult passage improvements L. Col - FY00/01: See specific measures under John Day, Bonneville and System studies.		
S	Lower Snake River feasibility study	3,000	1,000

Activity Type [1]	Activity/Description	FY00 Estimate (000's)	FY01 Estimate (000's)
	SYSTEM (continued)		
S	Aux. water supply in fishladders/Snake River projects	55	
S	Fish ladder temperature control evaluations	0	
S	Separator evaluation	850	1,400
S	Dispersed release (short haul barging)	0	0
S	McNary/Ice Harbor fallback evaluation	0	
S	Multiple bypass evaluation (AFEP)	80	460
S	Estuary PIT recovery (AFEP)	920	1,000
S	Adult PIT	400	480
S	Lamprey passage studies (L Col. adult passage improvement)	350	350
I	Automated trash rakes at 3 locations (L Col. adult passage improvement)	15	750
S	Lower Columbia feasibility study - Placeholders to initiate/continue study in FY00 or 01, including initial McNary drawdown and John Day drawdown phase II studies	50	5,000
S	Fish ladder transition pool eval	500	250
S	Adult passage AFEP	3,000	3,000
S	Delayed mortality eval	1,440	930
I	Snake River Drawdown PED		
	TOTALS [2]	74,296	96,586

[1] S = Study I = Implementation

[2] The totals reflect regional priorities and Corps capabilities. They differ from FY00 totals as enacted and FY01 budget request totals due to carryover and savings and slippage.

Mrs. CHENOWETH-HAGE. Thank you, Colonel Mogren. The Chair recognizes Dr. Mantua.

STATEMENT OF DR. NATHAN MANTUA, ASSOCIATE PROFESSOR OF ATMOSPHERIC SCIENCE, JOINT INSTITUTE FOR THE STUDY OF ATMOSPHERE & OCEANS, UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON

Mr. MANTUA. Thank you, Madame Chair, and members of the Committee, I appreciate the opportunity to testify at this hearing today. I am Nathan Mantua. I'm an atmospheric scientist at the University of Washington and my studies have focused on climate in the Pacific and more recently climate impacts on natural resources, including Pacific salmon in the Northwest. There will be four things that I want to report on in my testimony: First, in the past century coastal ocean habitat in the northeast Pacific has been highly variable, and that's also true in the broader, open waters of the north Pacific; Second, much of the variability is related to the tropical El NinAE6o/La NinAE6a phenomenon that we hear so much about in the media; Third, much of the decade-to-decade variability is related to a recently named phenomenon, the Pacific Decadal Oscillation that was mentioned in the first testimony; Fourth, the unusually warm era that began in 1977 may have ended in 1998. However, a lack of understanding the long-term climate cycles bases any long-term climate forecasts like those looking 10, 20 to 30 years in the future, much more on faith than on science.

Now, I'll read from the summary of my Testimony.

Though scientists are not certain of all the factors controlling salmon marine survival in the Pacific Northwest, several ocean-climate events have been linked with fluctuations in Northwest salmon health and abundance. These include: El NinAE6o/La NinAE6a, the Pacific Decadal Oscillation, the atmospheric Aleutian Low, and coastal upwelling. Each of these features of the climate system influences the character and quality of marine habitat experienced by Pacific salmon.

Cooler than average coastal ocean temperatures prevailed from the mid-1940's through 1976, while relatively warm conditions prevailed from 1925 to 1945 and again from 1977 to 1998. The decades-long climate cycles have been linked with the Pacific Decadal Oscillation, which is an especially long-lived El NinAE6o-like feature of the Pacific climate. In the past century, warm ocean temperature eras coincided with relatively poor ocean conditions for most stocks of Pacific salmon in the Northwest, while cool ocean temperature eras coincided with relatively good ocean conditions for Northwest salmon.

Pacific climate changes beginning in late 1998, indicate that the post-1977 era of unusually warm coastal ocean temperatures may have ended. Coincident with the demise of the extreme 19970998 El NinAE6o, ocean temperatures all along the Pacific coast of North America cooled to near or below average values, and this situation has generally persisted to date. Recent climate forecasts, largely based on expectations for continued but weakening tropical La NinAE6a conditions, suggests that these cool ocean tempera-

tures are likely to persist at least through the spring and on into the summer of 2000.

Beyond the coming summer there are no strong indications that there will be major changes in the ocean state. If the recent past is a useful guide to the future one might surmise that there is a reasonably good chance that cool coastal ocean temperatures will persist for the next 20 to 30 years.

On the other hand, there has been no demonstrated skill in North Pacific climate predictions beyond about 1 year windows into the future. Thus, a lack of understanding for Pacific long lived climate cycles bases 20 to 30 year forecasts more on faith than on science.

With a focus on the next five to 7 years, one may be much more confident in predicting that coastal ocean temperatures and coastal marine habitat quality will continue varying within and between seasons, as well as within and between years.

It seems that climate insurance for Columbia River salmon may be provided by adopting management strategies aimed at restoring some of the characteristics possessed by healthy wild salmon populations. Although the mechanisms are not completely understood, wild salmon evolved behaviors that allowed them to persist and thrive under variable ocean conditions. Management actions taken to restore some of the wild salmon characteristics that have been lost in the past century are likely to be fruitful roots for minimizing the negative impacts of poor ocean conditions and may also prove beneficial during periods of especially good ocean conditions. There is little doubt that the ocean environment will continue to vary between favorable and unfavorable conditions for Columbia River salmon populations, and this is true at both year-to-year and decade-to-decade time scales. That concludes my testimony.

[The prepared statement of Mr. Mantua follows:]

Ocean conditions and Columbia River salmon

Testimony provided for the House Subcommittee on Power and Water

April 25, 2000

Pasco, Washington

By Nathan J. Mantua, Ph.D.
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Summary

Though scientists are not certain of all the factors controlling salmon marine survival in the Pacific Northwest, several ocean-climate events have been linked with fluctuations in Northwest salmon health and abundance. These include: El Niño/La Niña, the Pacific Decadal Oscillation, the Aleutian Low, and coastal upwelling. Each of these features of the climate system influences the character and quality of marine habitat experienced by Pacific salmon.

Cooler than average coastal ocean temperatures prevailed from the mid-1940's through 1976, while relatively warm conditions prevailed from 1925-to-1945 and again from 1977-to-1998. The decades-long climate cycles have been linked with the Pacific Decadal Oscillation, an especially long-lived El Niño-like feature of Pacific climate. In the past century, warm ocean temperature eras coincided with relatively poor ocean conditions for many Pacific Northwest salmon stocks, while cool ocean temperature eras coincided with relatively good ocean conditions for Northwest salmon.

Pacific climate changes beginning in late 1998 indicate that the post-1977 era of unusually warm coastal ocean temperatures may have ended. Coincident with the demise of the extreme 1997-98 (tropical) El Niño, ocean temperatures all along the Pacific coast of North America cooled to near or below average values, and this situation has generally persisted to date. Recent climate forecasts, largely based on expectations for continued but weakening (tropical) La Niña conditions, suggest that the cool coastal SSTs are likely to persist through at least the spring, and probably through the summer, of 2000. Beyond the coming summer, there are no strong indications that major changes in the ocean state should be expected. If the recent past is a useful guide to the future, one might surmise that there is a reasonably good chance that cool coastal ocean temperatures will persist for the next twenty to thirty years. On the other hand, there has been no demonstrated skill in North Pacific climate predictions beyond about one year lead times. Thus, a lack of understanding for Pacific interdecadal climate changes bases 20-to-30 year forecasts more on faith than science. With a focus on the next 5-to-7 years, one may be much more confident in predicting that coastal ocean temperatures and coastal marine habitat quality will continue varying within and between seasons, as well as within and between years.

An expanded discussion of the impact of varying ocean conditions on Pacific salmon follows.

El Niño/La Niña

El Niño has received a lot of bad press for causing warm biologically unproductive conditions in the coastal waters of the Northeast Pacific Ocean. Especially intense El Niño events in 1982/83 and 1997/98 were connected with exceptionally warm coastal waters from Baja California to the Gulf of Alaska. Scientists have determined that El Niño plays an important role in North Pacific climate, but it is only one piece of a more complicated climate-ecology puzzle.

El Niño is Earth's dominant source of year-to-year climate variations. This phenomenon is understood to be a natural part of this planet's climate that spontaneously arises from interactions between Pacific Trade Winds and ocean surface temperatures and currents near the equator. It is important to keep in mind that the "essence" of El Niño is contained within the tropics, thousands of miles to the south of where any North Pacific salmon ever swims. However, swings between El Niño, and its cold counterpart La Niña, have consequences for climate around the world. Simply put, massive changes in the distribution of tropical rainfall, which are directly related to changing ocean temperatures in the tropical Pacific, influence atmospheric pressure patterns, winds and storm tracks thousands of miles away. These changes over the North Pacific and North America are especially strong in the months from October through March. During these months, El Niño influences the character of the dominant feature of North Pacific weather, the Aleutian Low pressure cell.

Aleutian Low

The Aleutian Low is a semi-permanent atmospheric pressure cell that settles over much of the North Pacific from late fall to spring. The exact position and intensity of the Aleutian Low varies greatly from week-to-week, year-to-year, and even decade-to-decade.

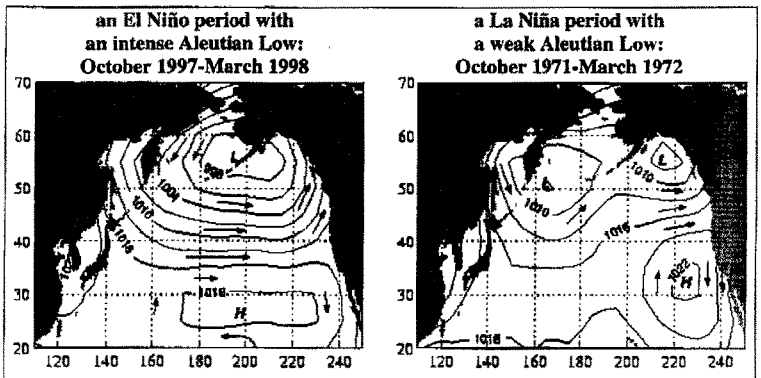

Figure 1: Observed winter/spring sea level pressure fields during strong and weak Aleutian Low periods. Arrows indicate the prevailing surface winds that are driven by these pressure patterns. An intense Aleutian Low can occur in any winter, but is especially likely during a strong El Niño event. Likewise, a weak Aleutian Low can occur at any time, but is especially likely during a strong La Nina event.

An intense Aleutian Low favors northward winds along the Pacific coast, and causes relatively dry, mild winter and spring weather. In the left panel of Figure 1 is a map with contours for atmospheric sea level pressures from October 1997-March 1998, at the height of the 1997/98 El Niño. This was a period with an exceptionally intense Aleutian Low, which can be identified as the bulls-eye of low pressure values centered over the Aleutian Islands. Northern Hemisphere surface winds blow in a direction that almost parallels the contour lines but angled slightly toward lower pressures, counter-clockwise around the lows and clockwise around the highs. Of special significance to the Pacific Northwest's coastal ocean is the fact that relatively warm northward blowing near-shore winds caused by a strong Aleutian Low tend to drive surface waters onshore (to the right of the wind direction), piling up relatively warm nutrient poor water in the coastal zone.

On the other hand, periods with a relatively weak Aleutian Low favor onshore coastal winds that move surface currents to the south. In the right panel of Figure 1 is a contour map for sea level pressures from October 1971-March 1972, a La Niña period with a weak Aleutian Low. Notice that in this year there were two relatively weak low pressure centers in the North Pacific, one near the coast of Asia and the other in the Gulf of Alaska. Also note the strong high pressure cell located off the coast of Northern California. Periods with a weak Aleutian Low typically bring relatively wet and cool winters to the Pacific Northwest region. In weak circulation periods the coastal ocean surface waters are cooler, less stratified and richer in nutrients because onshore currents are relatively weak. Off the coast of Northern California the strong high pressure cell causes southward upwelling winds even in the winter months.

Pacific climate events in the past few years have followed an often observed pattern: the 1997/98 tropical El Niño favored an intense Aleutian Low, while the 1998-2000 La Niña has favored a relatively weak Aleutian Low. Additionally, El Niño sends coastal currents from the tropics that travel northward along the coast of North America. These also warm and stratify the near-shore coastal waters, reinforcing the wind-driven warming and stratification brought by the intense Aleutian Low. Likewise, La Niña produces coastal currents that cool and weaken the stratification in the surface waters, reinforcing the La Niña-influenced, wind-driven cooling. In both El Niño and La Niña, the Pacific Northwest's coastal ocean is affected by changes in the oceanic and atmospheric circulation that can be traced to the equatorial Pacific--a long-range double whammy.

The maps shown in Figure 2 highlight some of the dramatic year-to-year changes that El Niño and La Niña can bring to the west coast's ocean. In the left panel are observed sea surface temperatures in December 1997, near the peak of the last El Niño event. The contour lines and shading depict temperatures as deviations from the long term average. Actual temperature values are shown with the larger numbers. West coast sea temperatures were 3-to-5 degrees Fahrenheit above average in a thick layer of warm water that extended to depths of 50-to-100 meters below the surface. The wide belt of warm and sharply stratified surface waters had been present since the previous summer.

In May and June of 1998 the tropical El Niño was quickly replaced by La Niña conditions, a climatic switch that set the stage for a dramatic ocean cooling along the west

coast of North America. Coastal ocean temperatures in December of 1998 (shown in the center panel) were actually a bit colder than the long term average, some 3 to 5 degrees Fahrenheit lower than those observed 12 months prior. An important factor behind this cooling was the prevalence of a weak Aleutian Low from October 1998 through April 1999. Throughout this period, North Pacific barometric sea level pressures often resembled those in the right panel of Figure 1. During December of 1999 (right panel of Figure 2) ocean temperatures were again mostly near to below the long-term average. This second year of cool coastal ocean temperatures is clearly related to a second fall and early winter with a weak Aleutian Low, which in turn has been influenced by the second consecutive year of tropical La Niña conditions.

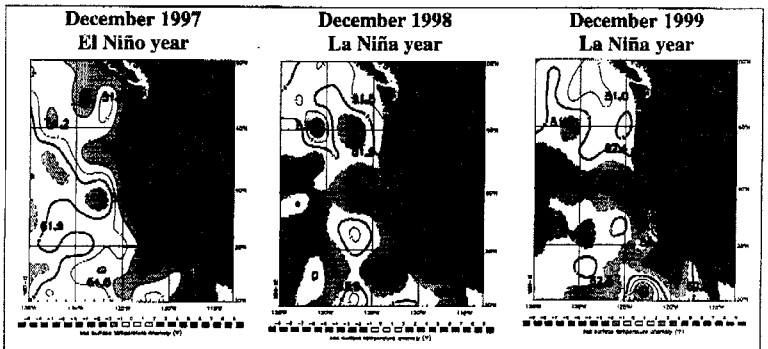

Figure 2: Coastal ocean temperature fields for December 1997, 1998 and 1999. The shading and contours show temperature deviations from the long term December average, while the large blocked numbers show the actual temperatures in degrees Fahrenheit. Note that coastal ocean temperatures in December of 1997 were 3 to 4 F above average, while temperatures in December 1998 and 1999 were generally near or cooler than average for most of the region shown. These maps were obtained from NOAA's Coast Watch web-site (url: *http://cwatchwc.ucsd.edu/elnino.html*).

Upwelling and Coastal Productivity

As the spring/summer upwelling season approaches, the coastal ocean is often primed for either rich or poor biological productivity. Clearly, the coastal ecosystem will be strongly influenced by the presence or lack of upwelling winds, but it will also depend upon the character of the preceding winter/spring Aleutian Low circulation and related ocean conditions. Following a weak Aleutian Low, cool and weakly stratified surface waters favor an especially productive food-web because upwelling winds are able to tap into the nutrient rich subsurface waters with little resistance. Conversely, following an intense Aleutian Low, warm and sharply stratified surface waters tend to have poor biological productivity even in

the presence of strong upwelling winds. The warm stratified upper ocean effectively caps the nutrient rich waters at depth. Upwelling in a sharply stratified ocean simply recycles the same depleted water in the surface layer over and over again, never replenishing the nutrients that are quickly used up by phytoplankton.

Low phytoplankton production cascades through the marine food-web. Zooplankton and small fish that feed on plankton become scarce, resulting in low food production for salmon. For juvenile salmon, this low productivity may result in slow growth which can also make them more vulnerable to predation, leading to lower smolt survival rates. Also, during warm years many fish from subtropical waters, such as mackerel, migrate into coastal waters of the Pacific Northwest from the south. These fish may compete with young salmon for food, and in some cases even target juvenile salmon as prey.

Pacific Decadal Oscillation

Typically, individual El Niño or La Niña events play out over the course of 8 to 14 months. However, climate records kept over the past century document decades-long warm and cool eras in the Pacific Northwest's coastal ocean that are superimposed upon the year-to-year changes associated with El Niño and La Niña. Recent research points to a second important player in North Pacific climate, the recently named Pacific Decadal Oscillation, or PDO.

The PDO has been described as a long-lived El Niño-like pattern of Pacific climate variability. Extremes in the PDO pattern are marked by most of the same Pacific climate changes caused by El Niño and La Niña. Two main features distinguish the PDO from El Niño. First, typical PDO "events" are much longer-lived than a typical El Niño - in the past century major PDO regimes have persisted for 20-to-30 years. Second, evidence of the PDO is most visible in the North Pacific/North America sector, while secondary signatures exist in the tropics - the opposite is true for El Niño. In short, warm and cool eras of the PDO do most of the same things to Pacific climate that swings between El Niño and La Niña do, but the PDO does them for 20-to-30 years at a time.

The record of coastal sea temperatures shown in Figure 3 illustrates some of the impacts of PDO climate cycles. This data comes from the west coast of Vancouver Island near a lighthouse at Amphitrite Point . The record is presented in two ways: monthly deviations from the long term mean are shown with the thin line, and 5-year running averages are shown with the thick line. The month-to-month temperature fluctuations can be as large as a few degrees, while decade-to-decade variations are more typically about +/- 1 degree Fahrenheit. Temperature records from stations along most of the Pacific Coast show the same prolonged periods of above average temperatures in the early 1940's, then again from 1977-1998. Coastal temperatures were mostly lower than average from the mid-1940's through 1976. Since the fall of 1998, sea surface temperatures at Amphitrite Point have been near or below average in most every month to date.

Several independent studies find evidence for just two full PDO cycles in the past century: cool coastal ocean regimes for the PNW prevailed from about 1890-1924 and again

from 1947-1976, while warm coastal ocean regimes dominated from 1925-1946 and from 1977 through 1998. Climate reconstructions based on tree-rings from the Pacific Northwest suggest that the PDO has been an important player in Pacific climate for at least the past few centuries, and that 20-to-30 year climate regimes are normal.

Coastal ocean temperatures at Amphitrite Point, British Columbia, Canada

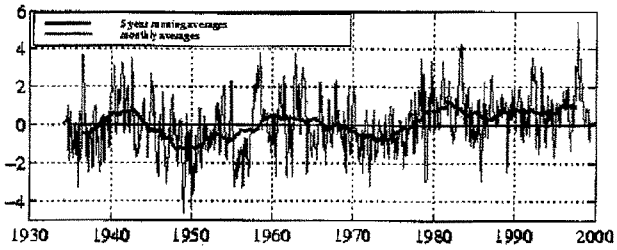

Figure 3: Record of coastal ocean temperatures from Amphitrite Point, on the west coast of Vancouver Island, British Columbia. Temperatures are plotted as deviations from the long-term average for the 1935-1999 period. These data were obtained from the Institute of Ocean Sciences web-site (url http//ios.bc.ca/)

Because causes for PDO climate cycles are not understood, it is now impossible to predict a PDO change before it occurs, or to accurately detect a PDO change while it occurs. The recent shifts to cooler ocean temperatures along the Pacific coast are one of the signals we expect to see with a shift from a warm to cool PDO regime. However, no one is certain if the recent cooling will fade away when the current La Niña leaves us--which is expected sometime in the summer or fall of 2000--or whether this coastal ocean cooling will stick around for the next 20 or 30 years as part of a cool PDO regime.

A number of recent studies find evidence for important decade-to-decade climate impacts on Pacific salmon. Essentially, the El Niño and La Niña impacts described above appear to play out over 20-to-30 year periods because of PDO climate cycles. An interesting finding is the that the biologically unproductive periods in the Pacific Northwest coincide with production booms in the Gulf of Alaska. Likewise, periods with especially high coastal ocean (and salmon) production in the northwest have coincided with low-production eras in Alaska. This north-south "inverse" production pattern is thought to arise in part because a warmer, more stratified ocean in the coastal waters of Alaska benefits phytoplankton and zooplankton production. The cool waters in the north are most always nutrient rich, but strong stratification is needed to keep phytoplankton near the surface where the energy from the high-latitude sunshine is limited. In the Pacific Northwest's coastal ocean, lack of nutrients from increased stratification is most often the limiting factor in phytoplankton production.

Ocean conditions and strategies for increasing Columbia River salmon runs in the next 5-to-7 years:

Given the growing body of evidence that ocean conditions play an important role in regulating salmon health and abundance, what management steps might be taken to improve Columbia River salmon populations in the next 5-to-7 years and beyond? It seems that climate insurance for Columbia River salmon would be provided by adopting management strategies aimed at restoring some of the characteristics possessed by healthy wild salmon populations. Although the mechanisms are not completely understood, wild salmon evolved behaviors that allowed them to persist and thrive under variable ocean conditions. Excessive harvest of individual stocks, the widespread development of salmon hatcheries in the Columbia River system, and habitat loss and degradation, have combined to greatly simplify the complex population structures and behaviors that salmon evolved over millennia. In short, management actions taken to restore some of the wild salmon characteristics that have been lost in the past century are likely to be the best routes for minimizing the negative impacts of poor ocean conditions, and may also prove beneficial during periods of especially good ocean conditions. There should be little doubt that the ocean environment will continue to vary between favorable and unfavorable conditions for Columbia River salmon at both year-to-year and decade-to-decade time scales.

For additional information on the Pacific Decadal Oscillation, visit the following url: http://jisao.washington.edu/pdo

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Mrs. CHENOWETH-HAGE. Thank you, Dr. Mantua.

Dr. Jim Anderson is recognized for testimony.

STATEMENT OF DR. JIM ANDERSON, ASSOCIATE PROFESSOR, COLUMBIA BASIN RESEARCH, UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON

Mr. ANDERSON. Thank you, Madame Chairman. It's an honor to be testifying before the Committee. This is an exciting time for scientists because we have a great opportunity to be proven wrong and scientists always enjoy that. The reasons we are being proven wrong is because we use analyses which are often out of date, while nature and research continues to go on. Now, the recommendations that I'm going to bring forward and how we might want to focus things are based on the fact that conditions have changed radically in the last year, as Nate Mantua has shown.

Well, things first went wrong in the PATH conclusions which were based on data through 1990, concluding that the only way to recover the runs was to remove the dams. They also concluded there was high mortality through the hydro system. The new studies on in-river survival show that high mortality doesn't exist and so mortality is happening. A lot of the conclusions that have come out of PATH simply don't comport with the existing data.

The cumulative risk initiative of NMFS has also had an opportunity to be wrong because they projected that runs are in a dire condition based on returns through brood year 1994. As we now know the ocean has changed considerably and there are a significant number of fish coming back to the river.

Now, many of the things that both of theses groups have done are right, but these elements are important and I think they need to be understood as we look for reasons or things to do in the near future.

The most interesting fact I want to bring forward is that the fish runs have changed considerably, and I think many people are aware of that right now. In this year, we have the makings of a run, which is two to three times the 10-year average of fish coming back into the Columbia River. Many of these fish will travel up into the Snake River system. They are different than fish that came back in the 1960's because these are mostly hatchery fish, and that's part of the issue that I want to bring forward and something that needs to be considered.

The projections for next year's run are truly astronomical if we look at the Jack returns this year. The Jack are precocious males that come back in the first year in the ocean last year they returned at a record level. We had the highest run since we've been collecting data in 1977, and right now the projection up to today is that the runs are about 10 times larger than they were in 1977. There are a lot of Jacks coming back, which also suggest there is going to be a lot of fish coming back in the next couple of years.

As we know, the ocean has changed fundamentally and appears to be in a better condition. This change will last for a few years or it could last for a long time. I hope it's going to last 20 years, so I have an opportunity to be wrong. Many scientists saying a regime shift has happened.

Considering that we are all wrong, what do we do, or that we are potentially are all wrong, what do we do for the future. I have three suggestions. One is we need to separate harvest. We need to make sure that the wild fish get up to the spawning ground, that they are able to spawn and at the same time we are harvesting the hatchery fish. That's not possible right now because some of the hatchery fish are not tagged to sepovate wild fish a live harvest is needed so we can determine which ones to release back into the river.

Another important factor is to try to improve hatcheries. As the runs increase, and we haven't thought about the possibility of runs increasing, the hatchery production has been increased to compensate for the previous low runs. Now that stocks are increasing we might consider cutting back on the hatchery production and allowing more of the wild fish to use the resources. We also need to look at the genetics of these hatchery fish. Maybe some of them can very spawn with the wild fish. May others should be removed. In either case we should improve the genetic and behavioral qualities of hatchery fish. I think there needs to be more emphasis on this.

The third suggestion I would think we should take a careful look at flow augmentation. In some situations I think it does no good for the fish. It's often neutral and in other conditions I think it's bad for the fish. We recently conducted an analysis which indicates that summer flow augmentation from the Hell's Canyon complex is actually detrimental because it warms the water which can increase the Feeding rate of the predators. These are the three suggestions that the region we might do in the near future to improve the runs. Thank you.

[The prepared statement of Mr. Anderson follows:]

Testimony of James J. Anderson

Associate Professor, School of Fisheries, University of Washington

Before the U.S. House of Representatives

Committee on Resources

Held April 27, 2000

In

Pasco, Washington

This testimony considers the recent analyses of juvenile Snake River endangered salmon in terms of the new information on ocean conditions and fish returns. Also discussed are possible recovery actions reflecting these new conditions.

My name is James Anderson; I am an Associate Professor in the School of Fisheries at the University of Washington. My research over the past two decades has involved Columbia River salmon and the influence of the hydrosystem and climate on the survival and productivity of the stocks. I wish to thank the Resource Committee for this opportunity to testify on the issue of Snake River salmon recovery.

Today our efforts to restore declining salmon runs are at a cusp. We are poised to make major decisions that will affect the future of the Pacific Northwest, its people, its economy, and the state and health of the environment. In the Columbia River Basin there has always been conflict between economic development and the health of the fish and wildlife. Science itself has been in conflict, as well as the personal beliefs of those who wish to use the abundant resources of the Basin, and those who wish to preserve them. These debates provide the evidence and arguments from which we seek guidance for the future.

The salmon runs have decline over the past two decades to levels never seen in recorded history. We have seen the National Marine Fisheries Service, empowered with the force of the Endanger Species Act, assume a level of control and influence over the Pacific Northwest probably unparalleled since World War Two. And we now face a decision that may set in motion a reversal of the very way we inhabit our environment, changing the balance between a resource-extracting economy to a resource-preserving economy.

It is not my concern to suggest how these forces balance; my concern is how we use the science upon which this balance must be based. In this respect I believe were are at a critical moment. The science that projects the fate of Snake River salmon is contradictory; more important, it is significantly at odds with the state of the fish runs today.

After five years the regional analysis of the status of the runs, the Plan for Analyzing and Testing Hypotheses (PATH), has concluded that breaching the lower Snake River dams is required to insure recovery of the Snake River chinook. This conclusion is contradicted by the NMFS Cumulative Risk Initiative (CRI April 2000), which concludes that salmon are in a *dire condition* and breaching alone will not recover them.

The PATH conclusions are based on salmon returns up through brood year 1990; the CRI conclusions are based on runs up through 1994. These analyses are based on data that is not representative of the current conditions, and their predictions forecast a future that is substantially different from what has occurred and what is likely to occur.

Most significantly, the CRI and PATH analyses do not reflect the possibility that the ocean can shift quickly into a regime favorable to Columbia River salmon. In contrast the North Pacific marine science community's recent findings show that large-scale fundamental changes in the North Pacific have occurred. Although scientists are cautious in making predictions, there is widespread speculation that these changes indicate a regime shift in the ocean.

Finally, and most compelling, are the returns of fish to the Columbia River. The data, succeeding the data used in PATH and CRI analyses, show substantial returns of fish. The returns of jack salmon this year are well on their way to record levels, which, if continued, will produce a record return of salmon in 2001.

In simple terms, society has been presented with three very discordant possible futures: breaching dams will recover the runs, breaching dams will not recover the runs and finally, the runs are poised to reach record levels right now. Before I discuss the possibilities and pitfalls of this unusual situation I will discuss in a little more detail the basis of each of these predictions.

The contradictory conclusions of PATH, CRI, and the actual current fish runs occur because the analyses must to rely on information up to a specific point in time. But since studies are updated each year, and the ocean itself is changing, the analyses are always historical snapshots of the system. In particular, the spawner-recruit information used in these models is especially out of date. The offspring from a brood year return two to five years after the parents spawn, so information on the relationship of spawners to the recruits that make up the next generation is only available well after the brood year. Besides the spawner-recruit information, new information on the survival of fish through the hydrosystem suggests new interpretations of the sources and levels of mortality over

the fish life cycle. These factors are important to the stories evolving from the analyses, and are discussed below.

What juvenile survival studies say about the efficacy of fish barging

Currently, the vast majority of Snake River fish that enter the estuary arrive via fish barging. Since fish survive the barging trip, the choice to barge fish or breach the dams comes down to which is greater, the delayed mortality associated with barging or the mortality of in-river migrating fish that must pass four breached Snake River dams and four lower Columbia River dams. Ultimately, the comparison of these two passage routes depends on estimating the delayed mortality, and this is not easy. It requires us to know the survival of juveniles passing through the eight dams of the current hydrosystem, the ratio of the adult survivals of transported fish to in-river passing juveniles (called D in the analyses), and an assumption about the cause of the extra mortality fish experienced after 1976. This final assumption is key in deciding the effectiveness of barging vs. dm breaching, because the life cycle analysis indicates that after 1976 fish experienced an extra mortality that may be attributed to an ocean regime shift or to the completion of the Snake River hydrosystem.

PATH favored assumptions that ascribed high delayed mortality to transportation. First, PATH assumed that in-river survival was low, about 25%. This resulted in a low survival of transported fish relative to in-river passing fish (D about 0.3) and low extra mortality. With these assumptions, the transported fish survival, before ocean mortality is taken, is about 30%. Estimating survival through the breached hydrosystem is relatively straightforward, and PATH concluded that the survivals would be about 60%. Thus, breaching was assumed to be significantly better than transportation.

The CRI analysis used the most updated smolt survivals obtained from studies in 1995 through 1999 plus the transportation studies from 1995. The in-river survival was about 50% and the resulting D value was about 0.8. In this case, survival of transported smolts, excluding the ocean mortality, is about 80%. Therefore, transportation is better than breaching, with its 60% passage survival. But since CRI concluded the transportation survival was high, the extra mortality fish experienced post-1976 was attributed to extra

mortality outside the hydrosystem. Furthermore, they suggested that extra mortality was likely uncontrollable, so that only a concerted effort on many fronts could recover the salmon, and that without this effort many Snake River index stocks were at a high risk of extinction.

What the recent fish returns say about the ocean conditions

Spawner-recruit data through 1994 presents bleak picture for the salmon. Fortunately, the newest information on the status of the runs and the ocean suggest a very different situation. Data from 1997 through 1999 show dramatic improvements in ocean survival and adult returns.

Ocean survival was good in 1997: Survival of wild Snake River spring/summer chinook has improved by a factor of three or more over the returns of the early 1990s. Based on returns of the 2-ocean fish, smolts migrating in 1997 have a smolt to adult ratio (SAR) of 1.55% (Williams personal communication). The return of the 3-ocean fish should increase the SAR to 3 or possibly 4%. In comparison, SARs in the early 90s were about 0.5%. Further evidence comes from the ratio of early returning males (jacks). The percent of jack returns from the 1997 smolt outmigration is twice the 1992-1996 average. (DART 2000)

Ocean survival in 1998 should be better: The percent of jack returns from the 1998 smolt migration is twelve times the1992 –1996 average. (DART 2000)

Ocean survival in 1999 may be the best yet: For this year, jack returns through April 20 are 925% of the ten-year average.

Good survivals in the ocean for the smolts migrating in 1997and 1998 equate to good returns this year. This is, in fact, the case: the adult spring chinook passage at Bonneville dam through April 20 is already greater than the average run over the entire season for the 10-year average. Further, the one-day maximum of 8635 adults is nearly equal to the entire 12,000 spring chinook return in 1995. The returns from 1995 came from the 1992 and 1993 out-migrations, which figured significantly in the estimations of conditions in both the PATH and CRI analyses.

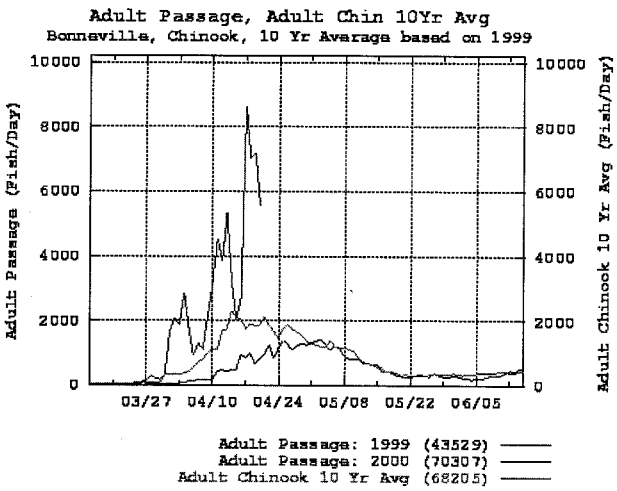

Figure 1. Spring chinook adult passage at Bonneville Dam. Through April 20 the returns for 2000 are about 10 times the 1999 returns, while the 1999 returns through June 15 are about twice the 10-yr average (From DART).

Finally, the record returns of jacks last year and returns this year, ~~that~~ through April 20 are ten times the 1999 returns at this date, we expect the adult returns for 2001 and 2002 will be very large, if not near record.

Corroborating evidence from the ocean

The ongoing hypothesis is that these returns are the result of the Eastern North Pacific returning to the cool surface water regime favorable to Columbia River salmon (Anderson 2000, Hare and Mantua 1999). There is evidence for this.

Zooplankton species changed: Off Oregon "warm water" zooplankton species common year-round throughout most of the 1990s were consistent with weak, but persistent, El Niño conditions throughout this period. However, in May 1999 "cold water" species dominated solely. The switch may be ephemeral, due entirely to the

present La Niña, or it could be a harbinger of another climate shift in the northern California Current (Peterson 2000).

The ocean is cooler: The Pacific Decadal Oscillation index (PDO), which is an indicator of ocean regime shifts (Hare, Mantua and Francis1999) exhibited a major shift into the negative condition favorable to west coast salmon production. The reversal in 1998 is representative of cooler coastal waters off the Columbia River.

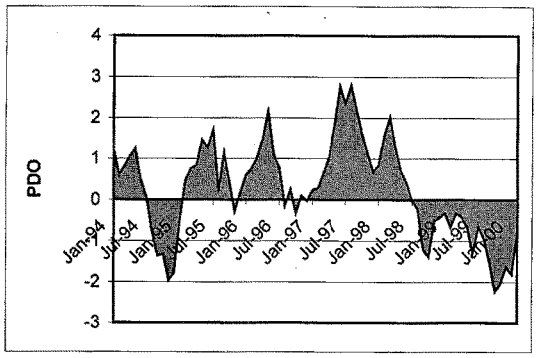

Figure 2. Monthly PDO pattern showing a reversal in the ocean conditions. This reversal may possibly indicate a ocean regime shift.

The cool ocean should persist: The eastern North Pacific region is under the influence of cold surface temperature anomalies that will persist beyond the current La Niña. These conditions will result in the fertilization of surface layers (Freeland 2000).

A regime shift: Scientists at the Jet Propulsion Laboratory in Pasadena, studying the satellite observations of Pacific sea-surface data, have observed a multiple-year trend that may represent an ocean regime shift (JPL 2000). Many reports from the March 2000 conference of the North Pacific marine community (PICES 2000) support this suggestion.

What to do next?

The CRI analysis suggests that the stocks are in a dire condition requiring immediate and extensive measures to keep them from going extinct. The fish returns themselves suggest that over the next few years, and possibly longer, the stocks will be abundant. These divergent predictions challenge NMFS and the region to carefully reevaluate their recovery strategies. While the region has been actively debating dam removal, additional flow augmentation, and moratoriums on water withdrawals in the Pacific Northwest, this new information presents a very different set of challenges and considerations. Below are three actions that warrant further consideration under the possibility of increased returns.

Separate Harvest

First and foremost NMFS must be prepared for the increasing demand for harvest of these returning stocks. Although it is good that this year's returns are strong and even larger returns are possible in next year, this does not necessarily bode well for the wild stocks. The runs may reach the levels of the runs of the 1960s and 70s, but whereas before they were mostly of wild fish, today about 90% of the run is of hatchery fish. Increasing harvest on the abundant hatchery runs can overharvest the weaker wild runs. If this happens, the benefits of good ocean conditions may be lost and we will have missed a valuable opportunity to improve the endangered stocks.

But it is not simply enough to restrict all harvest, because with improved ocean conditions the hatchery capacities can be exceeded, forcing the hatchery fish to spawn in the streams. Under some circumstances, this spawning might weaken the wild fish through interbreeding and competition for stream resources. Thus, ideally, the hatchery fish need to be selectively harvested, leaving the wild fish to spawn.

Effective selective harvest of hatchery fish requires two factors: all hatchery fish need to be marked, and live capture harvest techniques need to be used on the fisheries. Currently neither of these conditions is possible. A substantial number of hatchery fish are not marked and few of the fisheries use live capture techniques.

Reduce flow augmentation

To improve runs, other secondary actions can be taken immediately. One of the most straightforward actions is to terminate the Hells Canyon flow augmentation for fall chinook. This augmentation increases water temperature and increases the predation rate on the smolts (Anderson, Hinrichsen and Van Holmes 2000). Eliminating it should improve the survival of this run.

Improve hatchery practices

Increased ocean survival presents a special problem for hatcheries. Over the last two decades, hatchery returns have declined and so the hatchery managers have increased the production of smolts. Under better ocean conditions high smolt production can result in returns exceeding hatchery capacity, causing the adults to spawn in the river with the wild stocks. Although this may be beneficial for hatcheries with brood stocks that closely match their associated native stocks, it can be detrimental if the hatchery and native stocks are different. To deal with these problems, hatchery managers may need to reduce smolt output in the next few years and begin to aggressively improve hatchery management with the goal of producing smolts that are genetically and behaviorally compatible with the native stocks.

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Mrs. CHENOWETH-HAGE. Thank you, Dr. Anderson. I want to thank all the witnesses for their testimony, and without objection your entire testimonies will be entered into the official record, including Senator Morton's notebook here. I want to again thank you for your testimony, and I want to remind our members that the Committee Rule 2(i) imposes a 5-minute limit on questions that the members may ask. And so the Chair will now recognize members for any questions that they may wish to ask the witnesses beginning with Mr. Simpson.

Mr. SIMPSON. Thank you, Madame Chairman.

Ms. Johansen, there has been some concerns raised that the Bonneville has not expended the total amount of funds that have been allocated under the memorandum of agreement for fish funding. In fact, by some estimates up to 185 million dollars has not been expended. Why is there such a large sum allowed funding not being spent and are there projects out there not being funded for fish recovery that these could be funds could be spent on.

Mrs. JOHANSEN. The 180 million dollars that you referred to is the difference between what we expected would be appropriated by Congress back when the MOA was entered into and what Congress really appropriated. Bonneville budgeted the repay for a much higher level of principal and interest for anticipated Congressional appropriations since we reimburse the U.S. Treasury for the power user share of Congressional Appropriations provided for the Corps of Engineers and the Bureau fish of reclamation projects in the Federal Columbia River Power System.

The 180 million dollars will be carried forward into our next rate period and will be made available for our fish and wildlife projects, which is our commitment under Memorandum of Agreement. More importantly, my concern is that people not be fixated on how to spend 180 million dollars, but instead focus on how do we develop a sound plan for fish recovery, including near term measures. If there are additional near term measures that are scientifically sound that run through the appropriate scientific review of the Independent Science Review Panel and the Power Council's process, and that achieve the objectives under The Endangered Species Act, then Bonneville stands willing to fund those measures. If necessary, we could reopen the allocations in the Memorandum of Agreement but my expectation is that we have adequate funds available now to handle any additional measures that might be deemed urgent for an emergency.

Mr. SIMPSON. Colonel Mogren, obviously you have read in the papers recently about the decision that was made to not include a preferred alternative by Corps, and allegations or the implications or whatever that there was influence from the Administration in the White House in this decision. Could you go through that and tell me how this came about and why there will not be a preferred alternative, it's relatively, is it not, to do an EIS without creating a preferred alternative?

Colonel MOGREN. That is rare. Let me go back and start. What I'll do is I'll carry you through our process that I'm personally familiar with, and to speculate on the motives of some of the decisions that were made, I'm not sure would be appropriate on my

part. I would be happy to share with you the events that transpired as I participated in them, and as I'm aware of them.

As you know, throughout the process the Corps had planned all along to issue a draft EIS with a preferred alternative. We had said that in testimony; we had said that throughout the region. I believe it was the August or September timeframe, and frankly I may ask the staff to help with some of the specific dates. The district had started to put together its recommendation. As I mentioned before the Walla Walla district is charged with putting the draft EIS together, and they had started formulating that preferred alternative.

They had done that. Colonel Bulen had forwarded it to my boss, General Strock. Our staff had looked at it. We were not in complete agreement with everything that was in that document, made some revisions to it in accordance with our review process and then forwarded the document up to our headquarters. This was all in accordance with our normal process for this.

We had notified the other Federal agencies and this was on in early October now. I think we noted it on the 8th. Again, I'm not one hundred percent sure of the date because as we had talked to the agencies and kept Washington informed, we had intended to issue a preferred alternative and one of the steps in our process would be to discuss that and go into consultation on that with the other Federal agencies in the region. We were in the process of setting up a meeting to do just that.

Our document went forward to our headquarters. Sometime after the 8th of October, we had received guidance not to include a preferred alternative. That guidance originated with the Assistant Secretary of the Army for Civil Works, who had sent a memo to the Chief of Engineers, General Joe Ballard. That was subsequently transmitted to us with guidance from our headquarters to go forward without a preferred alternative and that's subsequently what we did, we complied with that guidance.

Mr. SIMPSON. I appreciate that explanation. I understand that there are at least several Senate Committees looking into this and asking the same kind of questions and they've asked for a variety of information. Would you be sure that the same information is available to this Committee?

Colonel MOGREN. I will certainly do that.

Mr. SIMPSON. I appreciate that very much. Let me ask one more question of Dr. Anderson. Given your testimony I'm not sure, I assume that you believe that the PATH decision process and the CRI is not adequate in terms of making future critical decisions on this; is that an accurate statement?

Mr. ANDERSON. That's true. I think the new information on the ocean and fish causes the predictions from those two analyses to be inaccurate and misleading.

Mr. SIMPSON. Thank you. Thank you, Madame Chairman.

Mrs. CHENOWETH-HAGE. Thank you. The Chair recognizes Mr. Hastings.

Mr. HASTINGS. Thank you, Madame Chairman. I appreciate it. Colonel Mogren, let me just followup because my colleague from Idaho asked a question that I wanted to ask. I wanted to kind of tie this down a bit. You're stationed where?

Colonel MOGREN. I'm in Portland.

Mr. HASTINGS. Portland, OK, and you were involved in this process last fall?

Colonel MOGREN. Yes.

Mr. HASTINGS. OK, from the Portland standpoint working from?

Colonel MOGREN. From the division headquarters; yes.

Mr. HASTINGS. Your recommendation as it had left your office going to Washington DC was that you would come up with a preferred alternative?

Colonel MOGREN. Well, the recommendation that went forward contained our proposed preferred alternative.

Mr. HASTINGS. So I say you were to recommend the preferred alternative?

Colonel MOGREN. Yes.

Mr. HASTINGS. Which was that breaching should not be an option?

Colonel MOGREN. Walla Walla District had proposed our alternative three, which was major system improvements with maximum barging. My staff looked at that and a briefing from the National Marine Fisheries Service on transport which had indicated to us in terms of recovery that we may have gotten about all that we were going to get out of transport. So whereas the transport program was vital to the survival of fish that we are seeing now increases to that level would only have marginal improvements. So rather than supporting the maximum transport recommendation, our staff said it might be more reasonable to take a flexible approach to assist in monitoring in evaluation efforts to get to the question of delayed mortality, for example.

The other point that we are not in complete agreement with was a fairly definitive recommendation from the district for non-breaching, and that was based largely on the uncertainty of the science at that point in time. I want to emphasize we were talking about the August, September, early October timeframe.

That same uncertainty in our view probably mitigated against such a definitive statement. So our proposal that went forward called for not breaching, not at this point in time, and there may be some point in the as the science evolved and matured that may, in fact, be required.

Mr. HASTINGS. It's safe to say that your preferred alternative, knowing that anything is on the table, was not to breach and you had some other alternatives to enhance fish passage and so forth; is that right.

Colonel MOGREN. That's right.

Mr. HASTINGS. So when it got up to the level in Washington DC, that decision was made and you weren't involved in that process at all?

Colonel MOGREN. No, no, other than I went up to my headquarters and again in accordance with our process and briefed our staff on where we were. Some of staff that were in the staff in the room with us were part of that, made sure the staff was aware of that and then there was a policy review process that we go through with our normal EIS's. As I indicated subsequently we had the guidance not to use it.

Mr. HASTINGS. You had to follow orders, and I respect that. So the inquiries from the Senate presumably will be focused not on your level but at higher level then, is that a good presumption?

Colonel MOGREN. Sir, I don't know. I assume so, but I don't know.

Mr. HASTINGS. I won't put words in your mouth on that. OK, thank you, Colonel Mogren. I appreciate that.

Senator Morton, you gave us a very interesting handout here. On page 12, you have and this is nothing do with hatchery fish. It's a very interesting water flow with fish runs measurement at Astoria that you comply with figures from the U.S. Geological Survey and the Corps of Engineers and so forth indicating that low flows is where your highest fish runs are historically and the converse is true.

Could you elaborate on that and if either one of you would like to pick up on that, if you haven't seen that chart it's in Senator Morton's handout on page 12.

Senator Morton, let me start with you.

Senator MORTON. Thank you, Congressman. Yes, the lower graph portion on the second page, both pages have to be studied together, and it has to be studied. It starts in 1938. We went back that far when we have these figures. We only went up or were able to go up to 1986 because of the data not being available at Astoria where the gauging station was eliminated. So in looking at both pages, yes, what you analyzed is correct. It's very interesting that during the low flows of the Columbia River were the highest salmon runs, and the inverse is also true, that during the highest flows we had the lowest runs. I'm not a biologist. We just analyzed that. It came out as we looked at the figures and data, so we printed it up.

Mr. HASTINGS. I know Dr. Anderson and Dr. Mantua, you haven't had a chance to look at that at all.

Mr. MANTUA. No, I have not had a chance to look at this particular graphic or table, but previous work that has been done tends to support just the opposite conclusion: that during high flow years in the Columbia system and throughout streams in the northwest, this is integrated over what we call the water year, the month of October to the following September so it captures both snow melt accumulation and melt season.

If you look at gauge flows on the Dalles, which captures most of the Columbia Basin, you see that that's well correlated with cold ocean conditions and good ocean habitat that we have associated with these climate cycles. So, in fact, there is some interaction going on both in the river and in the ocean that is connected to the same climate pattern, the Pacific Decadel Oscillation, changes in the wintertime circulation, and most of the work that has been done in that area that I'm aware of and that I've participated in suggests that heavy snow pack, high stream flows, cold ocean temperatures all go together with the productive years.

On the other hand, low flows, low snow pack, mild winter temperature and warm ocean conditions have gone with poor production. So it's actually contrary to the conclusions from this graphic.

Mr. HASTINGS. Thank you very much.

Mrs. CHENOWETH-HAGE. The Chair would recognize Senator Morton for a response for 1 minute.

Senator MORTON. I think it would be very helpful if the good doctor could use the information. We didn't have the time, Doctor, to go down through month by month. I think that would reveal even more if we do as you're indicating seasonally, at least for the four seasons and/or month by month. We just printed the data as it was revealed to us.

Mrs. CHENOWETH-HAGE. Dr. Mantua and Senator Morton, this information is quite startling and the sources are from the USGF and U.S. Army Corps of Engineers and at first glance it's hard to tell how it could be wrong. I wonder if the two of you could work together and send the subsequent report to the Committee? Would you do that? Thank you very much.

Chair recognizes Mr. Nethercutt.

Mr. NETHERCUTT. Thank you, Madame Chairman. Colonel Mogren, what is the date, sir, if you can recall that you were notified of the decision that altered the recommendation which left your office and the Walla Walla district office for the east? Do you remember when that came back to you and you discovered that this preferred alternative was to be removed?

Colonel MOGREN. It was mid-October.

Mr. ARNDT. 8 October.

Colonel MOGREN. I know our note went off and we received verbal guidance on the 8th of October and it was followed up in writing I believe a week or so later. I don't recall the exact date.

Mr. NETHERCUTT. The issuance then of the Corps recommendations or conclusions without a recommendation, so to speak, what was the date of that issuance?

Colonel MOGREN. Again, I need to refer to Mr. Arndt. Incidently, those dates obviously are in the documents that Mr. Hastings has asked for. So if we can't satisfy this question here, we would be happy to submit that for the record.

Mr. NETHERCUTT. That's fine.

Colonel MOGREN. Do you remember the dates of the documents of the Walla Walla recommendation, our recommendation, and the respond memo from headquarters off the top of your head? Sir, we'll have to submit it. Walla Walla District recommendation—October 14, 1999 Northwestern Division recommendation to Headquarters—October 18, 1999 Headquarters response memo—November 2, 1999.

Mr. NETHERCUTT. That's fine. I'm not trying to test your memory. I'm trying to get a sense of the gap in time from when this decision may have been made, and I'm sure that the Senate and the House will complete the investigations to decide who did what, when and to whom.

I appreciate the work of the Walla Walla district office and the initial recommendations for a preferred alternative. I think that's valuable to know that history and the history of your office has been what I consider positive in connection with trying to solve this problem in a scientific manner as opposed to a political fashion. I'm informed that the Environmental Protection Agency is in the process of preparing a letter concerning the Lower Snake River Environmental Impact Statement. I also understand that the letter will notify the Corps of an environmentally unsatisfactory rating for non-breach alternatives in the study. Are you aware of that letter?

Colonel MOGREN. Yes, sir, we are.

Mr. NETHERCUTT. Is that rating of environmentally unsatisfactory a surprise to you?

Colonel MOGREN. We were surprised by the severity of the rating. Back in August EPA had reviewed a preliminary draft that was based at that point on the PATH report and it issued us a rating of environmental objective EO2, which is less severe. We have subsequently been meeting with the Environmental Protection Agency to try to resolve some of these very important water quality issues. Their concerns are gas abatement, their concerns are water temperature and air quality issues, I believe Mr. Hastings referred to earlier in his comment were also part of this.

During the course of those negotiations and discussions there was nothing that came up that was going to indicate in our view that a more severe rating such as unsatisfactory was forthcoming. In fact, we did not know that until the regional administrator, Mr. Clark, had given a call to our office and indicated that this was forthcoming.

Mr. NETHERCUTT. When will that letter be available for review?

Colonel MOGREN. I don't know. I believe EPA is going to sign that this week. So I would assume later this week but again I don't know.

Mr. NETHERCUTT. I am wondering what impact the EPA letter whenever it's received and revealed and issued for review, what impact will that have on your process and your recommendation of an alternative and the activities that are continuing on an ongoing basis? My concern is that the likelihood may be higher now that this is a political determination from the EPA, as well as from Corps of Engineers, in my humble opinion, and that casts in doubt the question of whether you will be able to, you the Corps, will be able to issue a final recommendation and conclusion based on sound science as opposed to political science and I hate to have that definition muddled as we know it. I hope you get my point.

Can you assure us that you are going to do your best, at least at your level, at the Walla Walla office district level to make sure that this is not a political decision that this is a sound science based decision, even with EPA involved given the surprise that apparently is coming at you with respect to this letter and the more severe determination they have apparently made?

Colonel MOGREN. Sir, just to go back to an earlier comment I made in response to one of the earlier questions. I would prefer not speculate or comment on the motives behind any of the actions ongoing. With regard to your specific question about the impact on the process, we have received almost 90,000 comments. In fact, it was 90,000 last week. My guess is it's gone up since then regarding this issue and the EPA is one of those 90,000. Clearly, it is very important. We are dealing with the Clean Water Act and this is not something that the Corps takes lightly.

Clearly, there's direct implications on water quality imposed by the Clean Water Act, and we are not taking those issues lightly. We will address those issues fully and completely in our EIS.

One of the EPA's criticisms was that we do really give this due weight in terms of discussion and evaluation in the report. One

thing we've committed to do is bring that information forthcoming so anybody who reads this report has the benefit of that analysis.

Mr. NETHERCUTT. Did the recommendation come from that Washington DC office with respect to this environmental consideration or did it come from the regional office or the local office, or where did it come from?

Colonel MOGREN. It is my understanding it will be signed by Mr. Clark, the regional administrator. So I assume it came from his office. Again, I don't really know that. I assume that's where it's coming from.

Again, going back to process, we have already met with EPA this last week and we've agreed to some procedures to get to some of these issues that are in contention, such as the impacts of the dams on water temperatures, such as what can we do about dissolved gas.

I want to emphasize that the EPA and the Corps are working very strongly to try to resolve some of these issues, but there are some fundamental disagreements here. One of the issues, of course, is that from a biological standpoint with dissolved gas, the State of, I don't mean to isolate anybody from the State of Washington up here but the State of Washington has routinely waived the gas standard during fish passage season up to 120 percent level, which National Marine Fisheries indicates, you know, the Federal scientists indicate it's safe for juvenile salmon bypass. An absolute standard for the water quality is 110 percent. So what we have is a conflict between the standards of the Clean Water Act and the standards from the ESA as expressed as biological opinion that we operate to. I'm not sure what the resolution to that is.

I guess my final point I would make, sir, is to go to your point. What the Corps has always seen as its role in this whole process is to provide the best economic and scientific data that we can put together from the broadest number of sources, have as open a process as we can and to render a recommendation that will inform this process. I think the ultimate decision on this is going to be a political decision because you're balancing some very strongly held and competing values out here and that's what you guys get paid to do. What I get paid to do is inform that through whatever analysis and so on and data and information that we can collect and put together and provide to you.

Mr. HASTINGS. Madame Chairman, could I ask one question?

Mrs. CHENOWETH-HAGE. Mr. Hastings.

Mr. HASTINGS. Thank you. I just wanted to followup where you said Washington was waiving the rules regarding the level of 120. Isn't that because that's where the dams are and isn't that because there are people that are saying you need more flow. If you are going to have more flow you have release more water over the dams and therefore you are going to have more super saturation? It seems to me there is a conflict based in that statement from those that are involved in this.

Colonel MOGREN. You've hit it on the head, the conflict between the Clean Water Act requirements and the ESA Biological Opinion requirements. The 1995 Biological Opinion requires spill, under set conditions, requires spill to help fish bypass. That pushes your dissolved gas rate at the dams at which the spill occurs.

Mr. HASTINGS. Which are detrimental to fish passage; is that correct?

Colonel MOGREN. I'm sorry?

Mr. HASTINGS. Which are detrimental to the fish that get caught up in that super saturation; is that correct?

Colonel MOGREN. Well, right, presumably above a certain level; correct.

Mr. HASTINGS. I won't ask you to draw his conclusion, but it seems to me we are really in conflict because it seems to me most of the discussion has been on more flow augmentation, more water is what it is. So I just want to make that point because you made the point that these things are waived and yet we seem to be fighting ourselves on the back side.

We are not focusing on the impact on the super saturation.

Mr. HASTINGS. Thank you. Thank you, Madame Chairman, I appreciate the consideration.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Hastings. I want to ask Senator Morgon in your amendment to your testimony, on page one, you quote Chief Spokane Gerry from the Congressional Record in 1877, on this page, at the very bottom. Did you retrieve that quote from the Congressional Record yourself?

Senator MORTON. Madame Chair, on page 14 it's elaborated on further in the Congressional Record and the State of the State Message by Governor John Rankin Rogers in 1899. Those are both elaborated on on page 14.

Mrs. CHENOWETH-HAGE. Thank you, Senator. I wanted to ask Dr. Mantua, have you seen this quote from Chief Spokane Gerry in 1877? That quote is, "My people have not be able to lay in stock enough of salmon for their winter food." it's very interesting. Obviously, this came from the Congressional Record. Do we have climate studies that go back that far that can show this 30-year cycle that you testified to, Doctor?

Mr. MANTUA. We don't have very good ones but we have flow records from the Columbia River that date back to 1878, and that's one the most reliable and long-term direct measurements we have in the region. So we can't get to 1877. Of course, we do have excellent fishery records reconstructed from cannery pack that date back to the same time period. So it would be very important to include that information when you evaluate a statement like this. There are other sources of climate information, like tree rings that people that I work with are actively working on to try to reconstruct past climate in the Northwest and we're hosting a workshop next week in Seattle to get at issues like this, what was the climate like prior to direct instrumental measurements.

Mrs. CHENOWETH-HAGE. I think it's quite startling to me that the Native American were unable to even be able to stock in enough salmon for winter because obviously the fish runs were down even then and that's long before any dams existed.

Mr. MANTUA. True, but you must consider there was a very large lower river commercial fishery developed by that time.

Mrs. CHENOWETH-HAGE. In 1877?

Mr. MANTUA. I believe so.

Mrs. CHENOWETH-HAGE. That would be interesting to study.

Dr. Anderson, you testified that the fact that there needs to be more genetic studies of these listed stocks of salmon. Is there really any difference in the gene pool between the hatchery fish and the wild fish? Is there really any difference?

Mr. ANDERSON. I can't give you an easy answer to that. Some of the hatcheries are probably close to the wild stocks and some of the hatcheries are very different because of the way that fish have been shipped all over the Northwest when the hatchery programs were first established.

I think that's a good question and we should really begin to look at endangered species in the hatcheries and in the wild and try to sort out what is the difference between these two groups can we be a little bit more flexible maybe in how we manage both hatcheries and wild fish.

Mrs. CHENOWETH-HAGE. But in the Columbia River system is there a difference in the gene pool between the hatchery salmon and the wild salmon?

Mr. ANDERSON. There might be in some cases. I'm not an expert in that particular field as far as past.

Mrs. CHENOWETH-HAGE. I see. In your testimony you indicated that we should harvest the hatchery salmon while letting the wild salmon go free. How do you propose that we harvest the hatchery salmon? There are methods; life catch methods, fish wheels marking all the clipping of fin of all the hatchery fish, not using gill nets, having catch and release programs.

Most of this separation of harvest would have to be done in the river, I believe. Right now it's not being done.

Mrs. CHENOWETH-HAGE. I want to ask of Ms. Johansen, can you explain to us, how the additional 24-hour spill of all the dams, except the Dalles, will affect reliable power production and reliability as far as energy produced and what is the cost of the region of this new spill activity?

Mrs. JOHANSEN. The most recent spill regimen that my staff has discussed with the National Marine Fisheries Service staff basically results in the same financial package that we have. In other words, there is no change. There was a significant reduction of spill at The Dalles and that was countermanded by increases at other projects. So, the net effect financially is zero.

However your question is a good and important question. Due to several factors, including the derating of the hydro system, load growth in the region, and the fact that there has not been very much construction of new generation in this region, we face a critical reliability issue that we have to deal with now. Our studies reveal that if we embark on significant further spill on the Columbia, especially down at the projects that are closely tied in with the California Intertie that further derating could cause reliability problems in not only the Northwest but also in California as well. So, in working with the National Marine Fisheries Service, we try to make them aware of the transmission constraints and make sure that they understand where we run into those problems. Reliability is an important issue that this region does need to focus on. We've stretched the system to it's limits and the flexibility that we had even 5 or 10 years ago is gone.

Mrs. CHENOWETH-HAGE. Has the BPA analyzed and can you tell the Committee where you will be getting other power during those high demand peak weeks during August, September even in July when you are spilling and yet there's such a high demand in the region. What will you supplement the power with?

Mrs. JOHANSEN. The region is in a load resource deficit. Most of that deficit is not on the Federal system, although we do have a large share of the deficit. I don't want to understate that. The problem is not just on the Federal side, but it's also a problem for other utilities. For peak operations, if we don't have adequate water to provide or adequate resources in the Federal system, we rely on seasonal purchases from California. So, the use of the interties is quite important to us to meet our peak demand. We also rely on power purchases to the extent they're available from Canada because Canada has surpluses, but there are transmission constraints there, and for future generation construction how much of that will Bonneville purchase? We have recently concluded, and yesterday I signed the final record of decision on our Subscription Strategy, which will require that Bonneville add another 1500 to 1700 megawatts of power to augment our system so that we can cover all of the demand that we've committed to. We are covering that with purchases from independent power producers and a mix of utility purchases as well.

Mrs. CHENOWETH-HAGE. The power produced in California is significantly higher than that produced on the Columbia River system; is that not true.

Mrs. JOHANSEN. The cost of power on the West Coast is now dictated by a market that has been established as a result of deregulation. So, the difference between the cost of market power in the Northwest is not that significant versus California, and the market price we pay there however, the cost of production does vary between the regions and you're correct in that.

Mrs. CHENOWETH-HAGE. Because the facilities on the Columbia are so low cost and meet the demand of the Northwest Power Act in having a renewable resource for its fuel source, has the BPA analyzed the conflict here that may appear to us to be in the Northwest Power Act? The activities from BPA that seem to be focusing solely almost in some cases on the salmon and the cost of reliable low cost renewable resources seem to be sacrificed.

Mrs. JOHANSEN. We have quite a significant focus on maintaining low cost power. In fact, as I sit before you today we are the lowest cost provider save perhaps Idaho Power Company in the region. We embarked on significant cost cutting in order to establish that position. We have cut over a half billion dollars a year from our annual budgets to make sure that low cost continues to be provided in this region.

At the same time, we are making investments in efficiency improvements in the Federal hydro system working with the Corps and the Bureau through the direct funding agreements. It's enabled us to work together to find efficiency improvements in the hydro system that we otherwise wouldn't find, We are also increasing our transmission rates to enhance the reliability of the transmission system, which as I said earlier has been stretched to its limits in many instances.

While I publicly seem to be only addressing fish issues, really 99 percent of what I do and what my agency does is try to assure transmission reliability since we are the primary owner in this region. We also work with the Corps and the Bureau to make sure the efficiency improvements are made in the hydro system and in working with Energy Northwest on their nuclear plant.

Mrs. CHENOWETH-HAGE. Thank you. The members have asked for a second round of questions and I will recognize them for a second round beginning with Mr. Nethercutt.

Mr. NETHERCUTT. I want to conclude my questions here in the second round by thanking each one of you for your testimony. We always get stuck on the 5-minute rule. We love it but we hate it because otherwise it would be interminable. We sure thank you for your testimony. It's been compelling today and, Madame Chairman, we will be able to submit questions for the record, perhaps.

Mrs. CHENOWETH-HAGE. Yes.

Mr. NETHERCUTT. Then with your indulgence if we have question we would request that you file answers at your earliest convenience.

Ms. Johansen, I'm interested in your performance standards testimony and I think it makes sense. I urge that you think carefully about the development of those standards and also include a local input to the development of the standards. Is that what you had in mind, also?

Mrs. JOHANSEN. Actually, the performance standards are being developed by the National Marine Fisheries Service and they will be articulated in their Biological Opinion. The Federal agencies have been working with National Marine Fisheries Service to develop those standards, but they will ultimately be the call of NMFS.

NMFS intends, or at least it's our understanding that they intend, to release a draft Biological Opinion for review by the States and tribes around May 22nd. So, that would be an opportunity for the State and local governments and other to comment on those performance standards. This is the first time that we've done this, the region has done this. One of the other things that National Marine Fisheries Service is contemplating is review of those standards by the National Academy of Sciences. So, the intention is to make them as credible and relevant as possible.

Mr. NETHERCUTT. So there will be an opportunity for public comment and for additional local input. The local agriculture conservation districts are doing very good work and perhaps would want to have input into the establishment of those standards. I also was interested in your testimony where you indicated that funding habitat improvements makes sense as well in the full picture of trying to restore salmon.

Dr. Skinner, Mike Skinner is going to be testifying here on the next panel or the following about the issue of reproductive biology as it relates to fish and looking at what they are doing and why they are not doing it in connection with this whole great problem. I wonder if you or agency would consider funding, relative to the money that's been spent thus far on habitat conservation and protection and all the expenditures of government, the Corps study and so forth for a relative small amount of money.

We can look at the reproductive biology of fish as part of the puzzle and solution that we are seeking and for a very minimum amount of money and perhaps a limited amount of time and we'll hear testimony about that. I'm wondering if BPA would consider that as you go through looking at the funding that you're involved thus far and funding that you're intending to undertake in the future?

Mrs. JOHANSEN. We will certainly consider that. The process that we go through is to work with the Northwest Power Planning Council and the Independent Science Review Panel to sort through the hundreds of projects that come our way. Certainly, we will commit to working with Dr. Skinner to make sure that his proposal is described as best it can be as it goes through that process.

Mr. NETHERCUTT. Thank you very much. Senator Morton, Congress help established a fund that goes through the Washington State Salmon Recovery Funding Board and I'm wondering, sir, whether in your opinion this has been successful, what projects have been funded throughout the State that you think are valuable?

Senator MORTON. Obviously, the money is valuable to some of the projects but not to all. I think a lot of the projects have been what I would call minor significance as it pertains to habitat. We have habitat, I believe, to a great degree in the tributary waters, for example, of the Columbia as well as and particularly the Olympic Peninsula and for us to use that money in interior culverts, et cetera, I think has been a true waste. Basically, that's my opinion on it, but we do have the need for the moneys to be used in other areas of the State rather than deeply inland but more along the coastal areas and the Columbia itself.

Mr. NETHERCUTT. Thank you very much to all of you.

Mr. HASTINGS. I want to followup on Mrs. Johansen. In your written testimony, at bottom of the first page and I'll read it here and ask you to respond. In 1992 and 1994, when Pacific Northwest salmon and sturgeon were listed as endangered species Bonneville's fish and wildlife program expenditures plus the financial impacts of changes in hydro power system operations increased significantly going from 150 million to over 400 million dollars a year. These are all, of course, ratepayer dollars. There's no tax dollars. There's no tax dollars. These are all ratepayer dollars.

Could you break down that cost? I know a big portion of that is it foregone revenues is the way to say it. Could you break that down and elaborate on that paragraph?

Mrs. JOHANSEN. Let me provide clarification. The 430 million dollars is a budgeted amount and as Congressman Simpson pointed out, we have underspent under the MOA because we didn't anticipate expenses due to a lower level of Congressional appropriations. But, of the 435 million dollars budgeted amount that we have grown into, if you will, about 252 million dollars is associated with the direct program that we fund for the Northwest Power Planning Council. You can break that 252 million dollars down into about 100 million dollars for the North West Power Planning Council's direct Fish and Wildlife Program: about 40 million dollars for reimburseable expenses, and about $112 million dollars for capital reimbursement for the Corps projects. That's the particular area

where the appropriations didn't come in as robustly as we anticipated.

The remainder, the roughly 183 million dollars remainder, is an expected value of the operational costs that we incur either due to foregone revenues or increased power costs to shift the water around in order to meet the fish migration as opposed to optimizing for power.

So in any given year that balance, the amount above the 252 million, could be 200, 300 million or it could be very small depending on the water or depending on the market. So it does vary year by year, but on average we had planned for and had expected about 435 million dollars a year in total for all four cost categories under the current regime. Under our new rate case which is concluding, and unfortunately I'm in ex parte so I can't debate the merits with you, but I can tell you that we are increasing the level of funding given the range of uncertainty that we see in terms of what our fish and wildlife obligations will be. That expected value will go from about 435 to about 720 million dollars per year.

Mr. HASTINGS. Same percentage breakdown in the programs as you mentioned here that roughly 252 and the other in foregone power would that ratio remain about the same?

Mrs. JOHANSEN. The ratio remains about the same, but it's up, ratcheted up in each instance.

Mr. HASTINGS. Right. Prior to the listing in 1992, that 252 million dollars that you were talking about, I assume those programs existed prior to the listing of the salmon and the surgeon; is that correct?

Mrs. JOHANSEN. This predates me, but prior to 1992, we were operating under a program, a much more modest North West Power Planning Council Program. I believe that the annual program was more in the 40 million dollar range. I'll followup with specific numbers there. The operations of the hydro system were significantly different than we face now. The operation of the hydro system as a result of the listings in 1992 has really changed the priority from flood control and power, which was the case before 1992. Now flood control and fish are the two top priorities. The operational regime back then had far more modest impact on our lost revenues and our purchased power needs.

Mr. HASTINGS. Let's put it another way. If we were trying to compare apples and apples prior to this and again making the broad assumption and that these are—not the foregone power cost, I'm just talking about the 252, what figure would equate to the 252 prior to the listings?

Mrs. JOHANSEN. I'll have to get back to you on that. I believe it would probably be more in the neighborhood of perhaps maybe less than 100 million.

Mr. HASTINGS. Less than 100 million.

Mrs. JOHANSEN. That would be my guess. I want to followup with you on a specific breakdown.

The breakdown follows:

Total F&W Recovery Costs

(1978 - 1999)

"252"	1978-1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	MOA Period 1996	1997	1998	1999	Total
Direct Program	$2.3	$2.3	$4.6	$9.1	$19.6	$15.9	$19.6	$22.2	$18.8	$23.0	$32.8	$33.0	$67.0	$49.6	$55.9	$71.4	$88.5	$82.2	$104.9	$108.2	$810.9
Reimbursable	$15.0	$6.1	$11.5	$14.2	$16.0	$19.9	$23.7	$29.7	$19.0	$23.6	$23.4	$24.3	$28.4	$30.5	$34.9	$36.1	$35.4	$35.9	$36.4	$38.9	$502.9
Fixed Expenses 1/	$24.0	$8.8	$12.4	$15.9	$16.6	$19.7	$22.1	$28.5	$31.0	$31.9	$34.3	$38.2	$41.9	$53.6	$61.3	$63.6	$73.1	$76.3	$74.1	$76.0	$803.3
Subtotal	$41.3	$17.2	$28.5	$39.2	$52.2	$55.5	$65.4	$80.4	$68.8	$78.5	$90.5	$95.5	$137.3	$133.7	$152.1	$171.1	$177.0	$194.4	$215.4	$223.1	$2,117.1

1/ Associated with Capital Investments

"River Ops"																					
Power Purchases	$0.0	$0.0	$0.0	$0.0	$12.0	$17.0	$74.0	$11.0	$40.0	$40.0	$40.0	$40.0	$59.0	$104.0	$111.7	$114.0	$0.0	$0.0	$5.4	-	$658.1
Foregone Revenues	$0.0	$3.0	$14.0	$1.0	$8.0	$27.0	$19.0	$9.0	$10.0	$15.0	$15.0	$15.0	$23.0	$45.0	$62.0	$114.0	$85.7	$111.8	$120.5	-	$698.0
Subtotal	$0.0	$3.0	$14.0	$1.0	$20.0	$44.0	$93.0	$20.0	$50.0	$55.0	$55.0	$55.0	$82.0	$149.0	$173.7	$228.0	$85.7	$111.8	$125.9	-	$1,366.1
Grand Total	$41.3	$20.2	$42.5	$40.2	$72.2	$99.5	$158.4	$100.4	$118.8	$133.5	$145.5	$150.5	$219.3	$282.7	$325.8	$399.1	$262.7	$306.2	$341.3	$223.1	$3,483.2

Sources: (1978 - 1995) FY 2000 Congressional Budget / page 80
(1996 - 1999) MOA Reporting Template

Notes: Dollars are in Millions

FY 1999 River Operations require information on actual hydrological conditions. This information is not yet available.

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Last Update
4/29/2000

Mr. HASTINGS. OK, but making the assumption that that's the case, 100 million prior to the listing of the species has escalated or will escalate to over 500 million dollars that the ratepayers are principally paying, there are some Federal direct appropriations; is that correct?

Mrs. JOHANSEN. I believe if we held the ratio of the program expenditures to fore gone power revenues the same, the top of your range would be about 418 million, and this is all ratepayers.

Mr. HASTINGS. It's all ratepayers. So all the ratepayers here in the Northwest are paying this increased cost because of these listings?

Mrs. JOHANSEN. Yes.

Mr. HASTINGS. Thank you very much.

Mrs. CHENOWETH-HAGE. Mr. Simpson.

Mr. SIMPSON. Just one quick question that came up and I don't know who to ask this to actually. I guess I'll ask it to you to, Colonel, since in the middle. The debate started a little bit ago over whether historically increased flows meant more returned salmon or less return salmon, and I guess the State of Idaho has been given 427 acre feet and negotiated that and authorized it over the last several years to increase flow augmentation. Any results of that? We did it as an experimental program to see if it would increase the rate of return of salmon and flush salmon down the River. Have you seen the results of that yet? Have you seen any benefit from that.

Colonel MOGREN. Let me defer that to Mr. Arndt here, and I would also ask I believe there's a National Marine Fisheries Service panel member coming up in the next panel and he may be in a better position to answer that.

Mrs. CHENOWETH-HAGE. Mr. Arndt, would you stand and be sworn, please? Do you promise and affirm under the penalty of perjury that you will tell the truth, the whole truth and nothing but the truth?

Mr. ARNDT. As I understand your question there have been a demonstrable result in—.

Mrs. CHENOWETH-HAGE. Mr. Arndt, I'm sorry to interrupt you. Would you please introduce yourself for purposes of the recorder.

Mr. ARNDT. Thank you, Madame Chairman. My name is Doug Arndt. I'm Chief of the Fish Management Division for the Northwestern Division, Corps of Engineers. In response to your questions, sir, the data are still coming in on that and as you have heard earlier from the panel there seems to be an overriding impact of the ocean conditions that may influence that.

I have seen some data that would indicate that the flow regimes are probably less significant for spring/summer Chinook returns and perhaps more significant for the fall Chinook returns. This is captured in some recent information that National Marine Fisheries Service has put out. So I assume that you'll hear more about that from Ric Illgenfritz, who is on your next panel.

Mr. SIMPSON. Thank you.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Simpson.

Mr. Arndt, you may want to remain there. I have a question for you. If you want to pull your chair around to the side, Mr. Arndt. I first have a question for Dr. Anderson.

Dr. Anderson, can you give me the flows in cubic feet per second of the Columbia River, say, at the Dalles Dam and then maybe at Bonneville? What is the volume of flow?

Mr. ANDERSON. The volume today, I'm not sure. If I could look up our web page, I'll give you exact numbers. I think using from these tables right here, we have on the order of 150,000 in a low flow year to three, four, 450,000 cubic feet per second in a high flow year. That would be at Bonneville Dam. Most of the flows at the Dalles and Bonneville are similar.

Mrs. CHENOWETH-HAGE. The 427,000 acre feet, how would you calibrate that in comparison that Mr. Simpson has talked about that Idaho has issued out each year for the last 8 years?

Mr. ANDERSON. The flow that's coming out of Idaho and the flow augmentation, is that your question?

Mrs. CHENOWETH-HAGE. Yes.

Mr. ANDERSON. The relationship between the natural flows and the flow augmentation is tiny. The flow augmentation from Idaho is very, very small. It might be 20 or 30 KCFS, where in the spring we might have 200 to 400 KCFS down through the river system. We have looked at the possible impacts to that with our models and haven't be able to find any significant impacts of that flow augmentation.

Mrs. CHENOWETH-HAGE. Very interesting. Colonel Mogren, I would like to ask your biologist a question. Natural Marine Fisheries Service, Mr. Arndt, is proposing to increase spill to 24 hours a day at all dams except the Dalles. Now, if the biological opinion didn't require spill and if the Northwest Power Planning Council did not require spill would you as a biologist feel that voluntary spill would be justified to save the fish? If the intent is to keep fish, migrating juvenile fish in the river system, then I personally believe that spilling fish is better than putting them through a turbine. If one has the option of moving fish most safely through the river system that doesn't include keeping them in the river, as you heard in our earlier testimony, the current data coming from transport would indicate that it would be better to transport those fish rather than keeping them in river by spill or by any other means.

Mrs. CHENOWETH-HAGE. Tell me in your professional opinion how you feel about barging? Does it does really work and why if it does or doesn't?

Mr. ARNDT. If you look at the data on the returns of fish that have been transported versus those that have gone through the river system, transport works. It returns significantly more fish than if you keep them in the river. Does it work in the context of being a silver bullet and restoring the runs absent any other type of action, it does not do that. It's one very important component of a much broader action plan that would be required both in the hydro and outside any other so called issues.

Mrs. CHENOWETH-HAGE. Thank you very much, Mr. Arndt. I wanted to ask Mr. Mantua, it's my understanding that the fish returned, the count so far from pit tag count this year beginning March through April 20 is 70,331. Last year that compared to 6,904. So we have an increase of almost 11 times the number of returns with the 10 year average being 23,000, in excess of 23,000. As climatologist how do you account for such a dramatic return

this year as compared to last year when we view the climate and the affects on the salmon with such a difference in just 1 year?

Mr. MANTUA. I believe there is a great deal of evidence showing ocean conditions have improved markedly for many of the stocks in the Northwest, that ocean survivals were dismal in the early 1990's. I think the number is less than half of 1 percent for many of the runs in the Columbia River system and it's not unheard of to have survivals 10 times that number, that could completely account for the reserved increase in returns. In places where salmon stocks are in excellent shape and in southeast Alaska the numbers as high as 30 percent for certain stocks. So it is entirely consistent with vast improvement in ocean conditions and ocean habitat.

Mrs. CHENOWETH-HAGE. Thank you very much. I just want to close and thank you all. I want to thank Senator Morton for the film. I think that's very dramatic and certainly left an impression on all of us. I agression from your testimony the Oregon agencies killed 20,708 salmon in 1998, which could have yielded in excess of 48 million eggs. Out of 1 percent return we could have seen an excess of 436,000 salmon adults returning instead of what we are bragging about today at 70,000. So thank you for calling that to the attention of the Committee. I know that you have to get back to the very exciting session, and I thank you all for being here very much.

I do want to say to all if you but I wanted to mention to the Colonel, we will be sending further questions with regard to your draft and the impact of the White House on this. So we also want to let you know the record remains open for 30 days. Should any of you wish to add anything to your testimony, you are welcome to do so. We will be submitting questions in addition to those asked in writing. The Committee will send them out right away and we hope to have your response within 30 days.

Senator Morton and Dr. Mantua, I would appreciate your report to the Committee on the USGS and Corps of Engineers stats that we saw and even all the vagaries that could go into possibly a different conclusion. Would you be able to get it in within 30 days.

Mr. MANTUA. Yes.

Mrs. CHENOWETH-HAGE. Thank you very much. I want to thank these distinguished witnesses for their valuable testimony and with that these witnesses are excused and I will call the second panel.

Come to order and please stand and be sworn. Do you promise and affirm under penalty of perjury to tell the truth, the whole truth, and nothing but the truth, so help you God?

PANEL. I do.

Mrs. CHENOWETH-HAGE. I do want to say there are certain Committee rules and this is an official Congressional Hearing, and Congress has gone to great lengths to bring this hearing to this valley because there is an exceedingly important and strongly impacting issue. The Chair is very disappointed, very unhappy with National Marine Fisheries Service for just now bringing us their testimony. The Chair could exclude you from testifying. This is ridiculous that you would bring at this hour your testimony with this enclosure.

The rules of the Committee are to have your testimony into the Committee a number of days before the hearing, so we can all study your testimony so we can be prepared. Now, this is the agen-

cy that has taken it upon themselves without necessarily Congressional authority but with judge made of law to bade in the catbird seat on this whole issue. I think it demonstrates to us your willingness or lack of willingness to work with Congress. This document was issued April 7th. It was printed April 10th. You did have time to get it to the Committee.

Mr. Ilgenfritz, I will recognize you for your testimony but I will recognize no one else from NFMS. You must be prepared to answer the questions from the members, and I want to say on behalf of Chairman Don Young that I never want to see this happen again. There must be more cooperation from your agency with the Congress. With that the chair recognizes Mr. Bogert.

STATEMENT OF MICHAEL BOGERT, COUNSEL TO GOVERNOR KEMPTHORNE, BOISE, IDAHO

Mr. BOGERT. Madame Chair, distinguished members of the Committee, Representative Simpson, it's good to have a little view of home here in Washington State and I'm pleased to be able to speak with you today. My name is Michael Bogert. I am counsel to Idaho Governor, Dirk Kempthorne. I appreciate the opportunity to appear before you today and articulate Governor Kempthorne's perspectives on one of the most complex issues of the day, salmon recovery in the Pacific Northwest.

Prior to the time we took office in January 1999, the Kempthorne administration has been preparing for the upcoming decisions to be made very soon by the Federal agencies. We have been preparing for a very compelling reason.

Idaho stands to lose nothing short of everything in the aftermath of salmon recovery debate and perhaps ironically we will lose everything with no recovery of the salmon. With this perspective in mind, I would like to briefly describe to the Committee what we see as our role in recovering the species and how we are willing to participate in this process.

Governor Kempthorne believes that only through a regional collaborative effort will there ever be a chance for recovery of anadromous fish in Pacific Northwest. Every State in the region in all of the stakeholders impacted by the process must step forward and contribute.

No single State can recover the salmon scientifically. No single State can solely afford to shoulder a disproportionate burden of this process. It will be only through regional cooperation and not dictates by the Federal Government for there to be a chance to achieve real success in this area.

The hearing today is about what can be done now in the near-term to help the fish and I would like to briefly describe Governor Kempthorne's outlook on these issues. The Committee has our full testimony, and we would like to have those submitted for the records.

In general, Governor Kempthorne believes that any effective program to recover the species must be supported by science. It must be politically palatable and it must be economically feasible.

We in Idaho begin our analysis of this approach slightly differently than many members of the Committee have seen in the

past. The Governor has decided to add a fifth H to the equation. That H, of course, is humans.

From our vantage point much of our State's culture and economy are at stake in the decision to be made by the Federal Government in the coming weeks. Accordingly, Governor Kempthorne believes that no singular component of the salmon recovery burden should be born on the backs of any single stakeholder to the process, including the States.

Let me give you the most recent example of this problem, and as Dr. Roby will describe, it is going on now as we speak. United States Army Corps of Engineers recently estimated that over 640,000 listed individual salmon and tens of millions of hatchery stock are eaten alive at the mouth of the Columbia River estuary during the spring migration period. The culprits, the world's largest colony of voracious fish-eating Caspian terns, who just happen to be nesting on Federally-created Rice Island at the time the young salmon are attempting to make their way to sea.

Idaho, as did other stakeholders in this process, participated in a collaboration involving the States, Federal agencies including the Corps and United States Fish and Wildlife Service. This process resulted in a plan that involved providing alternative nesting habitat for these birds which happen to be protected under the Federal Migratory Bird Treaty Act.

The plan that was developed included a component that entailed harassing these birds from the most critical of areas where the endangered fish are slaughtered.

Not surprisingly, a group of environmentalists brought lawsuit a few weeks ago and claimed that the Corps had failed to comply with the National Environmental Policy Act and asked that the harassment strategy be halted immediately.

Their key piece of evidence? Written comments by the Fish and Wildlife Service that science had yet to prove that saving 640,000 listed individual species had any proven benefit to salmon recovery. A Federal judge bought the argument and as we speak, endangered fish are now being consumed by non-endangered birds and with the willing assistance of the Fish and Wildlife Service.

Members of the Committee, we submit that this is a paradigm of dysfunction. As a matter of fundamental science the State of Idaho likes its chances in a court of law that a fish eaten alive at the mouth of the Columbia estuary will not return to our State, but our perspective is even more focused.

At the time the Fish and Wildlife is telling us that saving 640,000 listed individual fish will do nothing to recover these species, the Federal Government as we speak is assessing how much Idaho water is needed to seemingly make fish migration easier. The answer to this question in Idaho goes to the very life blood of our State's agricultural economy in the upper Snake River Basin. Our reaction is how dare, how dare the Federal Government tell Idaho and the world that the outright slaughter of hundreds of thousand of endangered young salmon in the Columbia River estuary will have no impact on this problems and then in the same breath tell us that more water from our State is needed to get these fish out to sea. We appreciate the Committee's brief indulgence for the Governor's moment of righteous indignation, notwith-

standing the current position of fish and wildlife on predator control.

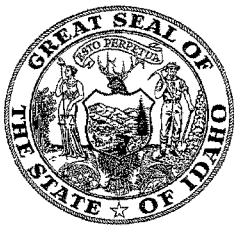
We shudder to think of what the Federal Government would do to the unfortunate soul on a rafting trip who accidently floats his boat over a salmon spawning bed during the height of the reproductive season.

Members of the Committee, you have the Governor's perspective on this issue as it relates to our view on the regional collaborative process, and with that, Madame Chair, I conclude my testimony.

[The prepared statement of Mr. Bogert follows:]

IDAHO'S PERSPECTIVE AND REGIONAL CONTRIBUTION TO RECOVERY OF COLUMBIA BASIN ANADROMOUS FISH

DIRK KEMPTHORNE, GOVERNOR



Testimony of L. Michael Bogert
Counsel to the Governor

Before the
Committee on Resources
United States House of Representatives

Hydropower, River Management, and Salmon Recovery Issues

April 27, 2000
Pasco, Washington

SUPPLEMENTAL SHEET

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TOPICAL OUTLINE

I. Introduction: Idaho's Perspective on the Problem

II. Idaho's Role in the Process

III. Idaho Perspectives and Contribution to Salmon Recovery

- A. Humans
- B. Habitat
- C. Harvest
- D. Hatcheries
- E. Hydropower

IV. Conclusion

Mr. Chairman and distinguished members of the Committee, my name is Michael Bogert and I am counsel to Idaho Governor Dirk Kempthorne.

I appreciate the opportunity to appear before you today and articulate Governor Kempthorne's perspective on one of the most complex issues of the day - salmon recovery in the Pacific Northwest.

I. Idaho's Perspective on the Problem

Prior to the time we took office in January of 1999, the Kempthorne Administration has been preparing for the upcoming decisions to be made very soon by the federal agencies. And we have been preparing for a very compelling reason: Idaho stands to lose nothing short of everything in the aftermath of the salmon recovery debate and, perhaps, ironically, with no recovery of the salmon.

Let me give you Idaho's common perspective on this issue as perhaps articulated by some of our stakeholders in this process.

The federal agencies charged with recovering the anadromous fish believe that they need Idaho water to help flush the fish migrate out to the ocean. Some groups argue that the four Snake River dams, which support important transportation and agriculture components in Idaho, should be destroyed.

Meanwhile, some of the fish that leave Idaho in the spring are being eaten alive by birds in the estuary before they even have a chance to migrate to sea. Once out in the ocean, they might be harvested.

Several years later, if they are lucky, they will return and could be eaten by predators at the mouth of the estuary or, further up the river, subject to tribal harvest. If they are *really* lucky, maybe a few fish will return home to spawn and die. But to Idaho, these returning fish are few and far between.

My point of all this is not to point the finger at any single component of this problem, but instead describe how from Idaho's perspective, sacrificing our state's water and voluntarily improving our native habitat may seem like a futile exercise when it is such a Herculean effort to get anadromous fish out and back to our state.

II. Idaho's Role in the Process

With this perspective in mind, I would like to briefly describe what we see as our role in recovering the species and how we are willing to participate in the process.

Governor Kempthorne believes that only through a regional collaborative effort will there ever be a real chance for recovery of anadromous fish in the Pacific Northwest.

Every state in the region and all of the stakeholders impacted by this process must step forward and contribute. No one state can recover salmon scientifically, and no single state can afford to shoulder a disproportionate burden of the process. Only through regional cooperation - not dictates by the federal government – is there a chance to achieve real success.

To that end, Governor Kempthorne sent his staff to meet with the staff of his fellow governors in the region. We have provided our regional partners Governor Kempthorne's perspective on salmon recovery, and his effort has been well-received.

III. Idaho's Perspective and Contribution to Salmon Recovery

This hearing is about what can be done now and in the near-term to help the fish, and I would like to briefly describe Governor Kempthorne's outlook on these issues.

In general, the Governor believes that any effective program to recover the species must be supported by science, politically palatable, and economically feasible. We begin our analysis of this problem by slightly revising the traditional "All-H" approach – Habitat, Harvest, Hatcheries, and Hydropower – with an additional H – Humans.

A. Humans

From our vantage point, much of our state's culture and economy are at stake in the decision to be made by the federal government in the coming weeks.

Accordingly, Governor Kempthorne believes that no singular component of the salmon recovery burden should be borne on the backs of any single

stakeholder to the process, including the states. Let me give you the most recent example of this problem, and it is going on as we speak.

The United States Army Corps of Engineers recently estimated that over 640,000 listed salmon and tens of millions of hatchery stock are eaten alive at the mouth of the Columbia River estuary during the spring migration season. The culprits: the world's largest colony of voracious fish-eating Caspian terns who just happen to be nesting on federally-created Rice Island at the time the young salmon are attempting to make their way to sea.

Idaho participated in a collaborative process involving the states and federal agencies, including the Corps and the United States Fish and Wildlife Service. This process resulted in a plan that involved providing alternative nesting habitat for these birds, which happen to be protected under the Migratory Bird Treaty Act. The plan that was developed included a component that included harassing these birds from the most critical of areas where the endangered fish are slaughtered by the birds.

Not surprisingly, a group of environmentalists brought a lawsuit a few weeks ago and claimed that the Corps had failed to comply with the National Environmental Policy Act and asked that the harassment strategy be halted immediately.

Their key piece of evidence? Written comments by the Fish and Wildlife Service that science had yet to prove that saving 640,000 listed species had any proven benefit to salmon recovery. A federal judge bought the argument and endangered fish are now being consumed by non-endangered birds with the willing assistance of the Fish and Wildlife Service.

We submit that this is a paradigm of dysfunction. As a matter of fundamental science, a protected young salmon that is eaten alive by a bird is not going to come back to Idaho to spawn.

But our prospective is more focused. At the same time that Fish and Wildlife is telling us that saving 640,000 listed fish will do nothing to recover these endangered species, the federal government is assessing how much Idaho water is needed to seemingly make fish migration easier. The answer to this question goes to the very life blood of our state's agricultural economy in the Upper Snake River Basin.

Our initial reaction is how dare – how dare the federal government tell Idaho and the world that preventing the outright slaughter of hundreds of thousands of endangered young salmon in the Columbia River estuary will have no impact on the problem, and then in the same breath tell us that more water from our state is needed to get the fish out to sea? We appreciate the committee's brief indulgence for this moment of righteous indignation.

Notwithstanding the current position of Fish and Wildlife on predator control, we shudder to think of what the federal government would do to the unfortunate soul on a rafting trip who accidentally floats his boat over a salmon spawning bed during the height of their reproductive season. I wonder if he could use Fish and Wildlife's current position on Caspian terns as a legal defense?

I use this example to highlight the contributions from all of the stakeholders that must occur in order for there to be any chance of progress in salmon recovery. With this, I will quickly move on to our perspective on the other Hs.

B. Habitat

Our perspective on habitat improvement is that the Endangered Species Act, as currently implemented, provides no safe harbors if private landowners voluntarily improve conditions for salmon. Many of our stakeholders in this process would just as soon take their chances on becoming ensnared in the ESA's "take" prohibition under section 9 than voluntarily undertake habitat improvement projects.

But we also understand that we can make important habitat improvement in Idaho. We are committed to identifying things we can do immediately, such as diversion screening and water quality improvement, in order to make things better for fish in Idaho.

On the other hand, as we move forward on these things, we expect that the region will look seriously at predator control and improvement in the estuary conditions.

C. Harvest

Idaho continues to be perplexed that wild fish, listed under the Endangered Species Act, can be subjected to a regulated harvest at all. Can you imagine the

hue and cry if the government suddenly declared a "harvest" season on the grizzly bear?

We are sensitive to the industries in the Pacific Northwest that depend on a yearly salmon harvest, and we are similarly mindful of the harvest rights possessed by Native American tribes through treaties with our federal government.

Idaho, as with other states in the region, is committed to the process of discussing harvest allotment through the *United States v. Oregon* litigation. This is one area where collaboration by all of the region is ongoing and should continue.

D. Hatcheries

The hatchery arena has a symbiotic relationship with harvest allocation, and Idaho generally supports scientifically-based hatchery programs.

In the case of captive brood stock hatcheries, this remains a program of vital and important investment to our state.

As a means of supplementation, the hatcheries in our state provide our sportsmen an opportunity for a fishing season and are an excellent management tool while we rebuild our wild stocks.

E. Hydropower

From Governor Kempthorne's perspective, the debate over dam breaching will continue as long as reasonable scientists differ over the data. And even if the science was clear today – and it is not - it would take at least a decade of political debate on Capitol Hill before they are removed.

The costs of dam removal could be as high as $1 billion, and, by the Corps own calculation, it could be several years before the silt and debris left behind the dams becomes manageable enough to provide any benefit to the fish. We are left with the unsettling impression that with such political and scientific controversy ahead in the next 20-25 years, the game could be lost before it has even started.

Accordingly, until we have clear evidence that the salmon can expect immediate improvement if the dams are removed, Idaho is opposed to taking on the risks to our Port of Lewiston and Idaho agricultural economy.

But this perspective does not end the "to do" list for the dams. During his tenure as a United States Senator, Governor Kempthorne was committed to investing in dam improvements while the science continues to be debated.

At an irreducible minimum, the best and brightest minds in the federal government and the states should be dedicated to making fish passage at the dams better so that the fish receive the benefits of the finest technology our nation has to offer.

Idaho supports minimum gap runner turbine technology in order to improve the reasonable accommodation that must be made for the regions' hydropower needs and the salmon migration. This technology is being installed at Bonneville Dam and the preliminary results have indicated increased fish survivability.

Likewise, fish collectors, fish ladders, and bypass systems have suffered from technological neglect while the controversy over the existence of the dams has raged onward. This must end immediately, because the losers in the failure to make capital improvements in these structures are the salmon.

Finally, at the risk of sounding repetitive, we must put on the record our position about augmented Snake River flows as a benefit to out-migrating juvenile salmon. At Governor Kempthorne's direction, our Department of Water Resources has studied the issue extensively in cooperation with our Department of Fish and Game. They have determined that based on the current flow-survival data developed by NMFS, there is no basis for NMFS concluding that early or late summer flows from the Upper Snake provide significant biological benefits for out-migrating juvenile salmon.

Nonetheless, our State Legislature just enacted and the Governor signed a one year authorization for the Bureau of Reclamation to access 427,000 acre feet of Idaho water for flow augmentation purposes. This good faith gesture should be recognized as our willingness to continue to participate in a regional solution.

IV. Conclusion

Governor Kempthorne appreciates the opportunity to present his perspective on these important issues today, and we look forward to the challenging work ahead for all of us in the region.

Idaho is optimistic that the state and regional stakeholders will join together and empower themselves throughout this process. At the end of the day, the best solutions are those that are owned by the participants rather than those that are imposed by edict.

Thank you.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Bogert. The Chair recognizes Dr. Dan Roby for his testimony.

STATEMENT OF DR. DAN ROBY, ASSISTANT UNIT LEADER, OREGON COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT, OREGON STATE UNIVERSITY, DEPARTMENT OF FISHERIES AND WILDLIFE, CORVALLIS, OREGON

Dr. ROBY. Good afternoon, Madame Chair and members of the sub-committee. My name is Dan Roby and I am testifying regarding the issue of Caspian tern predation on juvenile salmonids in the Columbia River estuary. I am an Associate Professor in the Department of Fisheries and Wildlife at Oregon State University and the Assistant Unit Leader for the Oregon Cooperative Fish and Wildlife Research Unit, which is part of the U.S. Geological Survey.

For the last 3 years I have been the Principal Investigator for a research project entitled "Avian Predation on Juvenile Salmonids in the lower Columbia River." this project was initially funded jointly by the U.S. Army Corps of Engineers and the Bonneville Power Administration but it is now funded solely by BPA.

The research has been carried out cooperatively by Columbia River Inter-Tribal Fish Commission and Oregon State University. My colleagues and graduate students; Ken Collis, David Craig, Don Lyons, Stephanie Adamany and Jessica Adkins deserve much of the credit for this study. I am testifying today in my capacity as a research biologist with no management authority or responsibility on this issue.

To briefly summarize our previous research results, we found that the largest Caspian tern colony in the world resides on a dredge material disposal island in the Columbia River estuary called Rice Island.

This breeding colony has grown substantially in the last decade and has recently been the nesting site for over 16,000 terns. The nesting period of this species generally coincides with the period of juvenile salmonid out-migration in the Columbia River estuary. Our data indicated the Caspian terns were most reliant on juvenile salmonids as a food source, amounting to about 75 percent of food items in 1997, 1998, and 1999.

We used a bioenergetics model to estimate the numbers of juvenile salmonids consumed by the Rice Island Caspian tern colony in 1997 and 1998. In 1997, we estimated between six and 25 million juvenile salmonids were consumed by Caspian terns, or approximately six to 25 percent of the estimated 100 million out-migrating smolts that reached the estuary. In 1998 the estimated number of juvenile salmon consumed by Rice Island Caspian terns was seven to 15 million or approximately eight to 16 percent of the estimated 95 million out-migrating smolts that reached the estuary in 1998.

Preliminary analysis of diet data from 1999 indicates that smolt consumption by terns was similar to 1998.

The magnitude of Caspian tern predation on juvenile salmonids has been cause for considerable surprise and concern. We think there are four observations that relate to the current situation. First, the Columbia River estuary has experienced declines of forage fish stocks that would, under other circumstances, provide alternative prey for fish-eating birds such as terns.

Second, most of the salmonids consumed by Caspian terns at the Rice Island colony were raised in hatcheries, and the proportion of hatchery raised smolts in the diet of terns exceeds what would be expected based on availability. This suggested hatchery-raised smolts are especially vulnerable to tern predation and may attract foraging terns.

Third, juvenile salmonids that survive the out-migration to the estuary must negotiate dams, slack water impoundments, and other obstacles in their efforts to reach the sea. The cumulative stress associated with this migration likely enhances their vulnerability to tern predation in the estuary.

Finally, the Caspian tern colony on Rice Island is one of only two known colonies of its kind along the coast of Oregon and Washington, and Rice Island represents one of the few if not the only suitable nesting habitat for this species along the coast of the Pacific Northwest. This exceptionally large breeding colony has coalesced at Rice Island because there are few other options for Caspian terns searching for a colony site.

One of our research objectives for the 1999 field season was to test the feasibility of using restoration of former Caspian tern colonies to reduce predation on smolts in the Columbia River estuary. Specifically, we wanted to test the hypothesis that relocating the tern colony on Rice Island to a previous colony site on East Sand Island would result in a significant reduction in tern predation on juvenile salmonids. East Sand Island is about 13 miles down river from Rice Island and five miles up river of the mouth of the Columbia River.

A greater diversity of forage fishes that are thought to be available to fish-eating birds in the vicinity of East Sand Island compared to Rice Island. Attempts to attract Caspian terns to nest at East Sand Island using habitat restoration, tern decoys, and audio play-back systems were successful.

In 1999, 1,400 pairs of Caspian terns attempted to nest on East Sand Island. Most importantly, Caspian terns that nested East Sand Island consumed only 44 percent juvenile salmonids, which is 41 percent fewer salmonids than were consumed by terns nesting on Rice Island.

These research results suggested relocating the Caspian tern colony from Rice Island to East Sand Island, near the mouth of the river is a feasible short-term management option for reducing tern predation on juvenile salmonids.

This proposed management action has the potential to save two to seven million smolts that have reached the estuary in 2000 and would have otherwise have been consumed by terns. Longer term management may include attracting portions of the current Rice Island Caspian tern population to nest outside the Columbia River estuary.

I'm out of time so I will skip to the take home message.

Management action focusing on tern predation in the estuary may be an effective and efficient component of a comprehensive plan to restore salmon to the Columbia River Basin. There is consensus support within the Interagency Caspian Tern Working Group to pursue relocation of the tern colony in 2000. There is currently, however, as you've heard, a temporary restraining order

that prohibits hazing of Caspian terns attempting to nest at Rice Island, and unless the TRO is lifted soon, Rice Island may again be the site of a large Caspian tern colony in 2000.

The Working Group also is committed to restoring former Caspian tern colonies at sites outside the Columbia River estuary, so that the very large population in the Columbia River estuary can be redistributed over a number of smaller colonies throughout the Pacific Northwest. However, funding for this management activity or for the continued monitoring and evaluation of this problem has not been formally addressed.

Thank you, Madame Chair, for the opportunity to present this testimony.

[The prepared statement of Dr. Roby follows:]

STATEMENT OF
DANIEL D. ROBY, Ph.D.
ASSISTANT UNIT LEADER,
OREGON COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT,
U.S. GEOLOGICAL SURVEY,
U.S. DEPARTMENT OF THE INTERIOR

BEFORE THE

SUBCOMMITTEE ON WATER AND POWER
COMMITTEE ON RESOURCES
UNITED STATES HOUSE OF REPRESENTATIVES

April 27, 2000

Good morning Mr. Chairman and Members of the Subcommittee. My name is Dan Roby, and I am testifying regarding the issue of Caspian tern predation on juvenile salmonids in the Columbia River estuary. I am an Associate Professor in the Department of Fisheries and Wildlife at Oregon State University and the Assistant Unit Leader for the Oregon Cooperative Fish and Wildlife Research Unit, which is part of the U.S. Geological Survey.

For the last three years I have been the Principal Investigator for the research project entitled "Avian Predation on Juvenile Salmonids in the Lower Columbia River." This project was initially funded jointly by the U.S. Army Corps of Engineers and the Bonneville Power Administration (BPA), but it is now funded solely by BPA. The research has been carried out cooperatively between the Columbia River Inter-Tribal Fish Commission and Oregon State University. My colleagues and graduate students, Ken Collis, David Craig, Don Lyons, Stephanie Adamany and Jessica Adkins, deserve much of the credit for this study. I am testifying today in my capacity as a research biologist with no management authority or responsibility on this issue.

To briefly summarize our previous research results, we found that the largest Caspian tern colony in the world resides on a dredge material disposal island in the Columbia River estuary, called Rice Island. This island has recently been the nesting site for over 16,000 terns, and the breeding colony has grown substantially in the last decade. The nesting period for this species generally

coincides with the period of juvenile salmonid out-migration in the Columbia River estuary. Our data indicated that Caspian terns were most reliant on juvenile salmonids as a food source, amounting to about 75% of food items in 1997, 1998, and 1999.

Over 40,000 salmonid smolt PIT tags were recovered on the Rice Island Caspian tern colony that have been deposited there over the last 10 years. The recovered PIT tags indicate that steelhead smolts were consumed in greater proportion to availability than other salmonid species, and that juvenile salmonids of hatchery origin were consumed in greater proportion to availability than wild smolts.

We used a bioenergetics model to estimate the numbers of juvenile salmonids consumed by the Rice Island Caspian tern colony in 1997 and 1998. We estimated that between 6 and 25 million juvenile salmonids were consumed by Caspian terns, or approximately 6 to 25 % of the estimated 100 million out-migrating smolts that reached the estuary in 1997. In 1998 the estimated number of juvenile salmonids consumed by Rice Island Caspian terns was 7 - 15 million, or approximately 8 – 16% of the estimated 95 million out-migrating smolts that reached the estuary in 1998. Preliminary analysis of diet data from 1999 indicates that smolt consumption by terns was similar to 1998.

The magnitude of Caspian tern predation on juvenile salmonids has been cause for considerable surprise and concern, and drew an immediate and strong reaction from fisheries managers. How could losses of smolts to birds, especially to one species of fish-eating bird nesting at one colony in the Columbia River estuary, be so high? Is this level of avian predation the norm, or does it represent an aberrant situation reflecting a highly perturbed ecosystem? We think there are four observations that relate to the current situation. First, the Columbia River estuary has experienced declines of forage fish stocks that would, under other circumstances, provide alternative prey for fish-eating birds such as terns. Second, most of the salmonids consumed by Caspian terns at the Rice Island colony were raised in hatcheries, and the proportion of hatchery-raised smolts in the diet of terns exceeds what would be expected based on availability. This suggests that hatchery-raised smolts are especially vulnerable to tern predation, and may attract foraging terns. Third, juvenile salmonids that survive the out-migration to the estuary must negotiate dams, slack water impoundments, and other obstacles in their efforts to reach the sea. The cumulative stress associated with this migration likely enhances their vulnerability to tern predation. Finally, the Caspian tern colony on Rice Island is one of only two known colonies of its kind along the coast of Oregon and Washington, and Rice Island represents one of the few, if not the only suitable nesting habitat for this species along the coast of the Pacific Northwest.

This colony has coalesced at Rice Island because there are few other options for Caspian terns searching for a colony site. There is substantial pressure to initiate management immediately in order to mitigate the impact of Caspian tern predation on smolt survival.

One of our research objectives for the 1999 field season was to test the feasibility of using restoration of former Caspian tern colonies to reduce predation on smolts in the Columbia River estuary. Specifically, we wanted to test the hypothesis that relocating the tern colony on Rice Island to a previous colony site on East Sand Island would result in a significant reduction in tern predation on juvenile salmonids. East Sand Island is about 13 miles down-river from Rice Island and five miles up-river of the mouth of the Columbia River. A greater diversity of forage fishes are thought to be available to fish-eating birds in the vicinity of East Sand Island compared to Rice Island. Attempts to attract Caspian terns to nest at East Sand Island using habitat restoration, tern decoys, and audio playback systems were successful. In 1999, 1,400 pairs of Caspian terns attempted to nest on East Sand Island, and average nesting success was 1.2 young raised per nesting pair (1,600 – 1,700 young terns fledged). Caspian terns that nested on East Sand Island consumed 41% fewer juvenile salmonids than terns nesting on Rice Island (44% and 75% of prey items consumed, respectively).

These research results suggest that relocating the Caspian tern colony from Rice Island to East Sand Island near the mouth of the river is a feasible short-term management option for reducing tern predation on juvenile salmonids. This proposed management action has the potential to save 3 - 12 million smolts that have reached the estuary and would otherwise have been consumed by terns. Longer-term management may include attracting portions of the current Rice Island Caspian tern population to nest outside the Columbia River estuary. Potential locations include former Caspian tern colony sites in Willapa Bay, Grays Harbor, and Puget Sound in the State of Washington, colonies which no longer exist because of human activities. There is evidence that these former colonies have coalesced to form the very large Rice Island colony. Re-establishing these colonies may provide considerable benefits for salmon restoration in the Columbia River Basin and reduce the vulnerability of the tern population to localized catastrophic events. An attempt to restore a Caspian tern colony to Grays Harbor in 2000 was thwarted when local opposition forced state resource management agencies in Washington to withdraw their active support of the restoration effort.

Management action focusing on tern predation in the estuary may be an effective and efficient component of a comprehensive plan to restore salmon to the Columbia River Basin. There is consensus support within the Interagency Caspian Tern Working Group to pursue relocation of

the tern colony in 2000. The Working Group also is committed to restoring former Caspian tern colonies at sites outside the Columbia River estuary, so that the very large population in the Columbia River estuary can be redistributed over a number of smaller colonies throughout the Pacific Northwest. However, funding for this management activity or for the continued monitoring and evaluation of this problem has not been formally addressed.

Thank you, Mr. Chairman, for the opportunity to present this testimony. I will be pleased to answer any questions the Subcommittee might have.

Mrs. CHENOWETH-HAGE. Thank you, Dr. Roby, and the Chair recognizes Mr. Hagerty for his testimony.

STATEMENT OF DEAN HAGERTY, COMMISSIONER AND PRESIDENT, PUBLIC UTILITY DISTRICT OF GRANT COUNTY, EPHRATA, WASHINGTON

Mr. HAGERTY. My name is Dean Hagerty and I'm appearing before you today as the Chairman of a five-member elected commission for Grant County Public Utility District in Ephrata, Washington. I appreciate this opportunity to address the Committee on what it and has been an important question in this part of the United States; how do we preserve and protect the salmon runs in our rivers and streams.

Grant County PUD is a publically owned utility which operates two multi-purpose dams, Priest Rapids and Wannapum located in the mainstream of the Columbia River. These facilities known as the Priest Rapids Project provide almost 100 billion kilowatts of energy during an average year.

The health and abundance of salmon that inhabit the Columbia Basin has long been a concern of Grant County PUD. Each year Grant County PUD and it customers invest nearly 50 million dollars in salmon protection and enhancement. We operate successful hatchery programs and hearing these other folks on the Rice Island thing, we know that our hatchery program, a good portion of our smolt that go down there end up on the island because the pit tags that we put in can be found on the island, and have initiated some of the most innovative salmon production programs in the region.

We are particularly proud of the part we have played to keep the population of fall and summer Chinook among the heathiest in the Columbia Basin and have had great success using the collaborative approach to solving salmon problems. Their turnaround began in late 80's through the cooperative efforts of all operators of the Mid-Columbia hydro electric project, working in concert with concerned Federal and State agencies and Indian tribes. This unique collaboration is known as the Vernita Bar Agreement and is widely recognized as a model for others to follow, a chart of results of the Vernita Bar Agreement are before you here. Congressman Hastings had an opportunity to visit our hatchery recently.

Recently, Grant County PUD led another collaborative effort to protect the newly hatched fall chinook in the Hanford Reach from being stranded or dewatered in shoreline pools when the river level fluctuates. Grant County PUD did not wait for someone else to act or deny the problem, rather we assembled the Mid-Columbia operators, Federal and State protection agencies, and Indian tribes to solve the problem. In all of Grant County PUD silent production and enhancement efforts, a cardial rule has always reigned good credible science must lead the way.

In contrast the debate surrounding the salmon-related issues on the Snake River is contentious adversarial and adrift in poor and often conflicting science. Grant County PUD does not support the breaching of the Snake River dams. This fragmentation has led to polarized positions which have not advanced solutions for the salmon. We should be looking for solutions that make sense, are economically acceptable and get results rather than entertaining the

ideas for experiments that are risky and premature, such as dam breaching.

As an elected official I encourage you and the region to work toward solutions that balance the needs of our multiple purpose river system and make good use of our resources, both financially and natural in the process. Do exactly what you are doing, look for ideas from the people in the region. Then work with them to make it happen. That's what makes all of us good stewards of our natural resource. The northwest can save the salmon while maintaining a healthy environment and strong economy, but we can only do that if salmon recovery solutions are No. 1, reasonable, No. 2, balanced, and No. 3, fair, and No. 4 involve all parties concerned and five and most importantly are grounded in good credible science. Thank you.

[The prepared statement of Mr. Hagerty follows:]

Statement of Dean Hagerty
President
Board of Commissioners
Grant County Public Utility District #2
Ephrata, WA

Before The

United States Congress
House of Representatives
House Resources Committee

April 27, 2000
Pasco, WA

My name is Dean Hagerty and I am the President of the Board of Commissioners of Grant County Public utility District in Ephrata, WA.

I appreciate the opportunity to address the Sub-committee on what is the most important issue in this part of the United States: How do we preserve and protect the salmon runs in our rivers and streams?

Accepting our share of the responsibility

Grant County PUD is a publicly owned utility which operates two multi-purpose dams, Priest Rapids and Wanapum, located on the mainstem Columbia River. These facilities, known as the Priest Rapids Project, provide almost 10 billion-kilowatt hours of energy during an average year, or more than enough electricity every year to supply the entire Seattle area.

The health and abundance of salmon that inhabit the Columbia Basin have long been a concern for Grant County PUD. For decades we have been working to protect salmon runs that pass through the stretch of river affected by the Priest Rapids Project.

Each year, Grant County PUD, and its customers, invest nearly $50 million in salmon protection and enhancement. For example, water that could be run through the turbines to produce electricity has been diverted through spillways to help juvenile salmon migrate downstream. We operate successful hatchery programs, and have initiated some of the most innovative salmon protection programs in the region.

Collaborative efforts lead to success

We are particularly proud of the part we have played to keep the populations of fall and summer Chinook among the healthiest in the Columbia Basin, and have had great success using the "collaborative" approach to solving salmon problems.

It was not long ago that the fall Chinook returning to the Hanford Reach, which is the longest undammed section of the Columbia River above Bonneville Dam, were among the most depleted of Columbia River stocks. Their turnaround began in the late 1980s through the cooperative efforts of all operators of the mid-Columbia hydroelectric projects working in concert with concerned federal and state agencies and Indian Tribes. This unique collaboration is known as the Vernita Bar Agreement, and is widely recognized as a model for others to follow.

Protection of fall Chinook spawning areas was complicated because there are seven federal and publicly owned hydroelectric dams with which we must coordinate. By working together, the hydro operators and fishery agencies and tribes were able to work out a solution that was acceptable to all parties. Dam operators agreed to maintain water levels to protect spawning areas throughout the winter.

Be proactive and take the initiative

Recently, Grant County PUD led another collaborative effort to protect newly hatched fall Chinook in the Hanford Reach from being "stranded" or "de-watered" in shoreline pools when river levels fluctuate. In past years, the river level below the Priest Rapids Project has fluctuated as much as 12 feet in a day, as hydro operators respond rapidly to energy demands.

Grant County PUD did not wait for someone else to act, or deny the problem. Rather we assembled the mid-Columbia operators, federal and state protection agencies and Indian Tribes (the same group we have been working with successfully through the years) to work out a solution to the stranding problem.

Let science lead the way, make politics follow

In all of Grant County PUD's salmon protection and enhancement efforts a cardinal rule has reigned – good, credible science must lead the way. Although great strides have been made in our understanding salmon migration through the river system, there continues to be major uncertainties that can only be answered through continued research and careful monitoring. We constantly make adjustments to our on-going programs as new information becomes available.

In contrast, the debate surrounding the salmon-related issues on the Snake River is contentious, adversarial, and adrift in poor (and often conflicting) science. Grant County PUD does not support the breaching of the Snake River Dams. This fragmentation has

led to polarized positions, which have not advanced solutions for the salmon. Sounding the alarm about the Northwest salmon problem is easy, but developing sound solutions that will really help salmon has proven to be much more difficult. Sorting through potential recovery efforts is a difficult and complex task, which can fall victim to political gamesmanship, shot-in-the-dark legislation, and unproductive litigation.

Establish clear priorities and use common sense

The decline of salmon has a number of causes, and to be successful, salmon recovery efforts must be comprehensive and address the salmon's entire life cycle. A regional solution for the salmon must address all causes. We have also learned that every good idea is not feasible and no single solution will solve the problem. Clear priorities must be established to get the biggest benefit for the highest priority at the least cost.

We have learned from our experiences

Hydropower operators have to balance power production, flood control protection, recreation use, irrigation needs and unpredictable runoffs from Mother Nature with the need to provide protection for salmon. Managing the river flows to meet all these important demands is a real juggling act, but we firmly believe that by working together we can protect salmon, both now and for future generations.

We should be looking for solutions that make sense, are economically acceptable and get results rather than entertaining ideas for experiments that are risky and premature – like dam breaching. As an elected official, I encourage you and the region to work toward solutions that balance the needs of our multi-purpose river system and make good use of our resources, both financial and natural, in the process. Do exactly what you're doing – look for ideas from people in the region, then work with them to make it happen. That's what makes us all good stewards of our natural resources. Plus, that's what makes good public policy.

The Northwest can save the salmon while maintaining a healthy environment and strong economy, but we can only do that if salmon recovery solutions are:

Reasonable
Balanced,
Fair,
Involve all parties,
and (most importantly) are grounded in good, credible science.

This approach will be the basis for making sound public policy decisions that benefit everyone who lives in the Northwest, including the salmon.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Hagerty. The Chair recognizes Mr. Ilgenfritz and thank you very much.

STATEMENT OF RIC ILGENFRITZ, COLUMBIA BASIN COORDINATOR, NATIONAL MARINE FISHERIES SERVICE, NOAA

Mr. ILGENFRITZ. I would like to thank the Chair and the members of the Subcommittee. My name is Ric Ilgenfritz. I'm the Columbia Basin Coordinator for the National Marine Fisheries Service, which essentially means I am the program manager for trying to figure out how we implement the Endangered Species Act throughout the Basin.

I would like to begin by apologizing and taking responsibility for the situation in which the Committee finds itself with respect to the materials that we've submitted for the record, and just add to that the Fisheries Service values its relationship with the Committee. Our ability to do our job well depends on it. If we don't have it or if we are in danger of losing it then it's on to us to do something about that. So I apologize for that situation. I'll work with your staff to make sure you have what you need when you need it.

I have submitted written testimony for the record. In the interest of brevity try to hit the high points and provide a little bit of information about the products that we're developing and the environmental circumstances we find ourselves in right now which these products will seek to address. Then I'll talk a little bit about the science that we've been utilizing as part of that effort.

First and foremost, we are working to develop a new biological opinion for Columbia River hydro system. We have working with the Army Corps of Engineers, the Bonneville Power Administration, the Bureau of Reclamation, the Fish and Wildlife Service and other Federal agencies to develop that document. The scope of that document will encompass all 12 listed ESUs in the Basin. The jeopardy standard that we will use in that document will be the same as the jeopardy standard that we utilized in 1995, which is to say the actions we will be looking for should have a high likelihood survival and a moderate-to-high likelihood of recovery of the affected species.

Our current schedule for finalizing and issuing that BO is to circulate a draft on or about May 22nd to the action agencies and the States and the tribes and go through a period of technical review and try to finalize it and issue it by the first week of July. I will be happy to answer any questions on that during the Q&A period, but I would like to turn briefly to the All-H paper, which is the second product we are developing.

The All-H paper is essentially a conceptual recovery strategy designed to look at all the human impacts across all the H's that affect these species.

We've utilized that approach for a couple of reasons; one, as a coordinating mechanism for the Federal Government to try to get all nine agencies involved to essentially speak with one voice and look at the data and issues through a single prism. We've also tried to use it as a tool for engaging the public. We've had 15 public hearings at which 10,000 people attended. We took something like 1500 oral comments and about sixty thousand oral comments.

We tried to use the document there both to engage and inform the public about what the choices are, ranging from incremental improvements on the status quo to moderate improvements to more aggressive improvements across all the life stages.

Our intent is to revise that document and issue it on the same timeframe as the biological opinion so that it can provide the broader recovery context into which the biological opinion will fit. So the hydro options we're seeking in the BO will be seen in the context of what everybody else will be contributing to the solution.

Very briefly let me talk a little bit about the science we've been using. Two primary tools we've used are called PATH and CRI. You've probably heard of them. PATH is the Process for Analyzing and Testing Hypotheses. It was the basis of the draft biological analysis we provided to the Corps for the Snake River EIS last spring.

The second tool we've been utilizing is the Cumulative Risk Initiative which is a tool we developed at the beginning of last year partially in response to comments we received on the PATH process and partially in response to determination that we needed to focus more broadly than just the Snake River.

The latest analyses from the CRI process are in. I'll give you a very brief summary of that and then move on. In general what it's showing us is that the stocks in the upper Columbia and the upper Snake are the ones that are in the poorest shape. Steelhead more or less throughout its range in the upper Columbia and Mid-Columbia and Snake River are also in very poor shape.

Looking briefly at the numbers, we are calculating, 100-year extinction risks for those stocks and in the interest of time I'll just skip over those. In addition to providing the extinction risk estimates, CRI also gives us estimates of productivity improvements we need to achieve in order to put all those stocks on a recovery pathway. That's very helpful to us when we are sitting here trying to develop performance standards for the hydro system and every other life stage.

I'm going to stop there on the All-H and say a brief word about marine mammal predation. We are conducting ongoing studies of marine mammal predation in the Columbia River estuary. We have preliminary data that is giving us a sense of what the levels of predation. We have been collecting data since 1995. We've analyzed data from 1995,'96,'97. What it's showing us is a range of possible predation on adult returning populations of less than 1 percent up to about three or 4 percent.

The data aren't particularly useful as a management tool yet, because we haven't refined our ability to determine what all that means. Our next steps there are to analyze our 1998 and 1999 data and take our research to the next step to improve our precision and try interpret exactly what it means. Are they eating primarily hatchery fish, wild fish, what have you?

So with that I will conclude. By way of conclusion, I want to introduce the gentleman to my left, Dr. Phil Levin. He's from our Northwest Fisheries Science Center, and he's a member of the CRI team. He is not here to provide testimony but if you want to draw on his expertise as a member of the team then he will be available to the Committee to answer questions. Thank you very much.

[The prepared statement of Mr. Ilgenfritz follows:]

Testimony of Ric Ilgenfritz, Columbia Basin Coordinator
National Marine Fisheries Service – Northwest Region
National Oceanic and Atmospheric Administration
U.S. Department of Commerce
before the
Committee on Resources
U.S. House of Representatives
in
Pasco, Washington
April 27, 2000

Introduction
Good afternoon, Mr. Chairman and members of the Committee. I appreciate the opportunity to be here today, and I commend the Committee for taking the time to examine the critical and complex choices facing the Northwest region regarding salmon recovery in the Columbia Basin.

The National Marine Fisheries Service (NMFS) is engaged in two efforts at present to address salmon recovery policy as it applies for the Federal Columbia River Power System (FCRPS). One is a new biological opinion (BO) covering operations and configuration of the system under the Endangered Species Act (ESA). The other is the All-H Paper, an elective effort by the Federal agencies to engage the people of the region in a discussion over long-term choices for recovering salmon Basin-wide.

I will first give the Subcommittee an update on the status of our work to complete a new BO for the FCRPS, and then I will describe the All-H Paper, and how the two efforts complement each other.

The Biological Opinion
Section 7 of the Endangered Species Act requires Federal agencies to consult with the Secretary of Commerce to ensure that their actions are not likely to jeopardize the continued existence of threatened or endangered salmon and steelhead, or their habitats. To inform this consultation, the so-called "action" agencies must conduct a biological assessment (BA) of their prospective actions to determine the likely impact of such actions on listed species. The BA forms the basis of inter-agency consultation under the ESA and the subsequent BO rendered by NMFS.

On December 21, 1999, NMFS received a BA from Bonneville Power Administration, the U.S. Army Corps of Engineers (Corps), and the Bureau of Reclamation outlining proposed operation and configuration of the FCRPS and assessing the likely impacts on listed salmon and other fish

and wildlife species. We are now developing a new BO for the system to replace the one completed in 1995.

The scope of the new BO covers the entire FCRPS and all 12 Evolutionarily Significant Units (ESUs) within the Columbia Basin. It will address operation of the system, including flow and spill. It will address system configuration, including a dam breaching decision, passage improvements at each project, and operation of the transportation system. It will establish performance standards for the hydro system based upon productivity improvements needed by each listed ESU to avoid extinction and achieve a recovery trajectory. A decision has not yet been made on the duration of the BO; it could be anywhere from two to ten years.

Our jeopardy standard will be the same as it was in 1995 but will be applied to additional at risk populations. That is, we must make a determination that proposed agency actions, or reasonable and prudent alternatives to such actions, provide a high likelihood of survival and a moderate to high likelihood of recovery.

NMFS and the Action Agencies have been working in an inter-agency group since Fall 1999. That group is composed of senior staff from each agency to begin consultation under ESA. In addition, on January 26, 2000, NMFS sent a letter to each of the five Northwest states and thirteen Native American Tribes inviting them to participate in the consultation process. Since then, the work group has been meeting regularly, both by itself and with the states and tribes, to lay the ground work for, and develop the key elements of, a new BO covering future operations of the FCRPS. Draft materials developed through the Federal work group process were recently shared with same states and tribes, including hydrologic and biological analyses of the effects of certain flow and spill alternatives, an analysis of the potential effects of those same operations on the transmission system, and an initial description of the information being developed to support the establishment and use of performance standards (mailings on 3/20/00 and 3/24/00).

There have been numerous work group meetings for interagency consultation, and there have also been a number of meetings between the work group and the affected states and tribes. These are the meetings during which the key technical elements of the biological opinion are being developed, analyzed, discussed, and refined. In short, this is where the real work is done. We have endeavored to make this process as open as possible by making technical documents and schedule information widely available, and by inviting state and tribal governments to participate.

Our current schedule for finalizing the BO is as follows: NMFS expects to submit the draft BO for technical review and comment to the states and tribes by May 22. This is not a formal public review process. The point of the review by states and tribes with technical expertise in this area is to ensure that NMFS is including and appropriately applying the best available scientific information. The BO will be revised and finalized by mid-July.

We had hoped to release the BO sooner, in advance of the spring migration of juvenile salmon. There are several reasons for the delay. First and foremost, we want to be certain our analysis is complete. The biology is a major factor informing our decision, and we want to make sure it withstands independent review. Secondly, we are applying a new tool in our efforts to re-build salmon and steelhead populations: performance standards. We think it is critical that we have an effective tool for setting goals and measuring progress. Performance standards have tremendous promise in this regard, but the technical challenge in applying them to the salmon life cycle is extremely rigorous and time consuming. Finally, the logistical demands of conducting public hearings on the All-H Paper and consulting with 13 tribes are considerable. We want to make sure we complete these consultations prior to entering a final decision-making mode. Until the BO is finalized, we will continue to operate the system pursuant to the 1995 BO.

I will now turn to the All-H Paper.

The All-H Paper: Context and Purpose

The purpose of the Federal caucus and the All-H Paper is to bring all Federal agencies with legal responsibility for salmon under one roof, look at the whole salmon life cycle, and present conceptual recovery strategies based on actions within each life stage. In doing so, we have engaged the public on the key choices facing the region.

I want to emphasize the importance we have placed on public involvement. I have attached to my statement a preliminary report summarizing our efforts over the past year to engage the region in dialogue, but I want to summarize the high points here.

During February and March, the Federal caucus held 15 public meetings throughout the region to give the public an opportunity to comment on, and participate in, Federal policy development on salmon recovery. Nearly 10,000 people attended the hearings, and we took an estimated 1500 oral comments. We also have received an estimated 60,000 written comments.

Prior to the public hearings, our staff engaged in dozens of stakeholder meetings with groups, individuals, and government, ranging the spectrum of economic and social interests of the region. In addition, the Northwest Fisheries Science Center has conducted seven open workshops on the Cumulative Risk Initiative (CRI), beginning with the earliest development of its application to salmon, and concluding just last week with a meeting of scientists from the states. This science has been developed out in the open, for all to see.

We contacted nearly every daily newspaper in the region last fall prior to release of the All-H Paper, and then again during the public hearings. We also conducted a one-day public information meeting in Spokane to disseminate information about both the paper itself and the public hearings to follow.

We have been criticized for years for conducting Section 7 consultations behind closed doors; it is true that Section 7 does not require a public involvement process as traditionally set forth in the Administrative Procedure Act. Given the magnitude of the issues we are considering, we felt it was very important to develop a means of engaging the public as we formulate the BO. Our hope is that through the All-H process, we can formulate approaches in collaboration with the region that are scientifically credible, legally defensible, implementable and acceptable to those affected. With that in mind, I will turn now to the basic content and findings of the draft All-H Paper.

Goals and Objectives

The All-H Paper contains five basic goals:

1) conserve species by avoiding extinction and fostering recovery of ESA-listed fish and wildlife;
2) conserve ecosystems on which salmon and steelhead depend;
3) assure tribal fishing rights consistent with United States' treaty and trust obligations;
4) balance the needs of other species; and
5) minimize adverse effects on humans.

In order to be sure we are making progress toward these goals, the agencies are committed to developing workable performance standards and measures. Such measures will enable us to monitor progress, adapt our approaches when necessary, and capitalize on success. They should also provide the public with a useful means of tracking results.

The Science

The most up-to-date scientific tool used by the agencies in this paper is the CRI. NMFS also used the Plan for Analyzing and Testing Hypotheses, or PATH.

PATH was the primary tool NMFS used for its first draft biological appendix to the Corps' EIS. NMFS received substantial comment on its summary of PATH. NMFS heard concerns from the Independent Science Advisory Board that the PATH analyses were overly optimistic because they failed to take extinction risks into account, and that the PATH analyses focused on the hydropower system to the exclusion of other Hs. In response to these concerns, NMFS used CRI to analyze the risk of extinction and to provide a broader analysis of salmon life stages for the final appendix.

The CRI has three main components: it analyzes extinction risks for each ESU; it provides a sensitivity analysis to determine which salmon life stages are the best candidates for improvement; and it will provide a feasibility analysis for achieving survival improvements in the areas identified in the sensitivity analysis.

The draft paper, which we released last December 17th, contains findings for the Snake River salmon; we recently completed analyses for 11 of the 12 listed populations in the Columbia Basin. (The 12th has a population size too small to be analyzed.) The results are very helpful to our understanding of the status of these ESUs. In general, the analyses show that Upper Columbia ESUs and steelhead throughout its range are in the worst shape, but all the ESUs need action now to correct the trends.

We found extinction risks for all 12 Columbia Basin listed ESUs to be very high. On average, for Snake River spring/summer chinook salmon stocks, there is a 67 percent risk of extinction in 100 years. For fall chinook, the risk is 56 percent in 100 years. For steelhead, the risk is 100 percent in 100 years. For Upper Columbia chinook and steelhead, the risks are 90 percent and 100 percent, respectively. The extinction threshold used for these figures is absolute extinction, which is a total of one fish returning within one generation. These numbers are alarming and tell us that the status quo will lead to extinction for all upper river salmon and steelhead populations.

To reverse these trends and bring extinction risks to less than 5 percent over a 100 year period, we need to see, on average, a 9 percent improvement in population growth rate for Snake River spring/summer chinook; a 6 percent improvement in population growth rate for fall chinook; and approximately 10 percent improvement for steelhead. In the Upper Columbia, we need to see a 10 percent improvement for steelhead and a 16 percent improvement for spring chinook. These are very ambitious objectives.

The sensitivity analyses indicate where reducing mortality may be able to contribute to these improvements. For spring/summer chinook, major improvements in population growth rate may be possible in the first year of life, during freshwater rearing, and during the estuary and early ocean phase, because these are the two life stages where the species undergoes the greatest amount of mortality. This points to improving the quality of spawning and rearing habitat in the upper tributaries, where they spend the first year before entering the hydro system, as well as improving water quality and restoring productivity in the estuary. Dam breaching is likely to benefit this ESU, but as a single action, is unlikely to be sufficient to achieve recovery. There is little to be gained by restriction of harvest on these fish, which already experience a very low exploitation rate. The last commercial harvest on these fish was in the late 1960s.

For fall chinook, the same basic dynamic holds: the first year of life offers the greatest potential for improving population growth rates. In this case, the hydro system is a bigger factor. Fall chinook spawn in the main stem, enter the system almost right away, and then rear in the estuary before entering the ocean.

Dam breaching is likely to result in the needed improvements for fall chinook, because it would improve the quality of the migration corridor and likely open additional spawning habitat. Harvest constraints could have measurable benefits for these fish, because over 50 percent of them are harvested in the ocean and in the river. While harvest is not permitted directly on

Snake River fall chinook, the species intermingles with the healthy population of Hanford Reach chinook, which can withstand higher harvest rates.

Finally, the analysis for steelhead shows that major benefits to population growth are likely to be achieved by improving downstream survival of smolts, and upriver survival of adults. These findings point toward first year survivals, dam breaching and harvest constraints, respectively.

For Snake River stocks, the bottom lines appear to be that breaching by itself may not be sufficient to recover all the stocks, but neither is it clear we can achieve recovery by relying entirely on other measures.

The Options by "H"

The All-H Paper shows three options within each of the so-called "Hs," hydro, habitat, harvest, and hatcheries. For each H, the first option represents what might be considered the "status quo." Even these options represent an improvement over conditions in the recent past. That is because there have been significant improvements recently in all of the Hs. The other two options represent even greater improvements; the differences range in degree from moderate to aggressive improvements over the recent past.

Within habitat, the options are expressed as procedural approaches, because the nature and extent of habitat projects must be determined through a rigorous watershed assessment and prioritization effort. The first option, therefore, is premised upon a greater level of Federal coordination. This means coordinating the budgets and priorities of all the Federal agencies that conduct habitat-related programs in the region, in effect, getting the Federal house in order. The second option is taking the same basic approach, but bringing state and local habitat managers into the coordination and prioritization process on a collaborative basis. Third would be an aggressive regulatory approach spearheaded at the Federal, level relying primarily on enforcement authority provided in the Endangered Species Act and Clean Water Act.

For harvest, the options are presented as management actions. Option one is to keep commercial fisheries at their currently reduced levels, but allow them to increase over time as salmon runs improve (assuming they do). This approach would use an abundance-based management regime, with harvest rates increasing as runs increase. Option two is to fix fishery levels at their currently reduced rates for a period of years while populations rebuild. Option three is to reduce or eliminate fisheries altogether, a so-called "conservation fishery" level for a period of years until populations rebound.

In the hatchery area, the options are complementary toward the harvest options. Option one is to proceed with currently planned, incremental reforms to the hatchery system. These reforms are contemplated in a document recently produced by the Northwest Power Planning Council entitled "Artificial Production Review" and in NMFS Biological Opinions. Option two would apply conservation hatchery operations more aggressive to at-risk salmon populations, in effect putting even more listed populations on life support. Option three would increase the use of

conservation hatcheries while simultaneously reducing the use of traditional production hatcheries built in years past to "mitigate" for the hydro system.

Finally, for the hydro system, the options are as follows. The first option is called the current program. This option represents ongoing incremental improvements to the system in its current configuration, both in terms of capital improvements at the dams and operations. The second option is referred to as the aggressive program. This option essentially means speeding up the timetable for capital improvements at the dams and taking a more aggressive approach on operations, including more flow augmentation and spill over the dams. The third option is breaching the four Lower Snake River dams. In this option, the earthen portion of each lower Snake dam would be removed over a period of 7-8 years as described by the Corps.

These options are meant to reflect the broad policy choices within each area. They are not meant as specific management actions. How to apply these policies in specific cases and locations will have to be determined over a period of time.

Alternative Recovery Strategies

The alternatives are also intended to give examples of broad strategic choices for mixing and matching the options. The four alternatives in the All-H Paper reflect the fundamental approaches available. However, they are not the only possible combinations, and some raise legal and practical issues. Finally, none of these should be seen as a preferred alternative at this time. The whole purpose of these meetings is to seek public input before making any choices.

Alternative One emphasizes breaching. It would press ahead aggressively with breaching, while continuing with incremental improvements in the other Hs.

Alternative Two emphasizes harvest constraints. It would reduce fishing to conservation levels – which is to say little or no fishing at all – while incrementally improving hydro system survival and habitat programs, and moving ahead with conservation hatcheries for at-risk populations.

Alternative Three is called the "aggressive non-breach" approach. This package emphasizes habitat improvements in combination with fixed harvest rates, more conservation hatcheries, and incremental hydro system improvements.

Alternative Four is called maximum protection. In this scenario, the region would push forward aggressively on all fronts: breaching, harvest constraints, habitat regulation, and conservation hatcheries.

Conclusion

There is no silver bullet. There is no single decision or process that will lead us to recovery overnight. If CRI taught us anything, it is that we must pursue salmon recovery across all life stages, and at each level of government and community in the region.

The government must issue a new biological opinion this year. Its content will reflect the input of states and tribes, and the input received from the public during the hearings.

The All-H Paper will be revised on the same timeframe as the BO. It will summarize the feedback received during the public meetings and the tribal consultations, and it will update our scientific findings. Ultimately, the All-H Paper will provide a recovery template to serve as context for hydro system operations and improvements called for in the upcoming biological opinion. It will also offer guidance to the formal recovery planning process, which is getting underway in the region as we speak.

I cannot emphasize the importance of habitat enough. The CRI points directly at first-year survival improvements in the tributaries and in the estuary as the places with the potential greatest contribution to rebuilding these stocks. This means vigorous improvements in the way we manage tributary habitats, which in turn translates into providing adequate instream flows of adequate water quality and protecting the riparian areas of these same streams. This is no small task, indeed, and should place the challenge of the Snake River dams in a more sober context. Restoring water quality, providing adequate instream flows and rebuilding the productivity of the estuary are very tough challenges indeed. If we have any hope of keeping salmon and dams in the Columbia Basin, we must make significant progress on these water and riparian issues. We recognize that this is not a popular observation, but the science is persuasive. Unless we can weave together an effort to improve dramatically the stewardship of our rivers and streams in the Basin, our chances for recovering the species will be remote. If, however, we can take advantage of the natural productivity of our spawning and rearing areas, we will succeed and pass to our children a rich and durable legacy.

Federal lands management will be determined primarily by the results of the Interior Columbia Basin EIS. Non-federal habitat issues will have to be addressed incrementally, and it will require creativity, patience and backbone. At this juncture, the efforts of the several states, numerous tribal governments, local jurisdictions and private initiatives, as well as the Northwest Power Planning Council, all represent an active laboratory for different habitat-related strategies. The essential ingredients include good science, technical assistance, active incentives — both positive and negative, and funding. While it is certainly too early to gauge the likelihood of success, the basic elements are in play and the level of effort is escalating.

Harvest and hatchery changes are and will be pursued through the U.S. v. Oregon process, and implemented in part through the Northwest Power Planning Council amendments to its fish and wildlife program. We must substantially change the outdated harvest management paradigms of the now expired Columbia River Fish Management Plan and build in a far greater sensitivity to

the protection of weak stocks - not just the harvesting of the strong stocks. We have commenced those discussions with the state and tribal fish managers, and we hope for further rapid progress in the coming months.

Predation control can and will be addressed on an inter-agency basis, but we badly need new authorities to address predation issues under the Marine Mammal Protection Act. We asked Congress for that authority in 1997; we still need it, and I would encourage this Subcommittee to work with the other committees of jurisdiction to move on the matter.

Funding will be critical. Federal agency budgets will have to be adequate. BPA will continue to provide substantial contributions. However, they alone cannot bear the entire burden. Each Federal program currently in place to enhance fish and wildlife habitat should be coordinated to ensure the maximum biological benefit to salmon in the Basin. Where matching funds are required, state and local planners will have to show initiative in order to take advantage of Federal resources where they are available.

Mr. Chairman and members of the Subcommittee, thank you once again for the opportunity to be here. I would be happy to answer any questions you may have.

[The report ″A Standardized Quantitative Analysis of Risks Faced By Salmonids in the Columbia River Basin″ is retained in Committee files. This report is also referred to as the ″Cumulative Risk Initiative (CRI)″.]

Mrs. CHENOWETH-HAGE. Thank you. I want to remind the members that there are certain Committee rules by which people can be authorized and cleared to answer questions and was well as give testimony. The Chair has ruled that no witnesses will be able to give answers except those that have been cleared by the Committee. So we really wish we could have had a better leg up on this CRI, this document, and having been able to study it but obviously we can't. So we will be asking questions only of the witnesses who have been recognized and we will keep the record open for further questions from the Committee on details of the CRI. So that with the Chair recognizes Mr. Simpson.

Mr. SIMPSON. Thank you, Madame Chairman. Dr. Roby, first of all, you mentioned the temporary restraining order that was imposed by the Federal judge on disturbing the terns out there. When would that have to be lifted in order to do something this year, to be effective this year?

Dr. ROBY. It's difficult to predict when the first egg will be laid on Rice Island. The U.S. Fish and Wildlife Service previously issued a permit to the contractors the Corps has contracted with to haze terns on the Rice Island tern colony to collect up to 300 Caspian tern eggs. So we are thinking that when 300 eggs or more are laid on Rice Island we will be stuck with the colony breeding again on Rice Island this year.

My best guess is that that would happen or that 300 eggs would be deposited on Rice Island probably by the fourth or the fifth of May, so very soon. If the TRO isn't lifted in the next few days I think the game has been lost.

Mr. SIMPSON. Mr. Ilgenfritz, one question I asked the previous panel they suggested maybe you could have the answer to, has there been any noticeable, let alone significant, increase in the condition of the salmon with 427,000 acre feet that the State of Idaho has authorized over the last several years?

My basic response would be that Doug Arndt on the previous panel correctly characterized the conclusions we have been able to draw, which is of more obvious benefit for fall Chinook and a less obvious benefit for some of the earlier migrants. Our goal with the flow augmentation program is to whatever we can to try to mimic the natural hydrograph, what the fish would be seeing in the river were it running in its natural condition. That's sort of the crux of our thinking in that regard.

Mr. SIMPSON. Thank you. Mr. Bogert, appreciated your testimony and the frustration that I think the Governor and the people of Idaho feel with what's going on. We have a Federally-protected fish and Federally- protected terns that are eating these on a Federally made island and Idahoans are being asked to make significant sacrifices in water and other things to flush more smolts down the river. It doesn't seem like it's to increase salmon but more to make a deli for these terns down here that we're not really doing anything about.

Mr. BOGERT. Congressman Simpson, that is I think succinctly the perspective that a lot of our stakeholders in the State of Idaho, I know the Governor certainly feels that way and I think that's his point on why from our perspective, and I know you share this, that we have the most to lose. We have our water to lose, we have perhaps our habitat to lose, and there's discussions over our transportation system and the lifeblood for many of Idahoans in the northern part of the State, and all of this at stake with perhaps nothing at the end of the day to show for it. That's a correct assessment.

Mr. SIMPSON. Could you tell me some of the other things. I know Idaho and the Governor are working very hard to address other issues because we believe there's more than just dams at stake here. We are looking at other things to try to improve salmon recovery habitat and so forth. Could talk about some of things the State of Idaho is doing or potentially looking at doing in terms of improving the habitat for salmon?

Mr. BOGERT. Yes, thank you. Prior to the advent of the upcoming biological opinion the State has been assessing issues, which from our view, have to occur; things like diversion screening. These are projects that we are coordinating closely with the Northwest Power Council to try to receive, assess the exposure there, and obtain money to try to help us and our help our stakeholders and agricultural try to remedy, so that we move that particular component of the table.

For several years now the State has been looking at trying to improve water quality in the north part of the State through a TMDL, total maximum daily load schedule through our Department of Environmental Quality. These are things, which from our perspective, have given us a running start we think on that which would be our fair share and our contribution across all of the H's.

I might add on hydro power the Governor has been a strong proponent of putting the best and the brightest that the Federal Government and the States have in terms of technological advancements to simply make fish passage easier through the hydro system and he believes that that is a worthy and warranted investment by the Federal Government and also by the State to come contribute to that as well.

Mr. SIMPSON. The Governor has mentioned several times the fish friendly turbines in the dams and the studies that have been done on that, is that something that the Governor supports, increasing fish passage past the dams?

Mr. BOGERT. Representative, he supported that as a United States Senator. We continue to support that and our understanding is that some of the initial test runs that have been done with the new technology at Bonneville Dam have showed improvement and significant improvement and should be continued to be developed.

Mr. SIMPSON. Thank you.

Mrs. CHENOWETH-HAGE. Mr. Hastings.

Mr. HASTINGS. Thank you, Madame Chairman. I'll probably spend most of my questions with Mr. Ilgenfritz. First of all, I want to wish you happy birthday. I understand it is your birthday. Perhaps the question should be are you celebrating an anniversary of your birthday or are you still counting them.

Mr. ILGENFRITZ. I'm still counting, but not for long.

Mr. HASTINGS. I'm going to get off subject here because I haven't received a response from NMFS and this is the first opportunity that I've had to followup. On March 24th, I wrote Will Stell a letter regarding destruction of the Kingdome and what affect that would have on the fish because of the proximity to Puget Sound.

The reason I wrote that letter is because on two occasions last year in my district, once in Wenatchee and one in Richland, those cities were prohibited from putting up a stoplight because they said that that activity could possibly hurt the fish in the Columbia River. I found that a little hard to believe. So that prompted this letter because I suspected that the implosion of the Kingdome could cause a bit more of activity than putting up a stoplight.

I have not received a response yet, I ask you to make sure a response is forthcoming, but the only response that was printed in the paper was by an official at NMFS that said something like, We didn't think there was any impact at all, so why bother looking at it?

Now, I found that rather hard to believe when they are not allowing stoplights to be put up in an area that sees less than 10 inches of rain. So with that, what I would like, Madame Chair, is to ask consent to have this letter be part of the record, and also when the response comes from Mr. Stell to have that make part of the record.

[The information referred to follows:]

01/02/2001 09:12 FAX
NOV-30-2000 13:59
DOC HASTINGS
4TH DISTRICT, WASHINGTON

ASSISTANT MAJORITY WHIP

COMMITTEE ON RULES

SUBCOMMITTEE ON
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NMFS NORTHWEST REGION

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Congress of the United States
House of Representatives

March 24, 2000

NOAA-NMFS
RECEIVED
APR 3 2000
NORTHWEST REGIONAL OFFICE

Mr. William Stelle
Regional Director
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115

Dear Director Stelle:

I am writing to request your assistance in clarifying the impact of the destruction of the Kingdome in Seattle, WA, and the construction of its replacement on water quality and threatened and endangered species.

I have recently received inquiries from a number of my constituents who are deeply troubled by the plans to demolish the Kingdome. As you know, the listing of additional salmon and steelhead stocks last year has resulted in lengthy delays for even the most trivial construction and road maintenance projects. Given the proximity of the Kingdome to Puget Sound, my constituents would like to know what permitting and review processes were completed in connection with this project.

As the region struggles to implement measures to recover these species, it is essential that enforcement of the Endangered Species Act does not become—or become perceived as—selectively enforced. I therefore request your assistance in clarifying this matter at your earliest opportunity.

Thank you for your assistance with this matter.

Sincerely,

Doc Hastings
Member of Congress

01/02/2001 09:12 FAX
NOV-30-2000 13:59 NMFS NORTHWEST REGION 003
P.03/04

1315 East-West
Silver Spring, MD 20910
THE DIRECTOR

JUN 12 2000

The Honorable Doc Hastings
House of Representatives
Washington, D.C. 20515

Dear Representative Hastings:

This letter is in response to your inquiry about possible impacts of Seattle Kingdome demolition and replacement on threatened and endangered species. Puget Sound chinook salmon are currently listed as a threatened species under the federal Endangered Species Act. The National Marine Fisheries Service (NMFS) is the federal agency responsible for managing listed chinook and other salmon in the Pacific Northwest. NMFS also is charged with developing recovery plans for the listed species under its jurisdiction.

My staff have determined that, to date, no formal or informal consultation with NMFS by other federal agencies has been requested for this project. It is possible that construction of a new stadium on the old Kingdome site will require federal permits. If that is the case, NMFS anticipates that the federal agency responsible for issuing such permits will request consultation with NMFS pursuant to Section 7 of the Endangered Species Act.

NMFS intends to adopt protective regulations for Puget Sound chinook in June of this year in order to enhance protection of the listed species and the habitat upon which it depends. These regulations are commonly known as the 4(d) rule for Puget Sound. NMFS expects that the construction of the new stadium will be conducted in a manner consistent with that rule.

In addition to our regulatory activities to protect listed Puget Sound chinook through Section 7 and 4(d) of the Endangered Species Act, NMFS has established a Technical Recovery Team for Puget Sound to develop scientifically-based recovery goals for chinook and

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FN:G:\PR3\Mobley\Controls\18385-hastings.wpd
Control Nos. 18385, 00-51

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

other listed species in the Puget Sound Region. These recovery goals will guide federal, tribal, state and local recovery efforts, and should be useful to the State Salmon Recovery Funding Board as it makes local salmon recovery funding decisions.

I hope this information assists you and your constituents. I appreciate your continued interest in Puget Sound salmon recovery.

Sincerely,

Penelope D. Dalton

Penelope D. Dalton
Assistant Administrator
for Fisheries

Mr. HASTINGS. If you would like to respond to that, Ric, I would be more than happy to hear your response.

Mr. ILGENFRITZ. Thank you, and you've linked two issues that stand to be linked because they're similar and they demonstrate the nature of our changed workload under the listings of the species under the Endangered Species Act.

It's an utterly insane proposition that policy people at the National Marine Fisheries Service ought to somehow sign off on every single traffic improvement, road project, what have you, in the land as something that might impact salmon. If we had to do that you could not hire enough people nor spend enough hours in the day cranking this stuff out in a way that keeps the economy cooking along.

So part of our chore as we try to get our minds and our agency around this task is to develop conservation initiatives that get us some efficiencies and how we're clearing these projects, and how people are getting guidance from the agency on how to avoid jeopardizing fish. That's a challenge that we take very seriously and something that we need to work on.

Mr. HASTINGS. It seems that one obvious solution to that is the statutes are so tight you should need some sort of legislative relief on that. Would you be willing to pursue that?

Mr. ILGENFRITZ. That's probably way above my pay grade, Congressman, although I understand the origins of the question. The nature of the law is such that when local agencies and entities are engaging in planning for transportation or any other projects, they look at them to see whether there's an impact or likely impact on a listed species. If they're not sure or they don't know or they're not qualified to determine, they just ship it to us or the Fish and Wildlife Service.

Mr. HASTINGS. The stoplight?

Mr. ILGENFRITZ. The vast majority of stuff we got from the Washington Department of Transportation last year would have no impact, but they didn't know. So they sent it to us to look at and we ended up with a huge pile of stuff to look at that we probably shouldn't have been looking at.

Mr. HASTINGS. But you did look at the Kingdome?

Mr. ILGENFRITZ. I don't know the situation there because I wasn't involved in it. My guess is that the county probably didn't ask us to look at it.

Mr. HASTINGS. Let's pursue that. If counties over here are at risk because they are afraid. Sometimes fear is a great motivator, and if two cities were fearful of NMFS coming down on them because they didn't ask, regarding a stoplight, and the fact that King County apparently didn't ask because there's no fear, isn't that a bit of a double standard in how you're treating this?

Mr. ILGENFRITZ. Well, a traffic improvement at a local level is essentially a transaction between the local authority and the State Department of Transportation. The State Department of Transportation is going to provide most of the funds. Most of those funds are Federal funds. Before the State signs off they're going to look to us for an indication.

So most of those projects that we got, we didn't get from the local governments here in the Tri-Cities and other communities. We got

them from the State because the State folks were not prepared to make the call that these projects do or do not jeopardize a listed specie.

So what we need to do is find some efficiencies in how we clear these projects.

Mr. HASTINGS. I see. I want to get to another question. In previous testimony Colonel Mogren said that the Corps has decided not to pursue, in fact, they suspended, any more study of John Day drawdown. We are hearing indications that what would be coming out of your report potentially this summer is to reactivate that. Is there any truth to that?

Mr. ILGENFRITZ. There may be two different questions involved here with respect to the disposition of the John Day Study. The question that study is trying to answer is basically can any more be learned by studying it further? The subsequent question is should it or should it not be considered as a management tool. The Corps study is answering the first question. Is there anything more we can learn by studying this further and they're saying basically no, but that doesn't answer the second question; should it or should it not be considered as a management tool. That standpoint, that latter question is not yet answered.

Mr. HASTINGS. Potentially this could be reopened then, albeit based maybe a different question but you could open the question of drawing down once again the pool of John Day; is that correct?

Mr. ILGENFRITZ. I wouldn't characterize an answer to a question that hasn't been answered yet. I'll try to answer that.

Mr. HASTINGS. Well, put it another way, one Federal agency based on the best data that they have has concluded that there is no more further study need. Another agency namely NMFS is saying, No, we think it ought to be, I'll say reopened up again even though another agency based on sound data is suggesting the opposite; is that correct?

Mr. ILGENFRITZ. We are not necessarily taking issue with the Corps' conclusion that there is nothing further to be learned. We've reviewed their conclusions and submitted some analysis for them, and there's not really any disagreement between the two agencies on that question.

Mr. HASTINGS. My time is up. Thanks for your consideration.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Hastings. The Chair recognizes Mr. Nethercutt.

Mr. NETHERCUTT. Thank you, Chairman, and welcome to all of the panelists and thank you for your testimony.

Mr. Ilgenfritz, with respect to the data used by the CRI, it's my understanding the data used was for a 15-year period from 1980 to 1994; is that correct?

Mr. ILGENFRITZ. That's correct.

Mr. NETHERCUTT. Yet your testimony here today is that you're looking at doing an evaluation of extinction risks over the next 100 years. Why in the world would you only look back 15 years to make a judgment about what's going to happen over the next 100 years? Please answer that if you can and as a second followup, what about the returns that we're seeing now that are more vigorous? To what extent are you taking into consideration those as you come to your conclusions and recommendations?

Mr. ILGENFRITZ. I'll give part of an answer to the second question first and then circle back to it. The data we looked at was 1980 to 1994 brood years. We consider the adult returns up through the 1994 brood years. That gives us 1995,'96,'97 returns, as well. So it's almost a 20-year period that we are looking at, but the answer to your first question is twofold; one beginning in 1980, 1979 really was the first year class that came back after the hydro system was in its current configuration. Based on how it's configured now and how it's been operated, that's when the snapshot in time begins for adult returns.

The second part of the answer is those particular years were really tough years, in the ocean in particular, and what they help do is give you and everybody else an idea of what the worst case scenarios are, given bad conditions, given all theses factors, what is the scenario in which these species are most likely to go extinct and what is the likelihood that that is going to happen.

Mr. NETHERCUTT. Based on that testimony and also considering the extraordinary returns that we're seeing now, which I assume you acknowledge exist.

Mr. ILGENFRITZ. Absolutely.

Mr. NETHERCUTT. To what extent will that influence your biological opinion and the conclusions that come from it?

Mr. ILGENFRITZ. To a great extent. There is a debate going on about how conservative one needs to be when putting together a biological opinion. The courts have tended to tell us that when we are uncertain about data or conclusions based on data that we should resolve those conflicts in the favor of the listed species. That guidance from the case law pushes us to being more conservative, but there is a certain amount of discretion we have there.

The returns we have been seeing the last 2 years ar very heartening. The year class we got back this year went out in 1996. It was the first year class to benefit fully from the hydro operations we called for in the 1995 biological opinion. It's obvious that the news is not all bad. There are some things we're doing that are generating some results. Obviously, ocean conditions have a lot to say about that.

Mr. NETHERCUTT. With respect to that, Dr. Anderson's testimony was compelling with respect to the shifting ocean conditions and the impact that they have on returns. To what extent has National Marine Fisheries Service expended resources and done studies of shifting ocean conditions as it relates to this problem?

Mr. ILGENFRITZ. We have been and are begging to do more so and I think we need to factor that in.

Mr. NETHERCUTT. To what extent have you done it so far; I take it minimally.

Mr. ILGENFRITZ. Within the agency we have been relying on the work of others.

Mr. NETHERCUTT. To what extent have you been relying on the work of others and to what cost can you quantify that? How much money have you spent with respect to shifting ocean conditions as a part of this problem?

Mr. ILGENFRITZ. In terms of studying them?

Mr. NETHERCUTT. Yes, sir.

Mr. ILGENFRITZ. I'd have to answer that one for the record.

Mr. NETHERCUTT. I'd appreciate it if you would. I also looked at your testimony with respect to the All-H paper and looked at the statement here. You say in this option relative to the hydro system, the earthen portions of each lower Snake dam would be removed over a period of seven to 8 years as described by the Corps. That's page seven, first full paragraph. Would you not acknowledge, sir, that assuming that this removal occurred and assuming that your seven to 8 year period is correct—and I don't know that that's exact number of years but assuming that it's true—aren't we looking at a period of at least seven or 8 years and then beyond that once there were a breach, which none of us here that we know of approve? Aren't we looking at between eight and another 20 or 30 years before we even know if this action will be effective with respect to the return of these species of fish?

Mr. ILGENFRITZ. There is no doubt that salmon recovery is a long-term proposition.

Mr. NETHERCUTT. I know salmon recovery is a long-term proposition, but dam removal is going to extend, is it not, any determination about whether the recovery efforts of dam removal are effective? We could be looking 30 years before we even know if this experiment is a good one or bad one?

Mr. ILGENFRITZ. That's possible; yes.

Mr. NETHERCUTT. Is it likely?

Mr. ILGENFRITZ. A lot of years will have to pass before we know whether the results of the project are what we thought they might be.

Mr. NETHERCUTT. I assume you wouldn't disagree with anywhere from seven to eight period years of interruption in the process of demolition and then another eight to 30 and would you agree with those numbers?

Mr. ILGENFRITZ. I'd prefer to get a scientific opinion on that. I don't know how many years of data they'd want to look at before they would be comfortable making a prediction.

Mr. NETHERCUTT. Are you familiar with the L-Watt dam removal question and are you familiar with any testimony that might have been forthcoming with respect to this issue of return of fish runs and the projected data that would be conclusive or inclusive relative to the return projections?

Mr. ILGENFRITZ. Not off the top of my head.

Mr. NETHERCUTT. My understanding is that it's anywhere between eight and 30 years before we know if it would do any good at all.

Mr. ILGENFRITZ. That's not unreasonable, eight to 10 years is two generations.

Mr. NETHERCUTT. Thank you.

Mrs. CHENOWETH-HAGE. Thank Mr. Nethercutt. I'm going to direct my questions at first to Mr. Bogert. Mr. Bogert, you'll need the microphone down there. Mr. Bogert, did Idaho have a seat on the Caspian Tern Working Group?

Mr. BOGERT. Madame Chairman, we did. We sent folks from the Idaho Department of Fish and Game and we have been coordinating with them very closely on this issue. As Dr. Roby can attest we in Idaho argued very strenuously for the most aggressive possible actions to be taken by the Working Group, but the collabo-

rative process required that everyone at the table perhaps compromise a little bit and accordingly at the end of the day while we participated in the process we were not thoroughly pleased with the final direction that was taken, but we nonetheless participated in good faith and engaged in those discussions.

Mrs. CHENOWETH-HAGE. What did the group decide?

Mr. BOGERT. At the end of the day, we had advocated for a much stronger and more aggressive policy with respect to the birds in the estuary in terms of even—Our assessment was that minimal space allowed on East Sand Island would have been even more, that eventually the Group decided to put forward in terms of its relocation strategy, was probably in order, if not a complete strategy that involved perhaps no birds on either Rice or East Sand Island.

But that position, through the collaborative process eventually ended up, and Dr. Roby can probably get into more detail, with a complete harassment with no terns on Rice Island, which from our perspective at the end of the day is the most lethal of the nesting sites for the terns, and then alternative nesting sites to accommodate the population that would have otherwise nested on Rice Island be afforded on East Sand. I think that's a brief summary of what as to the group at the end of the day decide to press forward with.

Mrs. CHENOWETH-HAGE. Mr. Bogert, what has happened with the lawsuit involving the terns? Can you give a brief description?

Mr. BOGERT. Madame Chair, the latest on that is as of last week the State of Idaho participated as amicus curiae in the lawsuit supporting the position of the Corps as to the adequacy of the harassment strategy. At the end of the day this was what was enjoined and what we believed to be the most critical component of the lawsuit, and I might add that we have received support from the State of Washington and the State of Oregon who have joined us as amicus curiae supporting the position of the working group with respect to harassment strategy on Rice Island.

Early last week it was decided by all parties of the case to stipulate to a preliminary injection to provide an avenue and appropriate procedure to take this case on an emergency basis to the Ninth Circuit, and as of late last week all of the papers were filed with the Ninth Circuit, and as Dr. Roby testified, we await word any moment, perhaps by the end of this week, as to what action, what we hope our enlightened judges in the Ninth Circuit to finally end this insanity over this most confusing and baffling of lawsuits.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Bogert.

Mr. Ilgenfritz, I want to ask you, why does the Marine Mammal Protection Act and the Migratory Bird Treaty Act seem to trump the Endangered Species Act, when NMFS tells us the ESA trumps all laws, such as the National Forest Management Act, and so forth. I'm baffled by this because Congress in the passage of ESA did not indicate that the ESA would trump all laws, neither did Congress indicate that Marine Mammal Production Act and the Migratory Bird Treat Act would remain at the top of the legal chain. So would you please answer that for the record?

Mr. ILGENFRITZ. I'm not aware of whether there is any case law on the Marine Mammal Protection Act and ESA going head to head. My understanding of the claim that's currently before the

Court is that it's essentially a NEPA claim, that there's no EIS on the plan that the Corps is trying to implement.

I'm not aware directly of whether there's been a measure of MMPA versus ESA in court. I can hopefully inform the Committee of the treatment of those statutes. We did do a report to Congress last year on Marine Mammal Protection Act in which we made some recommendations for the reauthorization that included giving us the authority to use lethal removal where necessary and appropriate to control marine mammal predation on listed species. My understanding is that those recommendations are pending before the Commerce Committee, perhaps before the House Resources Committee, too. So it's a vague area of law to be sure and we're trying to clarify it.

Mrs. CHENOWETH-HAGE. Then under those circumstances as described in your answer, why hasn't National Marine Fisheries Service ordered removal of the terns?

Mr. ILGENFRITZ. We participated as well in the Caspian Tern Working Group and we wholeheartedly have supported the Corps' attempt to implement its project to harass the terns on the up river island. I checked with our general counsel before I came in this morning and was informed that we are expecting a decision from the Appeals Court tomorrow.

We joined the Justice Department in appealing the preliminary injunction and our hope to that the Appeals Court will side with us so we can get moving.

Mrs. CHENOWETH-HAGE. I want to expend my time to ask a couple of more questions that may affect my State. I would like for you to describe or define the terms, Federal Columbia River power system in the context of the biological opinion by NMFS in the 1990's for the Endangered and Threatened Anadromous Fish Species in the Pacific Northwest and then I would like for you to define which Federal facilities have been included in the confines of that definition in those biological opinions; which Federal facilities were included.

Mr. ILGENFRITZ. FCRPS is generally a term used to describe all Federal dams in the Columbia and Snake River systems. That's what we think of. There is an ongoing dialog between my agency and some agencies in the Department of Interior about whether that term extends to cover irrigation facilities as part of the Columbia Basin project, the Yakima River project and so on and so forth. My understanding is that that discussion is ongoing and as unresolved.

Mrs. CHENOWETH-HAGE. So in the 1990's, actually the dams included the Dorschak (phonics), Lower Granite, Little Goose, etc; right?

Mr. ILGENFRITZ. On the Snake and Grand Coulee down and in the storage projects in Montana.

Mrs. CHENOWETH-HAGE. All right, will you indicate for the Committee the FCRPS definition in the National Marine Fisheries Service 2,000 biological opinion as to any additional Federal facilities that might be included?

Mr. ILGENFRITZ. It will cover all the facilities as identified in the previous biological opinion and we are still discussing with the Interior and the Bureau of Reclamation in particular whether it will

cover irrigation facilities more generally and really like which irrigation facilities are on the table for discussion.

The irrigation facilities generally tends to get tied up in the broader discussion of water management. So I don't know that we have actually gotten to the point of discussing specific facilities. Talking more generally we have to talk about specific facilities in order to ensure that the water management regime agreed to in the BO is sufficient.

I don't have an answer for you because the discussion is still ongoing. I think it's something we should work on over the course of the next couple of months.

Mrs. CHENOWETH-HAGE. I'm not happy with the vagueness of your answer. Let's try this again. Obviously, when were you sitting down with your staff and with people in Washington, obviously there are Federal facilities that are either irrigation facilities or both irrigation and power producing facilities that are within the parameters of discussion in the expansion of the FCRPS. Which areas are included and which potential Federal facilities are included in those talks?

Mr. ILGENFRITZ. All of the main stem, Columbia and Snake River dams in the United States including the Montana Storage Projects. In addition to the main stem dams there is discussion of whether to include irrigation facilities as well to the extent that return flows from irrigation facilities can affect mainstream flows.

Mrs. CHENOWETH-HAGE. In Idaho would that include the entire Hell's Canyon complex plus the up river irrigation facilities like Milner and Black Canyon Dam and so forth?

Mr. ILGENFRITZ. I think those facilities are tied up in the discussions that are ongoing right now and I don't think there are any conclusion to those discussions right now that I can report on.

Mrs. CHENOWETH-HAGE. Can you tell what the legal authority and justification for changing the CRPS definition to include these Federal facilities are?

Mr. ILGENFRITZ. The Endangered Species Act.

Mrs. CHENOWETH-HAGE. All right. I've received word that Mr. Hastings and Mr. Nethercutt would like a second round. So we'll begin the second round with Mr. Nethercutt.

Mr. NETHERCUTT. Mr. Bogert, I especially appreciate your being here on behalf of Governor Kempthorne. He's really been a partner with our State trying to deal with this tern problem and you have, too. We have appreciated that very much. The Interior Subcommittee of Appropriations is a Subcommittee on which I serve and we have jurisdiction over the Fish and Wildlife Service and we're going to have to do some funding with respect to the Caspian tern problem with the Fish and Wildlife budget coming up for fiscal year 2001 here in the next month. So I would ask you, sir, or Dr. Roby to what extent have you determined whether there would be—let me go to Dr. Roby first because it's a little more bird oriented.

To what extent have you, sir, looked at any negative impacts that might occur to the birds themselves by moving them from Rice Island to East Sand Island or some other location; is there any?

Dr. ROBY. We have not a lot to base that on, but we do have last year when we attempted to attract a portion of the Rice Island tern

colony to nest on East Sand Island, using the techniques I described earlier, and we were successful, as I said, at getting 1400 pairs to nest.

What was significant to us was that monitoring the nesting success of those 1400 pairs, we found that on average they raised 1.2 nestlings per nesting attempt. That compares with last year at Rice Island where the same figure was .52. So less than half the nesting success on Rice Island as on East Sand Island. Based on that and a number of other factors our scientific conclusion was that it wouldn't constitute an inordinate amount of risk to the Caspian tern colony for it to be a relocated from Rice Island to East Sand Island.

Mr. NETHERCUTT. So have either you or Mr. Bogert anybody else on the panel done any analysis of the cost, the dollar cost, of moving these Caspian tern populations from Rice Island to East Sand Island or to some other location?

Dr. ROBY. That's a tough one. I know about how much has been spent on research and monitoring related to this issue because I know about the grants that have come to Oregon State University for that purpose. I don't have a dollar figure for what the Corps of Engineers has spent. I know they've spent a substantial amount in restoring the colony habitat on East Sand Island and in modifying Rice Island to discourage nesting there.

Mr. NETHERCUTT. Mr. Bogert, have you in your amicus brief done any analysis of the funding needs to complete the transfer to the extent that it can be completed.

Mr. BOGERT. Representative Nethercutt, we have. The issue that's before the court is whether the harassment strategy needed to cease while some of the subsidiary issues related to NEPA are worked out. Our fear is that as each day goes by, the number of birds that go back to Rice Island, and indeed I think Dr. Roby can speak to, each day the birds are proliferating by leaps and bounds while the restraining order remains in effect. In terms of the actual dollar cost, I can give you our perception of what this means to our folks in Idaho perhaps in other ways than pure dollars, but in terms of an actual figure we couldn't give that to you and it's not at issue per se in the case right now.

Mr. NETHERCUTT. I understand. Mr. Ilgenfritz, you are a part, you meaning the Natural Marine Fisheries Service, are part of the Caspian Tern Working Group. Have you done any analysis with respect to this issue of removing these terns to another location?

Mr. ILGENFRITZ. Funding?

Mr. NETHERCUTT. Yes, sir.

Mr. ILGENFRITZ. If we have I am not aware of it. I can look into it and get an answer for the record for you.

Mr. NETHERCUTT. I would assume that the Caspian Tern Working Group would be looking at not only methodology but cost of the methodology. Am I in error with respect to the conclusion I've reached?

Mr. ILGENFRITZ. That is correct. I wish our Corps witness was still here because they are the project lead on that and they probably have more direct information about it. It's certainly an answer we should be able to get for you in relatively short order.

Mr. NETHERCUTT. That would be great. If you could provide that for the record I would appreciate it. One final question before the red light goes on for me, I think the National Marine Fisheries Service ought to be looking more thoughtfully at the idea that hatchery fish should be allowed to proceed along their life course as we try to make sure that wild fish are preserved to the extent possible. Has the National Marine Fisheries Service looked at initiating a selective harvest program with respect to hatchery versus wild salmon?

Mr. ILGENFRITZ. Yes, the short answer is yes. We are developing, as I said, the All-H paper and the basic premise of that paper is that there is no silver bullet in salmon recovery. What is likely to get us there over a long period of time is a collection of actions across all of the life stages. We need to do things to address harvest, hatcheries, habitat, what have you.

Part of the harvest issue, the tools we have in the tool box are just that, improving the selectively of the harvests, using time constraints, area constraints, gear constraints so that you can ensure when were you prosecuting a fishery you are minimizing the take of listed species. There are good tools in the tool box. Our challenge is to go out and try to put them into the field. So we'll try to do that as we move forward.

Mr. NETHERCUTT. What about the issue of mackerel that are more prevalent in warm waters that have had a predatory effect on listed fish? Have you looked at that whole issue of ocean conditions as these new migrating species in warm water conditions have an impact on species we are trying to protect? Have you spent any money on that whole issue of mackerel; for example?

Mr. ILGENFRITZ. Studying mackerel and what they do?

Mr. NETHERCUTT. Yes.

Mr. ILGENFRITZ. I am not aware of it. That's another one of those that I'll have to get back to you on. I would hazard a guess that it's wrapped up in the broader analysis of what happens when ocean conditions change.

Mr. NETHERCUTT. Your colleague is nodding yes and perhaps we can get an answer for the record, and that would be grateful. Thank you, Madame Chairman.

Mrs. CHENOWETH-HAGE. Mr. Simpson, you're recognized for questions.

Mr. SIMPSON. Just one question; you have read recently in the newspaper reports today that the opinion may come out and suggest that over the next five to 10 years the dams in place, while other methods are used to try to improve the fish and that we have performance standards to measure that improvement along the way and that a decision on dams essentially be put off for five to 7 years and the debate now is whether five or 10 years is the appropriate length of time; is that an accurate report?

Mr. ILGENFRITZ. The report is accurate.

Mr. SIMPSON. It was mentioned by Congressman Nethercutt that potentially removing the dams, we probably wouldn't see any result from that for maybe 30 years. What kind of performance standards would you use in determining if you remove the dams if it was recovering salmon in the next five to 10 years?

Mr. ILGENFRITZ. I'm glad you asked that question because I've been wanting to talk about performance standards. Performance standards are a tough nut to crack and as you imagine the sensitive point is where you actually set the bar. As a measurement tool, a management tool, they are ideal in concept because they provide a standard for people to shoot at, and they provide accountability.

In the hydro system the range we are looking at spans from basically current survivals up to our best estimates of where natural survivals might be, expressed as a composite of juvenile and adult survival through the system. If you use that measure during that base period data that we were talking about earlier, survival through the hydro system was probably 40 percent give or take 5 percent either way. Under the new bi-op that we have been operating under the last 5 years, that's up to around 59 percent. Our best guess of natural survival is that it's in the range of mid-70's to mid-80's.

The equivalent survival of breaching the four lower snake dams and leaving the four lower dams in would be maybe 72 percent. So we're working with Bonneville and Corps to try to put together a range so we can set that standard and be able to measure it.

Harvest is probably the easiest one to set because a fish that's caught is a dead fish, and you can base performance standards on abundance and escapements. The two really tough ones are habitat and hatcheries because habitat actions whether you're acquiring land for new reserves or protecting reparian areas, screening diversions, in-stream flows and the like, those things take a long time to show themselves in the data. So our performance standards there in the near-term are more likely to be action oriented. You know, did you screen your diversions, did you provide passage where appropriate, are we taking steps, as Michael mentioned, to try to get our TMDL's in place, in-stream flows and the like.

Hatchery, same story. It's very, very difficult to measure the impact of hatchery fish on wild fish. What we need to do there is put together a set of experiments and set our performance standards based upon what we learned. So there is a no silver bullet here, and if we can do it, it will be a neat trick because it's a really difficult technical challenge.

Mr. SIMPSON. I appreciate that and I appreciate the fact there is no silver bullet because one of the concerns I had in reading this was that we set performance standards that we are supposed to meet between the next five and 10 years and ultimately can't reach those potentially or don't reach those. So we go to the extreme of removing dams when there are no performance standards and we won't know the result of that for 30 years or beyond. I share that concern and I realize the difficulty of setting those performance standards but they have to be reasonable performance standards.

Mr. ILGENFRITZ. I hear you and our hope is to, just by way of followup, nail the performance standards for the hydro system in this bi-op and make sure they're reviewed independently so that they are in place as soon as possible.

Mr. SIMPSON. Thank you.

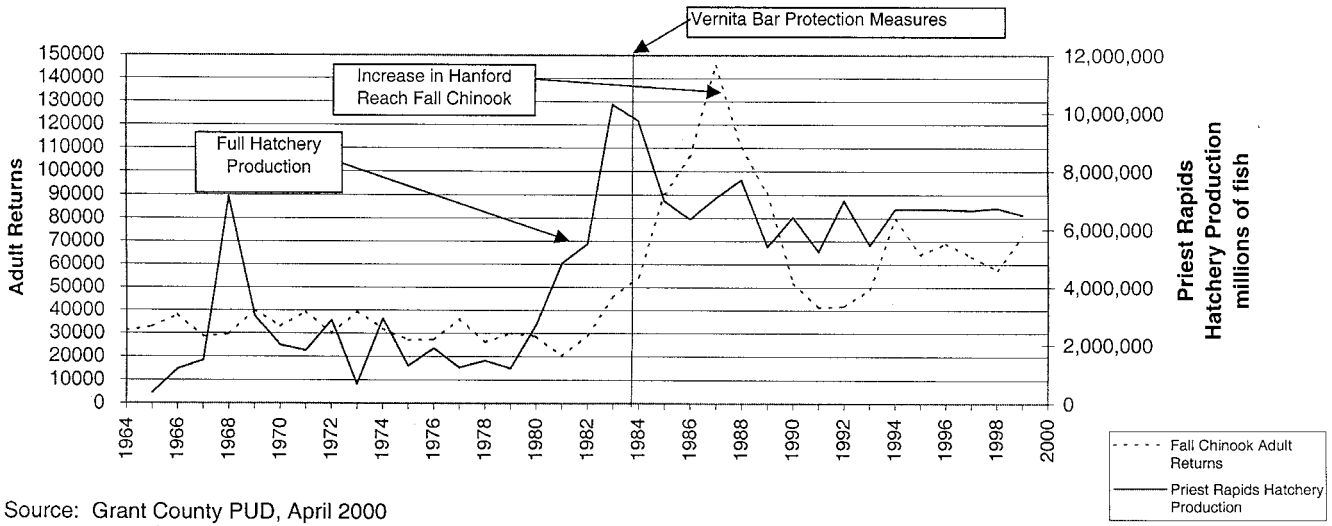
Mrs. CHENOWETH-HAGE. Mr. Hastings, you're recognized.

Mr. HASTINGS. Thank you, Madame Chairman.

Mr. Hagerty, I want to congratulate you for your testimony and particularly your testimony regarding reembargement, which as your graph says here was put in place well before there were any listings and it was an agreement that was brought together by people that were concerned because there were declining salmon runs and so you got together with all the people and said there must be a solution to this and you worked on that, and this graph, at least from my perspective, certainly shows that that has been successful, and, Madame Chair, if that has not be part of the permanent record, I would ask consent that that graph be made part of the permanent record.

[The information referred to follows:]

Relationship of Increases in Hanford Reach Adult Fall Chinook Return to Priest Rapids Hatchery Fall Chinook Production and Vernita Bar Protection Measures



Source: Grant County PUD, April 2000

Mr. HASTINGS. What I would like to ask, though, Dean, as we go along the two facilities, you're going through the process of relicensing, and I assuming that part of that process is to ensure that it is driven by the Endangered Species Act to make sure that the fish passage, et cetera, is all involved there, and I know that the conversations that you and I have had in the past, one of the big issues that you've had to get through or work through in this process is the issue of super saturation. Could you elaborate on that just a bit for me?

Mr. HAGERTY. This has been a long, I have been on the Commission 18 years so I am familiar with the process since the need for getting the fish down the river under the Endangered Species Act curtailed much of our ability to produce less electricity, last year at Wannapum Dam, as an example, we spilled 19 percent of the river flow for fish. This year because we added flow deflectors to help decrease the amount of nitrogen super saturation in the water, we are currently able to spill 38 percent. So in one respect from Grant County standpoint by doing something good for the fish we again spill more water, which takes generation away from the project. Just as an example, four fifths of our load, the current load within Grant County is satisfied out of our own projects, Priest Rapids and Wannapum, and let's assume that that costs one million dollars. The one fifth to make up the five fifths of the load to satisfy our project costs us another million dollars. That fifth costs us as much as four fifths because of the loss of generation.

Now, these projects provide power to parts of 11 western States, as you heard by my comment. There is a lot of power generated in these. So these are benefits that are taken away from the whole area, but our prime concern is helping the fish down the river. That's been our goal.

Mr. HASTINGS. So I talked to Mrs. Johansen about the costs that BPA is putting into the mix as far as fish recovery. That doesn't take into account any of your costs or any other Mid-Columbia PUD's.

Mr. HAGERTY. No, my 50 million figure that I gave you earlier in the testimony that includes our additional cost to go out and buy power and we buy a lot from Bonneville. We're a preferred customer, preferential customer of Bonneville, but as Bonneville costs go up our costs go up with it when we could be supplying that at a much lower cost out of our own project, if we can figure out a way to get these smolts down the river.

Mr. HASTINGS. Once again, it's the ratepayer, your customers, because not all of your power goes to Grant County. It goes throughout the Northwest. They're all paying this in addition to what BPA has added on?

Mr. HAGERTY. Right now we figure that 23 cents out of every dollars that we charge ratepayers in Grant County goes for fish, 23 cents out of every dollar.

Mr. HASTINGS. Thank you. Mr. Ilgenfritz, I want to followup on a line of questioning that the Chairman was taking about and that's regarding the irrigation. Obviously, I have a big interest in this because I have the Columbia Basin Project wholly within my District. You said there are ongoing discussions. Are you speaking

directly to the irrigation districts hear within the Columbia Basin, either singularly or collectively?

Mr. ILGENFRITZ. My understanding is that the discussions that I referenced that are going on between our hydro power division, which is based in Portland and the Bureau of Reclamation, and further that there have been some meetings with State and tribal representatives present at which all of the stuff has been discussed as well.

Mr. HASTINGS. No irrigation?

Mr. ILGENFRITZ. I'm not aware.

Mr. HASTINGS. This boggles my mind. We have 560,000 acres. There's three irrigation addition districts, and you're talking about something that would impact them, obviously impact the economy, and at this point you have not talked to any irrigation districts; is that right? Is that what you said?

Mr. ILGENFRITZ. I think the question that we're trying to get at is what's the best way to give these projects ESA coverage, to wrap them into ABO and get coverage that way with one document or whether to consult individually on the operations of each small project that might be part of larger projects, like the Columbia Basin Project.

Mr. HASTINGS. If you have the short timeframe of the BO, which I understand is sometime in May and you haven't even talked to them and we're less than a month away, I seem to be missing something here.

Mr. ILGENFRITZ. Well, it's a source of concern to me that I can't give or the Chair a straight answer and I'm hopeful that if the hearing record will be open for the next couple of weeks that we can get you a straighter answer to that because I don't want to leave that hanging.

Mr. HASTINGS. One last question, we heard the saga of Jack and Jill earlier, and to followup on what Congressman Nethercutt was talking about, about ocean conditions and the way he postured the question was how many dollars were being spent on that. I would like to posture the question a different way. Since Jack and Jill apparently spend most of their lifetime in the ocean, how much emphasis in your conclusions will be weighted on the ocean activity rather than the other activity?

Mr. ILGENFRITZ. I think it will be weighted in a couple of different ways; one, the discussion we had earlier about the base period data that we use and how conservative we are in that regard. We still have to make a decision about what to assume the ocean is going to do. We can be real conservative and assume that it's not going to do much to help the fish. It's going to stay bad or we could be real optimistic, you know, like OMB in the old days that it's going to produce a heck of a lot of fish. We have to make a determination. That's the first area.

The second area is ocean harvest. We try to regulate harvest from Alaska through Canada on down Washington, Oregon, California through Pacific Salmon Treaty and through the U.S. v Oregon process. So we will be factoring harvest impacts in as far as analyses that take place in the ocean.

Mr. HASTINGS. Thank you.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Hastings. I want to thank the witnesses for your testimony and I want to thank the members for their questions. The members of the Committee will have additional questions and we will submit them to writing. The record will remain open for sufficient time for you to return those. Usually, the record remains open for 10 working days for you to be able to alter or add to your testimony, but the record will remain open longer so we may receive your answers to our questions.

So with that I do want to thank these witnesses for your excellent testimony, and I will say that the hearing will be recessed at this point for 10 minutes for a break, and then we will be back at work 10 minutes from now. Thank you very much.

[Recess.]

Mrs. CHENOWETH-HAGE. The Committee will come to order and the Chair will recognize the last panel; Dr. Mike Skinner, Director, Center of Reproductive Biology, Washington State University, Pullman, Washington; Mr. Don Swartz, the Science and Policy Advisor, Northwest Sport Fishing Industries Association, Portland, Oregon, Mr. Antone Minthorn, Chairman, Confederated Tribes of Umatilla Indian Reservation in Portland, Oregon.

The chair notes also that the testimony from the Confederated Tribes just arrived. Again I must say that the rules require that the testimony be in 48 hours in advance of the hearing.

We will accept your oral testimony and we will appreciate your standing for questions but in the future we would appreciate very much, with all due respect to all of you, we appreciate the rules of the Committee being abided by. The rules of Congress are certainly no different than the rules of the Court or any other body like this.

So with that, I wonder if the witnesses might stand and raise their arm to swear.

Do you promise and affirm under penalty of perjury to tell the truth, the whole truth and nothing but the truth so help you God?

The PANEL. I do.

Mrs. CHENOWETH-HAGE. The chair recognizes Dr. Mike Skinner for your testimony.

STATEMENT OF MICHAEL K. SKINNER, DIRECTOR, CENTER OF REPRODUCTIVE BIOLOGY, WASHINGTON STATE UNIVERSITY, PULLMAN, WASHINGTON

Dr. SKINNER. Thank you, Committee, for the opportunity to testify. I'll start by clarifying a couple of things. Where I would like to start is this is a multifaceted factor problem. This is a problem of the biological ecosystem and has a number of factors. As you heard a couple of people mention today, not one single factor will solve the problem. It will take a multi-faceted approach with this issue. In the past 3 years we've developed a multi-disciplinary approach with the University of Idaho and Washington State University. For those of you that don't know, there is a lot of collaboration between the two universities.

Mrs. CHENOWETH-HAGE. I'm really sorry but the court reporter is having difficulty understanding. You might take the mic out.

Dr. SKINNER. This program involved both Universities as a multi-disciplinary program and I won't go through the details be-

cause I gave it to you in my testimony. This program, to clarify, involves over 70 independent faculty investigators, independent labs. Within the laboratories there's multiple people. So we have two to 400 scientists involved in the restoration. I point that out because a lot of people around don't realize that outside of the State and Federal agencies that the universities are a significant resource on this issue and have simply not been rigorously approached. I'll come back to that toward the end.

This program has three main components; habitat, economics and biology. Clearly, you've heard a lot about habitat and I won't go through in detail. That is a critical issue for the salmon. Economics, we feel is equally important because one of the major industries in the Northwest is agricultural, and anything we can do regarding the salmon is going to impact agricultural and it's important for us to understand that underlying exchange between salmon restoration and agricultural.

The final thing is biology, and basically this is one area of science which we do not feel has been rigorously addressed in the last couple of decades. There are a number of facets of biology which have not been looked at including looking at the biology of the fish, the diseased state of the fish. Simply counting the fish does not warrant the whole biology.

Currently, the activities that are dictate by the State and Federal agencies their primary focus is habitat. We agree that habitat is essential through the restoration of salmon. However it is not scientifically sound to consider that is the only parameter that will solve the issue. There are other parameters, too.

Twenty years ago when the Bald Eagle was in danger, there were a number of things we could have done to protect the Bald Eagle. One of those was habitat. They clearly had their habitat being encroached upon. Across the country we could have improved eagle habitat to hopefully bring the eagles back. Instead what we did, we looked at the biology of the eagle to determine what the central problem was and what we found was the eagle couldn't reproduce. We figured out what the issue was, and the pesticides in the environment was removed, the eagles returned.

We are in the same situation right now with the salmon. We could have some great habitats throughout the northwest but if we don't really try to understand the central problem we may not have any fish left, and we need to address this on a basic biological level and it goes beyond counting the fish.

For example, if this habitat change is going to be put in place, which I think is a very important thing to do, there needs to be some very critical biological performance measures going beyond counting the fish. Looking at early development, the whole gambit in terms a terms of biology. If we put those performance measures in place, which we can measure immediately upon changing the habitats, we can get some immediate turn-around information, but we don't need to wait two to 4 years for a return.

So we have this capacity at the University level to help focus State and Federal agencies to do that. We see the program we're proposing as very complimentary. State and Federal agencies have a very important task to apply scientific knowledge to the issue at hand. So their applied approach to the problem is essential. How-

ever, the universities provide a lot of basic research. We develop a state-of-the-art advances to understand this issue. We don't have the ability to apply the information so we work with the State and Federal agencies to do that.

The State and Federal agencies don't have the resources, such numbers of faculty to draw on. So we see this as a very complimentary thing that the universities still have not been approached as a resource. Individuals have but not the overall universities. So that is one of the issues.

My final message is this: There is a difference between applied and basic research. Universities provide that basic research challenge. That's one of the main reasons that we feel and we've approached a number of agencies over the past several years for this and the criticism of our approach is basic research. We feel that is going to be need to provide that technical advance to understand the basic problem.

[The prepared statement of Dr. Skinner follows:]

4/2000

SALMON RESTORATION PROGRAM

WASHINGTON STATE UNIVERSITY
AND THE UNIVERSITY OF IDAHO

Congressional Field Hearing:

Subcommittee on Water and Power
Committee on Resources
US House of Representatives
April 27, 2000
Pasco WA

Testimony:

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House Committee on Resources, Congressional Field Hearing 4/27/00, Pasco WA

TESTIMONY OUTLINE

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Introduction:

- Salmon at endangered levels and threaten extinction if no action
- Current/Past activities (current focus habitat)
- Multiple parameters factors in problem

WSU and UI Salmon Restoration Program Description:

- Scope – over 70 independent faculty investigators (independent labs)involving over 200 scientists in program. Both WSU and UI involved for inter-college and inter-discipline program. Rivals NIMFS and State Fisheries in size of basic research group. University based research program.

Specific Components Program:

- Habitat – State of the art technical advances and developments applied
- Economics – WSU and UI land grant and Ag Economics strength to access economics of salmon restoration
- Biology – reproduction (fish numbers)/genetics of population/disease state/development → adult

Need integrated science approach and expertise in multiple areas (University well suited this task).

Current Activity – Habitat focus

- Agree important issue, but is not scientifically sound or logical to focus specifically on one factor.

Analogies:

- Examples of how scientific approach to other endangered species has helped restore these species and comparisons with current approach on salmon issue.

Summary:

- Step back – scientifically review problem by scientists. Develop programs to identify factors and develop solutions. Integrate various areas and disciplines.
- University based basic research program complements current activities of State and Federal agencies which address problem with more applied approach. Basic research identify potential problems while applied science needed in implement solutions. This approach will bring science to the center of the issue.
- Request – Universities need to participate and additional support required.

4/2000

EXECUTIVE SUMMARY

TITLE: WSU and UI Salmon Restoration Program

DESCRIPTION:
Objective: To establish a comprehensive, multidisciplinary program aimed at developing and applying basic research and outreach activities to improve native salmon stocks in the US Pacific Northwest.

Summary: The program will integrate several major areas of science to develop novel solutions and understanding to the problem. These areas and disciplines include:

- Fish Biology (Reproduction, Genetics, Cell and Developmental Biology, Pathology of Disease)
- Habitat – (Watershed Systems, Agriculture Impact, Water Quality, Hydraulics/Sediments)
- Economic Science – (Economic Impact, Ecological Sciences, Communication)

These areas address different aspects of the declining salmon problem and will all be critical in salmon recovery. Integrating these diverse disciplines allows a broad approach to the problem that will create significantly novel interactions and understandings not possible with any of the areas alone. This constitutes a fundamental strength of this program.

Specific Aims: These will include but will not be limited to the following.

- To develop and evaluate management practices that minimize disturbance of fish habitat while maintaining competitiveness of regional industry.
- To study fish biology to determine the biological effects of human and natural disturbances and their impact on the decline of native salmon populations.
- To establish physical, chemical, and biological performance measures to monitor progress towards the restoration of native salmon populations.
- To develop and apply methods to define equilibrium points between sustainable native salmon populations and human development in the region.

Organization: The WSU and UI Salmon Restoration Program will utilize and facilitate the interactions of several organized units including the Water Research Center, the Center for Reproductive Biology, the Center for Environmental Education, Idaho Water Research Institute, and many other departments and academic units. The expertise of these centers and units will focus efforts on salmon restoration through this program and will be channeled through three major areas of emphasis. Rigorous annual external scientific review of the program will provide check points for relevance to overall salmon restoration efforts in the region.

STATE AND REGIONAL IMPACT: The endangered salmon runs in the Northwest are one of the most critical environmental and economic issues to impact the state and region in history. This issue affects nearly all major economic sectors in the Northwest from fish harvest to agriculture to urban activities. The Salmon Restoration Program provides an integrated scientific approach to the problem. The program is intended to provide a science-based resource for state and federal decision making in the region. No previous federal or state program has taken such a comprehensive scientific approach. Therefore, this program will complement the state and federal agency programs and will significantly impact salmon restoration efforts in the region. The need to develop this type of scientific research program has been requested by every major analysis of the salmon problem including the National Research Councils report commissioned by congress.

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Habitat Component Coordinator	Claudio Stockle, 335-5531	Roy Mink, 885-6429
Economic Science Comp. Coord.	Darin Saul, 335-3357	Joel Hamilton, 885-8949

Salmon Restoration Program Faculty

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Michael Barber Ph.D., Habitat
David Bennett Ph.D., Habitat
Ted Bjornn Ph.D., Habitat
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William Budd Ph.D., Economic/Social
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Gary Huckleberry Ph.D., Economic/Social
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Ray Huffaker Ph.D., Economic/Social
Rolf Ingermann Ph.D., Biology
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Gary Thogaard Ph.D., Biology
Phil Waschneider Ph.D., Economic/Social
Ed Weber Ph.D., Economic/Social
Joan Wu Ph.D., Habitat

WSU and UI SALMON RESTORATION PROGRAM
Fish Biology Component
Executive Summary

Objective – Establish a multi-investigator program in the area of Fish Reproduction and Biology to enhance research activities and promote interactions between the investigators. The benefit is an integrated program to address and apply basic aspects of fish reproduction and biology to the improvement of native fish stocks in the Northwest.

Organization- Utilizes the organization and existing structure for the Center for Reproductive Biology at the University of Idaho and Washington State University to help administer and integrate the research programs.

Summary - The collaborative fish reproduction research proposed will address concerns regarding improved efficiency in captive broodstock development, and the conservation and enhancement of native fish populations. The products expected from these projects are (1) a decrease in the time required for broodstock to reach sexual maturation, (2) increases in egg and sperm quality, (3) improvement in the cryopreservation of salmonid germplasm, (4) an estimate of the genetic diversity present in Pacific Northwest populations of salmon and steelhead and an understanding of the genetic changes that may occur as a result of artificial propagation, and (5) an understanding of possible interactions between disease and reproduction. The aim of the research proposed by Drs. Schelling and Nagler is to better understand the fundamental mechanisms associated with growth, steroid hormone actions and gonadal development. The results of this proposed investigation are expected to provide information that will lead to precocious sexual maturation in both males and females and improved egg quality. The investigation of Dr. Ingermann involves the cellular synthesis and utilization of compounds required for fertility; this information will lead to the development of better protocols of handling, shipping and storing eggs and sperm for relatively short periods of time. The proposed investigations of Dr. Cloud will result in improvements in the cryopreservation of germplasm with emphasis on freezing female germ cells. The long-term storage of salmonid germplasm is one of the simplest and most cost effective means of conserving the genetic makeup of the present populations. The work proposed by Drs. Thorgaard and Powell will use modern molecular techniques to more clearly define the population structure of salmon and steelhead and to define the genetic differences among the native and hatchery populations of these species. Drs. Baldwin, Ristow, and Byrne are interested in the potential interaction of disease and disease prevention and the resultant reproductive capacity of mature animals. All of these projects are designed to identify possible insults that may compromise the reproductive performance of threatened and endangered native populations of fish.

Projects - The central theme of the proposed projects is an integrated approach to a basic understanding of the mechanisms controlling fish reproduction. The outcomes of these research activities are expected to provide (1) new information with which to make informed decisions and (2) new or improved procedures to increase the efficiency of hatchery and captive broodstock programs.

Project 1 - Dr. Joseph Cloud, UI, Improved Methods in the Cryopreservation of Salmonid Germplasm
Project 2 - Dr. James Nagler, UI, Endocrine Control of Gonad Development in Salmonids
Project 3 - Dr. Gary Thorgaard, WSU, Assessment of Genetic Change in Salmonid Populations
Project 4 - Dr. Gerald Schelling and Dr. Ron Hardy, UI, Induction of Precocious Sexual Maturity and Enhanced Egg Production in Fish
Project 5 - Dr. Rolf Ingermann, UI, Evaluation and Enhancement of Gamete Quality
Project 6 - Dr. Sandra Ristow, WSU, The Impact of Disease and Immunization with a Vaccine against Diseases on Reproductive Efficiency
Project 7 - Dr. Katherine Byrne, WSU, Development of New Methodologies to Evaluate Reproductive Status of Salmonids Using Noninvasive Techniques
Project 8 - Dr. Madison Powell, UI, Population Discrimination Using Molecular Biology
Project 9 - Dr. Tom Baldwin, WSU, Assessment of Fish Disease

Salmon Restoration
Biological Performance Measures of Habitat

Performance Indicators of Salmonid Reproduction Relative to Spawning Habitat

River habitat alterations or modifications (or the lack of) could influence water temperature, flow, and quality. Similarly, substrate (river physical characteristics) quality and quantity (e.g. spawning areas) could be altered and are equally important. Since river/stream habitat must provide the site for maintenance of the reproductive adults prior to spawning, the redds (the nests), courtship, fertilization and early development, and growth of the resultant fry prior to smolt migration, changes to this habitat are expected to affect two major parts of the life cycle, a) adult spawning, and b) offspring survival.

The standard measure of quality has been the ratio of smolts produced to the number of adults that return. This endpoint has been valuable; any reduction in the number of returning adults was assumed to be a reflection of a diminished fitness of the smolts. Since the adult return rate may now also reflect downstream activities, additional or more detailed endpoints of physiological or developmental states of the adults appear to be warranted.

The specific parameters that might be used to determine if a specific habitat is able to support the reproductive efforts of returning salmon are as follows:

1. Blood steroid hormone levels in returning adults (progestin, estrogen, testosterone, 11-ketotestosterone [male]).

2. Gamete numbers and quality
   Eggs - egg numbers/female; ATP levels; yolk mass; maternal RNAs
   Sperm - % motility, ATP levels; DNA (fragmentation, level of lethal recessive mutations)

3. Fertilization success

4. Early embryonic development (embryo survival; embryo viability; proportion of normal development as measured monitored by the level of fluctuating asymmetry of diploid offspring).

5. Growth and survival of the fry to the time of migration

6. Genetic structure of the populations over time

7. Health/disease state of the returning adults (type and severity of disease)

8. Reproductive status of the returning adults

WSU and UI SALMON RESTORATION PROGRAM
Habitat Component
Executive Summary

Objective - To implement a multi-investigator research program to study and monitor habitat restoration processes for salmonids in the Pacific Northwest. Specific aims are a) to provide tools for the evaluation of adaptive management alternatives to restore salmonid species in the region, b) to develop and evaluate methodologies for habitat assessment, restoration and preservation at different scales, and c) to develop monitoring methods and indices of performance to assess progress towards established habitat restoration and preservation goals.

Organization - This component will utilize the organization and existing structure of the State of Washington Water Research Center (Washington State University) and the Idaho Water Resources Research Institute (University of Idaho).

Summary - Research activities will be developed in four areas: 1) Basin and watershed-scale analysis, 2) Habitat assessment, 3) Habitat protection, and 4) Habitat restoration. These activities will be fully coordinated with the other two components of this program (Fish biology and Social/Economic Science). Multidisciplinary teams will be assembled as required by the nature of the activities. An important element of this component will be to set up measures of biological (see Fish Biology), physical (temperature, sediments, turbidity, flow regimes, stability, stream and riparian geometry), and chemical (nutrients, dissolved oxygen, pesticides) performance that can be used to monitor habitat changes as restoration efforts are implemented. A direct link between restoration efforts and science is central to the habitat component of this program. A brief description of the four areas of this component follows:

1) *Basin and watershed-scale analysis*: Habitat loss and fragmentation are significant issues to be addressed in the process of restoring salmonid species. Dams in mainstems and tributaries, thermal barriers, inadequate flows, limited habitat diversity and degraded quality are elements of the problem. Habitat loss and fragmentation are related to human activities. The need to balance habitat capacity to restore salmonid species and the development and management of human activities in the region is central to the discussion. System analysis will be used to study the complex interactions involved in any restoration process at the basin and watershed scales. Study cases will be implemented to evaluate alternative habitat restoration pathways and their impact on local and state economies.

2) *Habitat assessment*: A successful restoration plan requires a detailed characterization of habitat conditions for salmonids throughout the basin. Fresh water habitat should provide for spawning and incubation, juvenile rearing, juvenile and adult migration corridors, and adult holding. Important features of freshwater habitat include water quality (temperature, turbidity, sediments, dissolved oxygen), water quantity (depth, velocity, diversity of flow regimes), channel and riparian zone quality (diversity of functions), food quality and quantity, and connectivity. Scientific habitat assessment is the focus of this area.

3) *Habitat protection*: There are more than 1.8 million acres of irrigated land in Washington alone. Water diversion for irrigated agriculture reduces streamflows and produces return flows of degraded quality. Dryland farming, particularly in areas with highly erodible soils, contributes substantial amounts of sediments to streams and rivers. Livestock grazing, rangeland management, and other agricultural activities have contributed to degrade riparian area functions that are important to provide quality habitat to salmonids. Protection of salmonid habitats from the impact of human activities is a significant component of any effort aimed at restoring salmonids in the region. The focus of this research area will be on the improvement of agricultural practices in the region that are conducive to habitat protection.

4) *Habitat restoration*: A variety of efforts external to this research, not necessarily well coordinated, have been and will continue to be implemented to restore habitat quality for salmonid species. The impact of most of these activities can only be measured in long-term spans. Objective methods to evaluate progress towards established restoration goals are therefore of paramount importance to guide and redirect such efforts. Such methods are the focus of this area.

Projects and personnel - The following multidisciplinary projects have been identified for each of the areas listed above. 1) *Basin and watershed-scale analysis*: (1.1) Develop comprehensive habitat capacity/continuity models and associated decision support tools to guide restoration efforts. (1.2) Investigation of the dynamic

responses of the ecosystem to restoration efforts aimed at developing strategies that maximize the restoration of salmonids while minimizing the impact on human development. (1.3) Investigation of the hydrological characteristics of the Columbia River System, including stream flow availability under different climate scenarios and surface, subsurface, and groundwater interactions. 2) *Habitat assessment*: (2.1) Evaluation of juvenile and adult salmon habitat and identification of areas for restoration in Columbia and Snake rivers Basin. Part I. (2.2) Evaluation of juvenile and adult salmon habitat and identification of areas for restoration in Columbia and Snake rivers Basin, part II. 3) Habitat protection: (3.1) Modeling and evaluation of agricultural best management practices at field and watershed scales. (3.2) Restoration of Anadromous Salmonids in Small Lower Snake River Tributaries. (3.3) Salmon habitat restoration using irrigation return flows 4) Habitat restoration: (4.1) Develop and evaluate procedures to increase productivity of streams used by juvenile salmon and steelhead. (4.2) Development of monitoring methods, data storage, and GIS layers to track progress of salmonid restoration efforts in the region.

The following individuals have been identified as members of the research team for the habitat component. Others will be added as specific teams are formed. These individuals will interact as needed with those in the other two components of this program. Washington State University: Dr. Michael Barber, Dr. Kenneth Campbell, Dr. Shulin Chen, Dr. Andrew Ford, Dr. Akram Hossain, Dr. Rollin Hotchkiss, Dr. William Kinsel, Dr. Victor Medina, Dr. Barry Moore, Dr. Thanos Papanicolau, Dr. Edward Rykiel, Dr. Claudio Stockle, Dr. Joan Wu. University of Idaho: Dr. Ted Bjornn, Dr. Jan Boll, Dr. Ernie Brannon, Dr. Mike Falter, Dr. Peter Goodwin, Dr. Garrett Johnson, Dr. George LaBar, Dr. Roy Mink, Dr. Michael Scott.

WSU and UI SALMON RESTORATION PROGRAM
Economic Sciences Component
Executive Summary

Objective: To develop a multi-investigator program that focuses economic sciences, communications, and local decision-making expertise to address strategic problems in salmon restoration in the Pacific Northwest. The benefit is an integrated program that researches basic economic impacts and limitations to restoring wild fish stocks.

Organization: Center for Environmental Education, WSU and the Department of Agricultural Economics and Rural Sociology, UI will coordinate and administer the program.

Summary: This program focuses expertise from the economic sciences, communications, sociology and cultural studies on problems critical to salmon recovery in the Pacific Northwest. Specific products of the program include 1) a determination of the feasibility and third party effects of water markets and a determination of the design of institutional structures necessary to implement such markets, (2) an evaluation of the economic benefits and consequences of water application efficiency, including benefits from return flows, (3) an evaluation of the relationships between water laws, institutions and endangered species for the purpose of determining changes that preserve the efficiency of water use and the integrity of water-using sectors, (4) an estimation of the economic impacts of salmon restoration alternatives, (5) an estimation of cumulative economic impacts of multiple Endangered Species Act listings, and the interaction between listings and other environmental regulations, (6) improved community-based voluntary restoration and planning programs, (7) an improved regional dialogue about tradeoffs between human development and salmon recovery, (8) an understanding of historic sediment and hydrologic regimes.

Projects: The central theme of the proposed projects is an integrated approach to understanding economic and social impacts of salmon restoration alternatives and to promoting better communications and decision-making processes as part of supporting local community voluntary initiatives

Project 1—Drs. Ray Huffaker, WSU and Joel Hamilton, UI, Water Markets and Institutions

Project 2—Drs. Ken Casavant, WSU, Dave Holland, WSU, Phil Wandschneider, WSU, Jim Jones, UI. The Economic Adjustment Process.

Project 3—Drs. Chuck Harris, UI, Garth Taylor, UI, Ray Huffaker, WSU. Cumulative Effects of Endangered Species and Environmental Regulation.

Project 4—Drs. Loren Lutzenhiser, WSU, Craig Parks, WSU, Patty Sias, WSU, Michael Salvador, WSU, Edward Weber, WSU, Darin Saul, WSU, Chuck Harris, UI, Aaron Harp, UI. Local Governance and Decision-making Strategies for Voluntary, Locally-based Salmon Restoration.

Project 5—Drs. Chuck Harris, UI, William McLaughlin, UI, Edwin Krumpe, UI. Developing A Community-Based Collaborative Approach to Basin-Wide Ecosystem Management.

Project 6—Drs. Joel Hamilton, UI, Chuck Harris, UI, Gene Rosa, WSU, Ken Casavant, WSU, William Budd, WSU. Summer Institutes and Workshops.

Project 7—Drs. Gary Huckleberry and Peter Mehringer. Historic Hydrologic Regimes and Habitat Capacity.

Project 8—Drs. Theresa Schenck and Darin Saul. Historic and Current Role of Beavers in Shaping the Hydrology of Fish Habitats.

Mrs. CHENOWETH-HAGE. Thank you, Dr. Skinner, and the Chair recognizes Mr. Swartz for his testimony.

STATEMENT OF DON SWARTZ, SCIENCE AND POLICY ADVISOR, NORTHWEST SPORTFISHING INDUSTRIES ASSOCIATION, PORTLAND, OREGON

Mr. SWARTZ. Thank you, Mrs. Chairperson and panel for inviting. I am Don Swartz, Science and Policy Director for Northwest Sportfishing Industries Association. We thank your for the opportunity to present our views at this important hearing on these important issues. These issues are critical to our association and sport fishermen here in the Northwest.

Before becoming a member of this group, I was a fish biologist. I worked for the State of Oregon for 31 and a half years, and I have been involved in Columbia River fish management and hatchery research and so forth for the past 35 years.

During part of that time, 1991 to 1996, I was the Chairman of U.S. Versus Oregon Technical Advisory Committee and served under the Nine Circuit Court on fish management issues on the river.

Today I'm here to ask the House Committee to step back and take a broader view of the situation we are in. It isn't just about this little valley here. It covers the whole Northwest. We need to save jobs and the economic development and everything that's gone on here we need to look at the whole region as well. We have other places in the region here where we are suffering as a consequence of some of the things that are happening to our salmon, and we have vacant cannery buildings up and down the coast, especially in Astoria. We have private fishing boats sitting in the docks all up and down the coast. These are trollers, these are charter boats, and what not. They are out of business essentially.

We have abandoned homes on the lower Columbia River that used to home commercial fishermen. They have had to move to Alaska to stay alive or change occupations, which means they had to move away from the river. There's a lot of things going on.

Our industry represents boat manufacturers, tackle manufacturers, wholesalers, retailers, mom and pop groceries that sell tackle and bait. Guides, charter operations that are still in business, there are a few of them. Down the list includes motels, hotels, resorts, et cetera, and we have over 400 members here in the Northwest in the three States, and we represent about 40,000 working family jobs. We've lost 10,000 of those jobs in this industry in the last 10 years since the listings started. It's not all, you know, attributable to the Snake river dams, but the Snake River dams are one of the key issues in recovering salmon.

When we look at the Columbia Basin, historically they produced 10 to 16 million fish a year. These were all natural wild produced fish and their spawning grounds went from British Columbia to Nevada or the Ewahee River that came out of Nevada.

Currently, the fish only have access to one half of what they formerly could get to and in that one half 70 percent of them was in the Snake Basin. The remainder portion of the available water shed is in those rivers where we have the biggest problems and probably the least likely to recover natural production. In the

Snake Basin we have 5200 miles of good fish productive water and that ranges all the way from very poor degraded habitat to pristine habitat. Of that 5200 we have roughly 1,000 miles still in the State of Idaho and State of Oregon and parts of Washington and Tucannon system. We still have about 1,000 miles what we could describe as pristine productive habitat. It simply doesn't have any fish in it.

Now, National Marine Fisheries Service embarked on a new study called their critical risk analysis, and the PATH report earlier, which was a composite from all scientists from all over the Northwest concluded that the Snake Basin the single most important thing would be taking out the dams in order to restore the fish runs. The new process says maybe we don't need to do that. We can do a vigorous job of habitat construction and harvest reductions and change our hatcheries around so that things are will work better. If we have 1,000 miles of pristine habitat where we never stock any hatchery fish and we look at our harvest rates on the existing up river spring and summer Chinook and they have been at a low 10 percent, and this is collectively for the ocean and in the river. They have been consistently below 10 percent since 1978 when we had our last fishery on those fish, how in the world are we going to make it so much better that we can disregard the dams. It just doesn't work. There's something wrong in that analysis. I believe there's some political science being played here.

What we are asking is that we step back and take a bigger look, broader look. We are spending one billion dollars a year and we've made no progress whatsoever. So far we're pouring this money into studies and bureaucracies and so forth that want to expand on things. I'm running out of time anyway.

We think we should reinvest that money to the people and we need the safe this economy up here and there is certainly enough money that we can do it in an overland system. Barge transportation is only cheap if we disregard the Corps' contribution. The Corps' budget for maintenance on the river, if we include that in the analysis, we find that barge transportation is probably the most expensive in America. The Corps' budget isn't being included in that analysis when we consider it cheap. It isn't. If we are not maintaining those dams, we have lots of money to invest in the infrastructure to keep people up here working at home.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Swartz, and the Chair recognizes Mr. Minthorn.

STATEMENT OF ANTONE MINTHORN, CHAIRMAN, BOARD OF TRUSTEES, CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION, PORTLAND, OREGON

Mr. MINTHORN. Thank you. My name is Antone Minthorn. I'm the Chairman of the Board of Trustees for the Confederated Tribes of the Umatilla Indian Reservation in or near Pendleton, Oregon. Thank you for the opportunity to be here today, and I appreciate your invitation to speak to the Committee, and I also apologize for submitting the paper at a late date. It will not happen again.

You have a paper there that we submitted late, and I have a very short statement that will cover that very briefly. The Confederated Tribes were here when Lewis and Clark came in 1805 and

when the Oregon Trail came through in 1843. Our tribes are the Cayuse, Umatilla and Walla Walla. This region is our home. The tribes held a treaty council with the U.S. Government in 1855 in the Walla Walla Valley in Washington territory. Other tribes present were the Yakama, Nez Perce and a few northern tribes.

At the Treaty Council the Confederated tribes gave over 60 million acres to the U.S. Government. The ceded area is Southeastern Washington and Northeastern Oregon, which includes the Columbia and Snake Rivers and tributary waters. Other millions of acres were ceded by the Yakama and Nez Perce tribes.

The Confederated Tribes reserved certain rights ceded areas and a very important right is to take fish at all streams running through and bordering the Reservation and at all the usual accustomed places. Salmon have always been an important economic and cultural right of our people who live in this country. We have always depended upon the salmon. That is why we are here today.

As I recollect in the 1960's there were still salmon from the tributaries in our Northeast Oregon ceded area. I used to catch them in Catherine (phonics) Creek, a tributary of the Grande Ronde River in Oregon. I also fished at Celilo Falls in 1957, the last year of the falls, but in the 1970's, the salmon runs were no longer there. There was always a concern by people about the disappearance of the salmon, but nothing was done until the late 1980's.

The Columbia River Inter-Tribal Fish Commission was created in the 1970's and the Columbia River Inter-Tribal Fish Commission is a regional Indian fisheries organization. The Confederated Tribes became involved with salmon issues in the mid-1980's with salmon restoration in the Umatilla River, where the runs became extinct due to irrigation diversions in the early 1900's by the Bureau of Reclamation. The Tribe's approach was to negotiate, cooperate, not to litigate. The project that I'm referring to is called the Umatilla Basin Project and it has been successful in putting water and fish back into the river, and I think you are probably familiar with that particular project.

In order for it to succeed, it took a high level of cooperation and leadership to achieve it. The Confederated Tribes, the irrigators, Federal agencies, State agencies all worked together to achieve that accomplishment and that victory. In the process of restoring salmon water to the Umatilla River, the Tribe has the capability and the capacity to manage their fisheries.

One year there were 10,000 salmon returning to the Umatilla River, and salmon runs are beginning this year and we don't know how that will come out when the run is over, but it has been successful.

The Tribe's concern over the declining salmon runs resulted in a Tribal salmon policy. The policy is based upon the life cycle of the salmon. It is a comprehensive approach which includes dam breaching. This policy has been approved by the Tribal people.

Another major plan document is Wy-Kan-Ush-Mi Wa-Kish-Wit, Spirit of the Salmon. This plan is implemented by the Columbia River Inter-Tribal Fish Commission. This plan takes a regional approach and works with subbasins. It's basic concept is gravel to gravel.

The concluding remarks that I have are that the Tribes have been effective in restoring salmon again referring to the Umatilla Basin Project as an example. We have built a capacity at the regional and local levels. We have scientists. We have successfully worked with other sovereigns and jurisdictions both in Oregon and Washington State. We want our voice heard in the river governance process, and we want the Federal Government to continue to honor its Treaty and trust responsibilities. These are my very brief remarks to the Committee here. And I just want to say that I think that we can succeed if we stay together. That's all. Thank you.

[The prepared statement of Mr. Minthorn follows:]

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and
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Testimony of Antone C. Minthorn
Chairman, Board of Trustees
Confederated Tribes of the Umatilla Indian Reservation

Before the
Subcommittee on Water and Power
House Committee on Resources
April 27, 2000
Pasco, Washington

My name is Antone Minthorn. I am the Chairman of the Board of Trustees of the Confederated Tribes of the Umatilla Indian Reservation. Thank you for the opportunity to be here today. I appreciate your invitation to speak to the Committee.

Introduction

The Confederated Tribes of the Umatilla Indian Reservation includes the Cayuse, Umatilla and Walla Walla peoples. Nearly one hundred and fifty years ago, my ancestors signed a treaty with the United States government--the Treaty of 1855. My Treaty is as important to me as the Constitution and Bill of Rights are to you. In fact, the Constitution proclaims treaties to be "the supreme Law of the Land."[1] Together, they go hand-in-hand.

Other tribes of the Columbia River Basin also signed similar treaties. We each drew life and sustenance--food for our bodies and our souls--from Nch'i-Wana, "The Big River." We still do. We signed the treaties to protect and preserve our river, our fish, our people, and our way of life--in 1855, now, and forever. Each of the four tribes--Nez Perce, Umatilla, Warm Springs and

[1]U.S. Const. art. VI, cl. 2 ("[A]ll Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding"). *See* United States v. Washington, 384 F. Supp. 312, 330 (W.D. Wash. 1974), aff'd, 520 F.2d 676 (9th Cir. 1975), *cert. denied*, 423 U.S. 1086 (1976). Treaties with Indian tribes are contemplated by this constitutional provision. *See, e.g.*, Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832).

Yakama--is a separate sovereign, with the powers and responsibilities of self-governance. Each of us is unique, but there is much we share--language, culture, religion.

We all honor the salmon. We fish for salmon at Celilo and at our other usual and accustomed sites on the mainstem and in the tributaries, as we have done for thousands of years. Our salmon harvest never triggered any extinctions. We "managed" the runs successfully, providing for sustainable populations of both fish and people. We did so long before there was the possibility that others could "manage" the work of the Creator into oblivion.

The Continuing Crisis

Today, many salmon populations are seriously depleted, some even driven to extinction. This critically important resource--central to our economic and spiritual well-being--is in danger of disappearing from our homelands, leaving them--and us--barren, empty and poorer than before.

This year, many have pointed to higher overall run sizes for spring chinook. They claim that conditions have improved and the crisis is over. I hope that they are right, but I fear that they are not. Wild spring chinook numbers are still low, only about 10 percent of the total run. There are still fewer wild spring chinook returning than average adult returns in both the 1980s and 1990s. "This is not good enough to rebuild or recover the stock," according to scientists.[2]

Tribal Initiatives

The Confederated Tribes of the Umatilla Indian Reservation officially described its interests regarding salmon in 1995. In that year, we adopted our *Columbia Basin Salmon Policy*. It is a comprehensive statement of principles, with specific recommendations, addressing the entire salmon life cycle. It looks at all the "Four Hs" of salmon mortality--the hydrosystem, habitat in the tributaries, hatcheries, and harvest.[3]

Also in 1995, the four Columbia River Treaty Tribes looked at our mutual interests in saving the salmon, and came up with a plan to do it--*Wy-Kan-Ush-Mi Wa-Kish-Wit (Spirit of the Salmon)*. It is a lengthy, detailed plan that also comprehensively examines all causes of salmon mortality. It also contains specific recommendations for reducing mortality and restoring fish.[4] Nearly five years before the federal government began to stress an "All H" approach, we did.

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[2]*Wild Spring Chinook Count Low*, Columbia Basin Bull., (Apr. 21, 2000) (citing Idaho Department of Fish and Game information; "IDFG biologists estimate the smolt-to-adult return needs to be 2 to 6 percent, but that returns to Idaho have been closer to 0.5 percent.").

[3]Confederated Tribes of the Umatilla Indian Reservation, *Columbia Basin Salmon Policy*, Mar. 8, 1995.

[4]*Wy-Kan-Ush-Mi Wa-Kish-Wit (Spirit of the Salmon), The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs and Yakama Tribes* (1995).

So far, our policy, our plan, and our recommendations have been largely ignored or disregarded by the federal operating agencies and resource managers. They are only now stressing the need for comprehensive solutions for all Hs.

Dam Breaching

The tribes have long and consistently advocated a broad spectrum of gravel-to-gravel measures. We have taken positive steps to achieve recovery, sometimes helped, and sometimes hindered, by federal government policies and practices. However, as we all know, dam breaching currently receives the most attention. We regret this. We agree that breaching is not a "silver bullet." We have never claimed that it was. It is unfortunate that it has created so much controversy.

While providing certain benefits, the hydrosystem has taken an enormous toll on salmon and the tribal people who depend on them. As a result, ancient experience and modern science both led us to the same conclusion on dam breaching in 1995, as stated in our *Columbia Basin Salmon Policy*.

The Confederated Tribes of the Umatilla Indian Reservation supports natural river level drawdown of the lower Snake River by removing the earthen embankments at Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams.[5] The Columbia River Treaty Tribes also reached the same conclusion endorsing dam breaching five years ago.[6] Together, we believe that the lower Snake River dams must be partially removed to prevent further extinctions of Snake River salmon.

Breaching alone is not enough. But all other measures combined, without breaching, will not be enough. Partial removal of the four dams is an essential component of any effort to effectively protect and restore Snake River fish. Breaching is necessary to eventually de-list salmon under the Endangered Species Act. It is necessary to rebuild and restore the runs **and their habitat** leading to sustainable, harvestable salmon populations consistent with tribal Treaty Rights and the federal government's Trust Responsibility to the tribes.

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[5]Confederated Tribes of the Umatilla Indian Reservation, *Columbia Basin Salmon Policy* 12 (Mar. 8, 1995) ("We support the staged, strategic modification or removal of dams, such as the lower four Snake River Dams . . ., coincident with development of a New Energy Plan for the region and implementation of aggressive energy conservation programs.").

[6]*Wy-Kan-Ush-Mi Wa-Kish-Wit (Spirit of the Salmon), The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs and Yakama Tribes* 5B-30 (1995) ("The tribes' preferred alternative for Snake River Dam drawdown would require structural modifications at Lower Granite, Little Goose, Lower Monumental, and Ice Harbor dams to allow for drawdown to natural river level. Drawdown to natural river level is generally intended to restore flows to the water surface elevations that existed in the Snake River prior to impoundment.").

The "Presumptive Pathway"

We believe that the federal agencies should pursue a presumptive pathway to breaching. We also support dramatic, aggressive actions in the other three Hs now. These include tributary habitat protection and restoration. Federal land managers must adequately safeguard existing habitat, and restore degraded conditions. Adequate monitoring and budgets to accomplish it are needed to ensure accountability.

We must begin this process at once, realizing it may be decades before the full benefits are seen. Dam breaching may not occur for several years, but it may still be more immediate than results from necessary tributary habitat improvements. The federal government should proceed with both strong measures in the other three Hs, and the engineering and mitigation tasks associated with breaching. Should we see significant progress toward tribal restoration goals, then, **and only then**, would a breaching decision be deferred.

There has been vague talk of other steps to recover salmon, such as floating net pens, "new and improved" barging,[7] so-called "fish-friendly" turbines, "fish pumping," and digging a new, artificial channel for fish, in lieu of breaching. Unlike some whose minds are closed, we are open to all alternatives, including non-breaching. We do not oppose any legitimate, scientifically valid salmon recovery options. We believe that they should be explored. They should not be used only to delay and divert attention away from the dams, however.

In the past, we have fought for strong actions in the other three Hs. Time and time again, however, we have run into roadblocks, or a brick wall, from some federal agencies. After many years and much frustration, we have been left with no choice but breaching. We wish that breaching was not necessary, but overwhelming, reliable, independent evidence suggests that it is.[8]

7*But see* Letter from Stephen Mealey, Director, Idaho Fish and Game Department, to Donald Chapman, Ph.D. (Oct. 31, 1997) ("Smolt transportation has been the vanguard of the federal and industry view of salmon recovery since populations crashed in the late 1960s and 1970s. During this period, wild Snake River spring/summer chinook and summer steelhead declined by approximately 85%. . . . In view of this track record, the Idaho Department of Fish and Game . . . finds no basis in the data and adaptive management principles for supporting smolt transportation as a primary long-term recovery tool."). *See also* NW Fishletter (Apr. 7, 1998) ("[T]he ISAB report [on the Corps' fish transportation program] points out that current return rates, even with transported fish, are still below the two percent to six percent scientists feel is necessary for recovery of the listed stocks." Rick Williams, chairman of the Independent Scientific Advisory Board (ISAB), said that "[t]ransportation will continue to lead to extinction because of low SARs [smolt-to-adult returns].").

8*See, e.g.*, Letter from Stephen Mealey, Director, Idaho Fish and Game Department, to Donald Chapman, Ph.D. (Oct. 31, 1997) ("As for the merits of dam breaching, the Department believes it is biologically clear that wild Snake River salmon and steelhead will do better in a free flowing river than in a series of dams and reservoirs. Of the long-term recovery options currently considered, we are increasingly confident that breaching the four lower Snake River dams is the option most likely to restore Idaho's wild salmon and steelhead."); Donald Chapman, Congressional Testimony (*quoted in* Idaho

Support for Breaching

Science has confirmed common sense. Salmon need healthy habitat, and mainstem rivers are habitat. Breaching is habitat restoration, and with it will come salmon restoration. It is no coincidence that the healthiest remaining fall chinook salmon population is in the Hanford Reach, the last remaining undammed stretch of the Columbia and Snake Rivers.

Since 1995, our position favoring breaching has received further support from the U.S. Fish and Wildlife Service,[9] the Independent Scientific Group,[10] the Idaho Department of Fish and Game,[11] the Idaho Fish and Game Commission,[12] the Alaska Department of Fish and Game,[13] the Process for Alternative Testing of Hypotheses (or PATH) group of scientists,[14] the Multi-Species Framework process, the American Fisheries Society,[15] and over 200 fisheries scientists.[16]

Department of Fish and Game, *Idaho's Anadromous Fish Stocks: Their Status and Recovery Options* 17 (May 1, 1998)) ("[I]f we want to go back to the harvestable runs of the 1950s, 45 years ago, there is only one way to do that: take out four lower Snake River dams . . . [T]hat is the only way to do it. We are not going to get there by tweaking the system.").

[9]U.S. Fish and Wildlife Service, Draft Feasibility Report/Environmental Impact Statement, Appendix M, Fish and Wildlife Coordination Act Report, M10-1 - M10-12 (Dec. 1999).

[10]The Independent Scientific Group, *Return to the River: Restoration of Salmonid Fishes in the Columbia River Ecosystem* (1996).

[11]Idaho Department of Fish and Game, *Idaho's Anadromous Fish Stocks: Their Status and Recovery Options* 16-17 (May 1, 1998).

[12]Idaho Fish and Game Commission, Policy Statement (May 8, 1998); Idaho Fish and Game Commission, News Release (May 29, 1998).

[13]Testimony by Frank Rue, Commissioner, Alaska Department of Fish and Game, to the Federal Agency Caucus on the Recovery of Snake River and Columbia River Salmon (Mar. 9, 2000) <http://www.state.ak.us/local/akpages/FISH.GAME/geninfo/hot/esr/ruetest.htm>.

[14]The PATH scientists estimated an 80% probability that bypassing the four dams will recover spring and summer chinook salmon, and a 100% probability that it will recover fall chinook. Other options examined, including intensified fish barging, range from a 30% to 50% probability of recovery. See Columbia Basin Bull., (Jan. 29, 1999) ("Doug DeHart, Director of Fisheries [for ODFW], discussed the PATH report and its conclusions, saying that as a biological decision analysis, the report is scientifically sound, credible, comprehensive, objective and conclusive. 'I believe this biological decision analysis is the best of its kind and must be considered to be part of the final decision. Recovery will only occur under options that approach the natural river,' DeHart concluded.").

[15]Western Division, American Fisheries Society, *Resolution of the Western Division of the American Fisheries Society On the Role of Dams and Snake River Salmon and Steelhead Recovery* (July 13, 1999 <http://www.fisheries.org/wd/news/1999/Resolution_dams_snake_river_salmon_steelhead.htm>; Oregon Chapter, American Fisheries Society, *Resolution of the Oregon Chapter of the American Fisheries Society on Snake River Salmon and Steelhead Recovery*, Feb. 17, 2000 <http://www.state.ak.

They have been joined by Oregon Governor John Kitzhaber,[17] the Affiliated Tribes of Northwest Indians,[18] cities and municipalities, newspapers like the Idaho Statesman and the New York Times, hundreds of Alaska commercial fishermen,[19] and tens of thousands of American citizens. Removing dams is not new nor unprecedented. It has happened around the country.[20] It has happened in my tribe's ceded territory, on the Walla Walla River. It has helped fish.

Mitigation

Let me be clear: dam breaching should not take place without appropriate and timely mitigation. We readily acknowledge that impacts will occur. We did so in 1995; we still do today. Tribes know all too well the hardships imposed by unforeseen economic and social changes. We do not wish upon non-Indian families and communities the same circumstances that tribal families and communities have endured because of the loss of salmon.[21]

No Shortage of Red Herrings

Some assert that dams are not the real problem. They point to ocean conditions or terns, or harvest. They raise the specter of flooding, of unleashing tons of sediment, of lost power and navigation.

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us/local/akpages/FISH.GAME/geninfo/hot/esr/afs_reso.htm>.

[16]Scientists' Letter to President Bill Clinton (Mar. 22, 1999) <http://www.state.ak.us/local/akpages/FISH.GAME/geninfo/hot/esr/scientst.htm>.

[17]Speech by Governor John Kitzhaber to the *Governance and the Columbia River* Conference (Oct. 15, 1998).

[18]Affiliated Tribes of Northwest Indians, *Resolution #97-28, "Endorsement of Natural River Restoration to Protect and Enhance Fish & Wildlife Populations in the Columbia River Basin,"* (Feb. 13, 1997).

[19]*Alaska Commercial Fishermen Endorsing Removal of The Four Lower Snake River Dams* <http://www.state.ak.us/local/akpages/FISH.GAME/geninfo/hot/esr/fishermn.htm>.

[20]*See, e.g.*, Steven Ginsberg, *Freeing Fish on the Rappahannock*, Washington Post, Apr, 22, 2000, at B3 < http://www.washingtonpost.com/wp-dyn/articles/A60458-2000Apr22.html>.

[21]Meyer Resources, Inc., *Tribal Circumstances & Impacts from the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes* 1999. This study found that the tribes currently catch less than 10 percent of the harvest that supported them at the time of the Treaties of 1855. It also found a significant transfer of wealth from the tribes to non-tribal populations that benefit from the dams. Tribal unemployment and poverty levels are significantly higher than those of non-tribal populations. Tribal death rates are about twice as high as non-tribal death rates. Tribal per capita incomes are 40 to 70 percent below non-tribal populations.

It has been said that "[t]he role of ocean conditions continues to be largely ignored by NMFS, despite the fact that the ocean is where salmon spend most of their lives and where there is the highest mortality."[22] Yet the ocean has always been a source of high mortality. The ocean has always been with us, and so too were the salmon, until the last few decades. These decades saw the corresponding construction of the lower Snake River dams, and the decline of Snake River salmon. Since the dams were built, returns have decreased more than those in rivers with fewer dams. The difference is that Snake River salmon have to pass eight dams, which is four dams too many. If the problem is in the ocean, then Snake River salmon are more sensitive to those conditions, which is unlikely.[23]

Terns, too, have often been mentioned. Undeniably, they are a problem, one of many that needs to be corrected. The tribes support efforts to relocate the terns. We will continue to work on the Avian Predation Task Force, as we have done for years. Nevertheless, we should note that the tern situation is largely the result of the hydrosystem itself.[24]

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[22]Barry Espenson, *Smith's Hearing Hashes Over Recovery Arguments*, Columbia Basin Bull., (Apr. 21, 2000) (quoting U.S. Senator Gordon Smith, R-OR).

[23]N.S. Nokkentved, *Scientists tackle salmon science*, Twin Falls, ID, Times-News, Apr. 21, 2000 (citing comments by Charlie Petrosky, Idaho Department of Fish and Game).

[24]Roby, *et al.*, *Avian Predation on Juvenile Salmonids in the Lower Columbia River* (1997) (There is "a growing body of evidence that the operation of the hydrosystem may be contributing to unexpectedly high avian predation rates on juvenile salmonids in the Columbia River estuary." There are data indicating "that various efforts to reduce smolt mortality in-river (e.g., . . . barging) may cause hatchery-raised smolts to reach the estuary before they are physiologically capable of smoltification. Smolts that reach the estuary prematurely may be avoiding seawater by remaining in the freshwater lens at the surface where they are more vulnerable to tern predation. Also the additive stress on juvenile salmonids from negotiating dams and/or being barged down river may contribute to reduced physiological condition and enhanced disease, factors that will tend to further increase the vulnerability of smolts to bird predation in the estuary. . . . Hydroelectric dams create 'bottlenecks' to salmon migration and often injure or disorient out-migrating juvenile salmonids, increasing their vulnerability to predators. . . . [J]uvenile transportation practices that release salmonids *en masse* offer avian predators additional opportunities to exploit concentrated and vulnerable prey."). *See also Northwest Salmon Recovery Report*, Jan. 18, 1999, at 9 ("[T]he fundamental reason that the Columbia River salmonids experience a 'fragile status' is a series of enormous dams that have been built on the Columbia River, and the failure of natural resource agencies to mitigate effectively the damages to migratory fishes that those structures cause. We believe that it is both unscientific and contrary to law to destroy or jeopardize healthy seabird colonies because state and federal fishery managers have not devoted the resources necessary to enable the salmonid populations to reproduce successfully in an alien environment that has destroyed their natural breeding strategies. Moreover, we believe that operational changes at the dams would yield far more benefits to . . . salmon and steelhead than harassing seabirds or destroying their colonies. . . . The options supported by some agencies are based upon misguided belief that Caspian terns are somehow culprits in the demise of certain populations of salmonids. This is tantamount to coming home after an unsuccessful day at work and kicking the family dog.") (*quoting* Letter from Craig Harrison, Vice-Chair for Conservation, Pacific Seabird Group, to Oregon Department of Fish and Wildlife).

Harvest, of course, continues to be a favorite target. Tribal harvest, in particular, is still the subject of scorn and hostility. Here in Pasco, two months ago, tribal elders were confronted with signs reading, "Save Our Salmon, Eat Indian Gillnetters."[25] Unfortunately, the past twenty years have proven that Snake River spring/summer chinook cannot be rebuilt via severe harvest restrictions. Even NMFS admits that zero harvest would have little effect on salmon survival. Populations will continue to decline unless other mortality factors are reduced.[26]

The tribes have severely restricted harvest for years. We stopped commercial fishing for summer chinook in 1964. We haven't had a commercial spring chinook season since 1977. We stopped voluntarily, to conserve the resource when runs were low. Our remaining fall chinook commercial season has lasted, at most, a week or two. Our tribal longhouses have not had enough fish for traditional ceremonies and religious practices. We have been limited to harvest rates in the single digits. We have tried to do our part. Yet we wonder why the dams are allowed to harvest 40 percent of some adult runs, and up to 99 percent of some migrating juveniles.

The potential for flooding has been raised. We do not understand how **lowering** the river level will **increase** the chance of flooding downstream. Even the Corps has said the lower Snake River are not authorized for flood control.[27]

Concerns over sediment have also been expressed. The tribes believe that some concern is justified. However, most of the sediments will have stabilized in two years, depending on flows. They may be disbursed even faster near individual dams. Ecological benefits may be seen in two to four years. In-river passage for both juveniles and adults would be improved quickly by removing the obstacles posed by the dams.

25Confederated Umatilla Journal, Mar. 2, 2000, at 4 (photo).

26National Marine Fisheries Service, *Biological Opinion: Impacts of Treaty Indian and Non-Indian Year 2000 Winter, Spring, and Summer Season Fisheries in the Columbia River Basin, on Salmon and Steelhead Listed Under the Endangered Species Act* 57 (Feb. 29, 2000) ("Even with zero harvest the analysis indicates that all of the index populations will continue to decline unless conditions affecting survival in other sectors are improved . . .. Elimination of harvest can not change that general result. Growth rates decline with increasing harvest, but the effect on the growth rate is relatively small - on the order of one or two percentage points.").

27 *See* Lewiston, ID, Tribune, Aug. 16, 1998 ("The four dams between Lewiston and Pasco, that are being considered for breaching -- Lower Granite, Little Goose, Lower Monumental and Ice Harbor -- are run-of-the-river dams. 'A run-of-the-river dam has some significant application in water management, but they are not necessarily true flood control dams. That's what storage reservoirs are for,' says Dutch Meier, spokesman for the corps at Walla Walla. 'Run-of-the-river dams must pass virtually all the water that arrives.'").

Nevertheless, we wonder why we are hearing about the sediment issue now. We wonder why we have not heard about it before, since the lower Snake River has been routinely dredged for years to maintain shipping. Much of those dredge spoils and sediments have been re-deposited in the river. Yet they have been met with nothing but silence. There are plans to continue maintenance dredging in the lower Snake over the long term. So far, we have heard no concerns over the disturbed sediments it may generate. We also wonder why there is not similar concern over plans to dredge the lower Columbia River estuary to increase shipping, disturbing sediments there. This is the estuary that even NMFS has said is vital to the health and productivity of the salmon.

Breaching would eliminate power production from the lower Snake River dams. They produce only four to five percent of the region's electricity, however. Average electric rates could increase from $1 to $5 per month.[28] Newer analysis suggests even lower costs, from $1 to $3 per month. Affordable replacement power may be available through a combination of cost-effective energy conservation and investments in wind, solar and other clean, renewable power sources.[29] The potential for conservation is substantial, and should not be discounted.[30]

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[28]*See, e.g., New look at costs of breaching dams*, Seattle *Post-Intelligencer*, Jan. 15, 1999 ("Breaching four Snake River dams to help salmon would probably not boost household electric bills by much in the Puget Sound region, an initial federal estimate suggests. . . . [I]t would probably increase the monthly electric bill of an average Seattle household by less than $1 per month, federal officials said . . .. The added monthly cost would likely be even less for residential customers of Tacoma City Light and Puget Sound Energy, since they rely even less than Seattle City Light on federal power. The expected rate increase 'is not going to mean much' to most residential customers, said Ed Mosey, a spokesman for Bonneville Power Administration. . . . [T]he rate forecasts are the best federal estimates so far on how dam breaching would affect ratepayers. . . . [S]pread[ing] the cost of breaching across all Northwest electricity consumers - regardless of the source of their power - could boost monthly household bills by an average of about $2, or 4 percent, BPA officials said.").

[29]David Marcus and Karen Garrison, *Going With The Flow: Replacing Energy From Four Snake River Dams* (Apr. 10, 2000) <http://www.nwenergy.org/publications/docs/sum_cl_energy.html> (Executive Summary). *See also* Mike Lee, *Report urges power conservation efforts*, Tri-City Herald, Apr. 10, 2000 <http://www.tri-cityherald.com/news/2000/0410.html#anchor596187>.; *Dam study finds new energy sources*, The Oregonian, Apr. 10, 2000 <http://www.oregonlive.com/news/oregonian/index.ssf?/news/oregonian/00/04/lc_21power10.frame>; >; *Alternative energy sources could replace power generated by Snake River dams*, The Olympian, Apr. 11, 2000 <http://news.theolympian.com/stories/20000411/Northwest/56472.shtml; *Clean energy sources could replace dams, study asserts*, Seattle Post-Intelligencer, Apr. 11, 2000 <http://www.seattlep-i.com/local/damm111.shtml>.

[30]*See* The Oregonian, Nov. 30, 1998 ("[T]he Northwest Power Planning Council estimates that since 1980, utilities have secured less than half the conservation potential that could be cost-effectively developed. . . . If Northwest utilities fully exploited the energy-efficiency opportunities out there, the cost of electricity to their customers could be reduced by more than $2 billion.").

Commercial navigation to Lewiston would end, but it would continue to and from the Tri-Cities. Economic development opportunities for the Tri-Cities area would potentially increase. Lewiston could remain a commercial transportation hub, with proper investment in highways and rail. Recreational opportunities could be enhanced significantly.[31]

Costs of Recovery--and Extinction

Certainly there are costs to recover salmon. Many have reaped great benefits from their destruction. Balanced against recovery costs must be the **costs** of driving them further to extinction.[32] There will be costs if we don't breach the dams. There will be further non-compliance with the federal Clean Water Act and other statutes, for example, if the dams remain intact. Other costs may include even harsher restrictions in tributary habitat and more water from Idaho. They would include dishonored treaties and potential tribal claims for infringement of our rights.

We agree with those who say we there needs to be a human face on the salmon recovery debate. For far too long, for too many years, tribes and many others have seen all too well, and much too often, the human face on our **failure** to recover and restore salmon. We've seen it in the faces of our tribal elders, when they've come to us to ask, "Where are the salmon for our ceremonies--our feasts, our funerals, our births, our Sabbath?" We've seen it in the faces of our children, when they've come to us to ask, "What was it like to fish at Celilo, to fish in our nearby rivers and streams?"

We've seen it in the faces of the non-Indian fishermen and their families, and the many communities that depended on them, all up and down the Columbia and along our coasts. It's time that we recognized the human face of salmon **extinction**.

31*See, e.g.*, Idaho Statesman, Sept. 22, 1997 ("Breaching four dams on the Lower Snake River makes economic sense and restores an Idaho treasure. If salmon return to the state in substantial numbers--which they will if the dams are breached--the long-term benefits outweigh any short-term losses.").

32*See, e.g.*, *Let's make sure this sockeye isn't the last at Redfish Lake*, Idaho Statesman, Aug. 25, 1998 ("The fish are worth an estimated $150 million to Idaho's economy, especially in hard-pressed rural towns. In Salmon . . . residents lament the loss of a once-thriving fishing industry that drew anglers and tourists. 'There used to be over 20 tackle shops between here and Stanley,' Jack Cook, owner of the Silver Spur Sports Shop [said]. 'Now they're all gone.'").

Much has been spent on salmon recovery. It may be more accurate to say that much has been mis-spent. Even your colleagues in the House have raised concern about the focus of some of the funding.[33] Too much has been spent on technological fixes that haven't worked. The tribes are not anti-technology. We are not slaves to it, either. It must assume its proper role in saving salmon. Combined with common sense, it can serve us well.

Supplementation, and Success in the Umatilla River

Hatcheries are one of the four Hs of salmon mortality. It should be emphasized, however, that it is certain hatchery **practices** that are most deserving of criticism. Properly used, hatcheries can be a valuable tool in salmon recovery and restoration.

The Confederated Tribes of the Umatilla Indian Reservation has proven this in our own Umatilla River. Using a careful, scientifically sound hatchery supplementation program as part of the Umatilla Basin Project, we have restored salmon after they had been erased for over 70 years. We even have fishing seasons for both Indian and non-Indian fishermen. We did this by working cooperatively with the state and federal governments, and, most importantly, the affected stakeholders in the Basin. Together, we were able to forge a "win-win" solution that both restored fish and preserved the local farm economy.

We didn't rely on just supplementation, however. The other key element was restoring a portion of the habitat--the Umatilla River itself. In our watershed, both supplementation and habitat restoration were essential. The tribes hope to repeat such successes throughout the Columbia River Basin.[34] Intervention with captive breeding and supplementation, including the use of surplus hatchery fish, is needed in many subbasins. We do not advocate massive, indiscriminate efforts. We have followed a selective, cautious approach. For us to succeed elsewhere, however, NMFS needs to accommodate the tribes' strategies when implementing the Endangered Species Act.

For us to use hatcheries like we did in the Umatilla, it is critical that there be more flexibility in NMFS artificial propagation policies. It would also be helpful if certain existing hatcheries were transferred to tribal control and management, as we have proposed. The tribes must maintain and increase our capacity to hold and rear fish, outplant them to natural production areas, and conduct appropriate monitoring and evaluation. Adequate funding for tribal projects is also needed to implement the tribal strategies.

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[33] *See* Energy and Water Subcommittee Report, FY99 (June, 1998) ("The [House Appropriations] Committee has previously expressed its deep concerns regarding the vast sums of taxpayer dollars poring into this project with little apparent effect. For all its reliance on technological fixes and fish barging, there is no clear evidence that the salmon recovery efforts in the Pacific Northwest are, or will become, successful.").

[34] *See, e.g.*, Rocky Barker, *Idaho Nez Perce try strategy to restore wild chinook runs*, The Oregonian, Apr. 23, 2000 <http://www.oregonlive.com/news/oregonian/index.ssf?/news/ oregonian/00/04/ nw_11fish23.frame>.

Conclusion

In order to protect and restore the salmon we have to work together--all of us, Indian and non-Indian alike. We all must recognize and respect each other's interests, even when they are different. We must give them their due consideration if we are to successfully negotiate resolutions to our complex resource management problems. To preserve the salmon, we must listen to the scientists, and thoughtfully weigh their insight. We must listen to our elders, and learn from the wisdom they have gained. If we turn a deaf ear to them, the day may come when our children listen to us, anxiously awaiting an answer to their question: "What did you do to save the salmon?"

Thank you.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Minthorn. The Chair will recognize members for their questions beginning with Mr. Hastings.

Mr. HASTINGS. Thank you. Mr. Minthorn, you touched briefly on the successes you had with the returning runs on the Umatilla River and according to your testimony you said those runs had been gone for some 70 years; is that correct?

Mr. MINTHORN. That's correct.

Mr. HASTINGS. In case I missed it, I was trying to read and listen at the same time, when did that project start to restore these runs? How long has that been ongoing?

Mr. MINTHORN. The project was authorized in 1988, and we began working at that time—we began to put salmon into the river right then and there.

Mr. HASTINGS. These were hatchery fish?

Mr. MINTHORN. That's correct.

Mr. HASTINGS. They were hatchery fish. Do you consider returning runs still hatchery fish or do you consider them wild fish, wild salmon?

Mr. MINTHORN. I think that there are hatchery fish and there are wild fish. Those that are reintroduced into the lifecycle and begin to thrive, then I would consider they are getting into that area of being wild.

Mr. HASTINGS. One generation would probably be sufficient then or did you consider hatchery fish that left after you made the initial effort, then when they came back the second generation would be wild salmon from your perspective?

Mr. MINTHORN. From my perspective, yes, and I'm not a biologist, but just from a Tribal member.

Mr. HASTINGS. No, I'm not a biologist either. In that line of thinking, most of the discussions has been on saving wild salmon runs. Does your Confederation take into consideration any distinction between wild runs and salmon runs and would it make any difference to you if the returning fish were hatchery fish or salmon? Does it make any difference to you as long as the fish are returned, to put it bluntly?

Mr. MINTHORN. It makes a difference in that we use hatchery salmon to supplement the fishery, and if the wild fish are there, we certainly want to get those wild fish back and to preserve and protect them.

Mr. HASTINGS. I understand that. What you said a moment ago, the second generation would be wild fish from your perspective?

Mr. MINTHORN. From my perspective, yes.

Mr. HASTINGS. Right, OK, good. You also mentioned in your testimony while most of the focus has been on dam breaching, you have not really taken a hard fast position on that or did I read that incorrectly?

Mr. MINTHORN. Just when I talked about the Umatilla Basin Project and that the approach we took there was to negotiate not to litigate and to work, to begin to try to work these problems out with the irrigators, which has been a very difficult process. In fact, we are still working on it yet, but the Umatilla Basin Project will be completed May 20th. That's when we have the ceremony for that in closing out that phase of the Umatilla Basin Project.

Mr. HASTINGS. I would just say that the Umatilla Basin Project that you have been working on that has been successful because you have returning run now. It appears to be consistent. The Vernita Bar Agreement, which is another agreement that was primarily based on local initiative, to me that is a very good model for looking ahead. I want to be one to congratulate you for keeping an open mind on this because you heard by the testimony earlier today that there's some pretty hard feelings on both sides of this issue?

Mr. MINTHORN. We are open but, like I say, we have a salmon policy that was approved by our General Council, which is Tribal membership and adopted by the governing body, but our salmon policy does look at the salmon cycle in which all the problems and issues are, and dam breaching is on that cycle amongst all the other problems that are there. So we tend to look at it more from what you might call a holistic view.

Mr. HASTINGS. One thing that struck me and what I have looked at, I want to ask you this and Mr. Swartz this question too. NMFS has taken the notion or the initiative to list what I would say subspecies, upper Columbia or lower Columbia and so forth. So taking that notion, it is interesting that there is at least two runs of Sockeye. One spawns in Lake Wenatchee, I believe, and another spawns in Lake Usoyoos (phonics) and those runs are remarkably consistent all the way throughout the lifetime of the dams being on the river. In those days you had to go through nine dams, and yet those returns have been remarkably consistent, which would indicate to me that there may be something else in the biological mix that causes salmon runs not to come back. Do you have any comment on that, either one of you?

Mr. SWARTZ. If we look back about 20 years ago, the main body of Sockeye coming back to the Columbia River was from the two ways that you're describing. We had about 200,000 a year coming back. In the more recent years, it's more on the order of 30 to 50,000, considerably reduced. I think that's a reflection of poor ocean conditions. And those runs we still consider healthy. They weren't considered for listing and they are reproducing. They simply aren't at levels that we like to see them where they're harvestable. We probably need at 30 to 50,000 a year virtually all of those fish's farms. Given a better ocean condition they might come back up to a quarter of a million a year.

The passage problems and so forth are quite a bit different between the Snake and the main stem Columbia. The main stem Columbia is a much bigger river, and the water temperature a lot cooler, and the Snake, we have all kinds of problems in the reservoirs there with high temperatures and all the gas problems and everything else. It's just a different environment.

Mr. HASTINGS. They have a longer way to go from the mouth of the Snake River to where they can go a little farther. Up Hell's Canyon is a lot shorter than where the mouth of the Snake River is.

Mr. MINTHORN. That's not true. All the way up the Snake as far as the Salmon River and all the way up the Salmon River clear to Head Water Lakes by Sun Valley. Each trip is just as far as going to British Columbia on the mainstem Columbia.

Mr. HASTINGS. So the length is essentially the same. Mr. Minthorn, you need to clarify something.

Mr. MINTHORN. I don't have too much to comment on regarding Sockeye. I know that in the Umatilla there is a run of steelhead that did not get wiped out by the irrigation diversions but was able to survive. So I just mention that because I guess maybe some fish are better able to survive.

Mr. HASTINGS. One last question, Mr. Swartz. We opened this hearing today with a video on the Oregon fish and wildlife, I think clubbing hatchery fish. What is your response to that?

Mr. SWARTZ. Well, we've always clubbed hatchery fish. Those videos that we saw were very typical of what is happening on a spawning day in any hatchery. Those particular fish were Chinook, not Coho. This issue became a national thing a couple of months ago because of the situation down in Fall Creek, which is on the Central Oregon coast. We killed, the Department killed about 4,000 Coho in 1998 that they decided they didn't want them to spawn in the river.

There are certainly places where our hatchery fish are very poorly suited for natural production. That particular river fish is one of them. In the Snake Basin, the hatchery programs that we've developed there and all of them are as a result of the Lower Snake compensation program. That's only about 20 years old now. All of those were designed completely differently.

We use wild stock or brood stock and then incorporate wild stock in the brood stock every year. Those fish up there are only one generation removed from the wild fish, and they are not killing or clubbing those fish in the Snake Basin, for example, that are surplus. They leave them in the river and let them spawn. The policy of the Oregon Fish and Wildlife is if the fish is not a good match for the natural fish in the river, then they reduce the fitness if they commingle with them and we should remove them. The reason those fish down at Fall Creek are not a good fit they come back and spawn in the month of October and the wild fish spawn in December and January. We have evolved that fish over about 40 generations of artificial culture and we started taking earlier and earlier fish so that we had a longer time period to get them up to size, get them to the ocean, to be a very high survival and return rate on them. They contributed very heavily to the troll fish throughout the Oregon Coast. That was the principal purpose those fish were developed for. They fed a very large, a very productive troll fishery and recreational fishery offshore. That fishery is gone now.

We're not supplying fish to anybody anymore. We're simply going through a process where they're isolated from wild fish because of their time and life history and leaving them in the stream to actually challenge and compete with the native fish is a bad idea. Mother Nature designed the fish fit to habitat and spawn at an appropriate time. So young fish come out of the gravel when there's food supply and water temperatures are coming up and things are right. So the little fish will survive it well.

The hatchery fish submerge much too early in the wintertime.

Mr. HASTINGS. One last question. Your brought up other fish. What about non-indigenous fish, like shad and walleye, which com-

pete for our food source, which has to have an effect, I would think, and also the walleye probably is a predator, I would guess.

Mr. SWARTZ. It is.

Mr. HASTINGS. Is there anything that we should be doing about that?

Mr. SWARTZ. We took the bag limit off walleye and Washington wanted to make them a trophy fish and manage them for special species. Oregon debated on whether we should do that or not, and for a while we agreed with Washington and said, OK. All of the research show that walleye are a predator. It's endangered fish that they are eating. Why offer them protection for restricted bag limits and so forth. We opted to take the bag limits off.

Mr. HASTINGS. One last question and thank you for your indulgence. Do you have any studies as to what or how many salmon are displayed by the introduction of shad as a competitor or Wall Eye as a predator, any studies?

Mr. SWARTZ. I wouldn't say that they're displaced. They may compete for food as juvenile, but salmon typically spawn in areas that are beyond the range of shad. Salmon steelhead go up the main roer and turn into the tributaries and spawn in the head water area with the exception of Falchina (phonics). Falchina do spawn in the main stem.

Shad spawn only in the main stem and the young of year migrate out of the system within about 3 months.

Mr. HASTINGS. Isn't it a threat to the salmon to be migrating out rather than coming back from the shad?

Mr. SWARTZ. I'm sorry, I didn't understand.

Mr. HASTINGS. Isn't the threat of the shad to the salmon in relation to when the salmon are smolts, rather than when they are coming back? That's when they compete for food.

Mr. SWARTZ. Shad aren't feeding. They're like salmon. When they come in to spawn that's all they've got on their mind. They aren't feeding in the river. So adult shad is moving upstream and they are not competing for food with the juvenile salmon that are moving down stream. Just like the adult salmon coming upstream, they cease feeding when they leave the ocean.

Mr. HASTINGS. Thank you.

Mrs. CHENOWETH-HAGE. Mr. Nethercutt is recognized for questions.

Mr. NETHERCUTT. Thank you, Madame Chairman.

Mr. Swartz, you, sir have been a fish biologist for 31 and half years.

Mr. SWARTZ. With the Oregon Department of Fish and Wildlife.

Mr. NETHERCUTT. I'm sorry?

Mr. SWARTZ. With the Oregon Department of Fish and Wildlife; yes.

Mr. NETHERCUTT. And you spent most of your life in Oregon?

Mr. SWARTZ. Yes.

Mr. NETHERCUTT. Coastal location Portland?

Mr. SWARTZ. In Portland; yes.

Mr. NETHERCUTT. That's where you spent most of your time?

Mr. SWARTZ. Yes.

Mr. NETHERCUTT. And you're here representing the Northwest Sportfishing Industries Association?

Mr. SWARTZ. That's right.

Mr. NETHERCUTT. You're advocating for sportfishermen in connection with your testimony here today?

Mr. SWARTZ. That's right.

Mr. NETHERCUTT. You've never lived inland, I take it, in farm economy or farm country?

Mr. SWARTZ. No.

Mr. NETHERCUTT. And you're concerned, are you not, mostly about the economic consequences to the sportfishing industry that you represent?

Mr. SWARTZ. That's one of my concerns, yes. As a biologist I'm also concerned about resources.

Mr. NETHERCUTT. I understand. I appreciate and respect that. However, sir, would you acknowledge that there would be severe economic consequences to the agricultural economy of the interior of Washington, Oregon and Idaho? Would you acknowledge that if the dams were breached?

Mr. SWARTZ. If they were breached and there were no mitigating actions; yes.

Mr. NETHERCUTT. All right, and you also acknowledge, I assume, or accept the testimony today that it would take seven or 8 years, as testified by the National Marine Fisheries Service to remove those dams, deconstruct them; is that correct?

Mr. SWARTZ. The Corps has told us repeatedly it would take them about 10 years to work up a design to get the operations in place. None of the dams will be gone for at least 10 years from the time the decision is made to take them out.

Mr. NETHERCUTT. During the deconstruction period, there's also a period of time that there would be interruption on our river systems on the Snake and Columbia, assuming there would be deconstruction of the Columbia at some point; correct?

Mr. SWARTZ. Yes.

Mr. NETHERCUTT. What is your calculation as to what would happen to fish populations in their ability to return up the river system during that deconstruction period of time, be it five or six or seven or 8 years? Would it be a negative?

Mr. SWARTZ. It probably would.

Mr. NETHERCUTT. And that's a life cycle of a fish, some fish in this discussion; right?

Mr. SWARTZ. At any one location I don't think the interruption would be that long, but certainly we would look at some mechanism for transporting fish around or whatever transpired.

Mr. NETHERCUTT. I understand. I assume with respect to the economic loss, you would also acknowledge that if the dams are breached over this seven or six or 10 year period, whatever that might end up being, there would be a severe economic consequence to the agricultural industry?

Mr. SWARTZ. We are looking at the likelihood that it's going to take 10 years, and I think that we need to start looking at how do we deal with, once the dams are gone or even the deconstruction time period, how do we serve people that are dependent on water from the dams or transportation and so forth and deal with those things before we pull the plug.

Mr. NETHERCUTT. I understand and also you acknowledge, I assume, that based on the testimony there is here today and based on your experience as a fish biologist with the State of Oregon that we wouldn't know whether there would be any positive benefits as a result of dam breaching from anywhere from eight to 30 years; do you acknowledge that?

Mr. SWARTZ. No, I think that the current situation is the survival rate of smolts leaving the Snake River albeit whether they come down the river or whether they come down on a barge is considerably less than that from all of the fish from Hanford Reach on down the river. We are getting such low survival on the Snake River fish that the decline rate on them is very severe, and I think a lot of the other fish that are being looked at by NMFS and listed and so forth, we are going to see a recovery fairly quickly with better ocean conditions and so forth.

I don't think a better ocean is going to stop the decline on the Snake.

Mr. NETHERCUTT. How would you suggest that we get better ocean conditions? How can we manipulate temperature?

Mr. SWARTZ. We can't.

Mr. NETHERCUTT. OK, that's a serious part of this issue.

Mr. SWARTZ. That's a problem that's been going on for centuries, as long as salmon have been here.

Mr. NETHERCUTT. Yes, sir, can't control that?

Mr. SWARTZ. No.

Mr. NETHERCUTT. But that's a significant part of this problem?

Mr. SWARTZ. It contributes to it. I'm not going to say it's the whole problem.

Mr. NETHERCUTT. Is it significant?

Mr. SWARTZ. Certainly.

Mr. NETHERCUTT. Dr. Skinner, I wonder if you, sir, could advise the Committee whether you have done or any of your colleagues in the university system that you know of have done any research to determine the difference genetically between wild and hatchery fish?

Mr. SKINNER. The principle of that out has been shown if you take a trout from one river to another river, there is an adaptation by a specific genetic strain, such as they are different between river. It's presumed to be similar to the salmon. It's not been aggressively looked at at this point.

It is demonstrated stone trout when transferred cannot survive. So clearly it demonstrates that there is a genetic difference between the different strains in the rivers.

Mr. NETHERCUTT. Are you aware of any genetic studies on salmon by Federal or non-Federal sources?

Mr. SKINNER. Right now the primary push on the Federal side is the trout. Salmon has not been looked at. There has been a very little bit of mapping but it's not an extensive level right now.

Mr. NETHERCUTT. Has the research that you've done, the basic research that your university and others may have done been utilized in any respect that you know of by Federal agencies.

Mr. SKINNER. Our university, no. NMFS is doing some with Federal funds. We generally at the university level work on a more

shoe string operation. Sometimes we get State funding and so forth but we don't have Federal money.

Mr. NETHERCUTT. Let me ask you, how much money would you recommend be allocated to basic fish reproduction, biological reproduction research and over what period of time and when could you provide some positive information based on the estimate that you can come up with today that would be of assistance to the National Marine Fisheries Service, this Committee, and Congress and everybody who cares deeply about trying to figure out this problem solving?

Mr. SKINNER. It would take about six million a year and in 5 years we would have results. In other words, we already have information coming out on the genetics that suggest—.

Mr. NETHERCUTT. I'm having trouble hearing. Are you having trouble hearing?

Mr. SKINNER. What we are proposing is a six million dollars program for 5 years. That would be an extended program to look at the bases for habitat to biology relationships that we are looking at. We already have some basic information to suggest that there are some basic biological problems on the genetic set and reproduction level that we are just now starting to scratch the surface on much beyond the things we've talked about today. We think there are some basic problems with these fish even though they look perfectly normal. They may not be perfectly normal in reproduction or genetics.

Mr. NETHERCUTT. How fast would be you be in a position to provide a report to the Congress or the National Marine Fisheries Service or Fish and Wildlife?

Mr. SKINNER. On the research going forward probably within two to 3 years. We basically say this is what the basic problem is and the University could not apply the solutions. The State and Federal could apply.

Mr. NETHERCUTT. Thank you.

Mrs. CHENOWETH-HAGE. Do you have anything further?

Mr. Nethercutt, any further questions?

Mr. NETHERCUTT. Just one final question; I don't mean to badger you here, Mr. Swartz. I am wondering, sir, if the Northwest Sportfishing Association has insisted on participating in discussions with Washington State or Idaho or Oregon with respect to ideas you have for improving salmon populations similar to the State timber, fish and wildlife program or the ongoing agriculture fish and wildlife program; are you familiar with those programs?

Mr. SWARTZ. No, I'm not.

Mr. NETHERCUTT. OK, would you be willing to participate in continuous discussions with relative interest with regard to this problem with agriculture, timber and so forth to try to solve this problem?

Mr. SWARTZ. Yes, we routinely volunteer that kind of participation. We want to be heard and we want to be recognized as an industry. Just last week Senator Smith referred to our concerns as, we can't handle it. What do you account for? Well, we generate about three billion dollars worth of economic output here in the northwest region and we feel that it's a little bit more than just weekend angling.

Mr. NETHERCUTT. I understand and I acknowledge it's more than that as well. It's a valuable resource. You have to try to keep it, but it's the big picture we ought to try to solve.

Mr. SWARTZ. We agree with that.

Mr. NETHERCUTT. All right, sir. Thank you to all the panel.

Mrs. CHENOWETH-HAGE. Thank you, Mr. Nethercutt. I want to thank the witnesses for testifying and the members for their questions. The members of the Committee may have additional questions for the witnesses and we will ask you to respond to these questions in writing within 30 days.

The hearing records will be held open for the witnesses for 10 working days should you wish to add anything to your testimony.

I do want to say that this has been a most interesting hearing. The impact of this issue is reverberating around the world. Not only do we see national and international news organization focusing on our working river, the Columbia River system and the Snake River, but we're also seeing organizations and businesses that are not only national in scope but international in scope. If we are to be intellectually honest I think we need to begin to ask ourselves, why does the government want complete control of not only the operation of the river but of our ability to produce a living in the Northwest?

As I evaluate what's happening and the impact for those to have the ability to communicate nationally and worldwide and as I look hopefully into the future I hope that we will return to solid scientific data to make our decisions on. I hope in the near future that we will be able as a nation, as a government, as a Congress to give very clear direction to the agencies in which to operate.

I hope in the near future that we will be rid of this situation we are now involved in where agencies on their own can move the goal posts as we witnessed today in the moving of the impact of the FCRPS, the Columbia River system, not only from the dams on the Columbia but also impacting systems moving clear into Montana and Idaho. This continual moving of the goal posts will create utter confusion. It will be very costly and probably serve not to bring one additional fish back up to their traditional spawning grounds.

I think it's becoming increasingly clear to us that the fish is a surrogate for something else, and I have a couple of very interesting quotes I would like to close with. One is from—Actually, one is from the Tri-City Herald and one is from the Lewiston Tribune, a quote on December 18, 1999, and this quote is by Will Stell, National Marine Fisheries Service Regional Director, when he said, "The best thing for fish would be to end all riparian development, take out the dams and move east."

And then a quote from Ann Bagley, who is the Pacific Region Director for the U.S. Fish and Wildlife Service, who is quoted also in the Lewiston Tribune, December 18, 1999. The bottom line, she said, "Bottom line biological conclusion is a no brainer. For native species it's a free flowing river, not a dammed river."

Then with a situation that's going on right here in Mr. Hastings District in Methow Valley, Mike Grady, from National Marine Fisheries Service, was quoted December 8, 1999, in an issue of the Wall Street Journal as saying, "Endangered Species Act gives us the right to set target flows. We are blind to State and local laws.

We are blind and local laws. All we care about is getting that block of water to the fish."

We are standing on the very edge of viewing our agencies in a state of total disregard for the rules of law, and that's very alarming to those us that sit on this panel as well as the entire Congress. The alarm should extend beyond any party boundaries but should be shared by all of us, because only when we all operate under the same rule can there be order and can people live together peacefully without one group of people imposing by force their will on others.

This is our first responsibility is to keep the peace, and I know that we are committed to do that. Part of keeping the peace and making sure that we have the right information with which to make our decisions are these hearings, and I want to extend my personal thanks to Chairman Don Young, who is in Alaska right now and to Chairman John Doolittle. I want to the thank the staff for their excellent work in preparation and work through these committees, and I want to thank Congressman Hastings and Congressman Nethercutt for inviting us into Washington.

So with that I will say again that the record will remain open. We will look forward to the receipt of your answers, and if there is no further business this hearing is adjourned.

[Whereupon, the Committee was adjourned.]

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