PEER REVIEW 1996

COASTAL SALMON RESTORATION INITIATIVE

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TABLE OF CONTENTS

OSU

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College of Oceanic and Atmospheric Sciences

WG Pearcy, Professor Emeritus

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Curry County Extension

Derek Godwin, Watershed Management

Oregon State University Forest Engineering Dept.

Paul W. Adams NEW 2/20/97

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Oregon State University Sea Grant Extension

Tim Waldvogel NEW 2/20/97

Oregon State University Dept. of Fisheries & Wildlife

Dr. Stan Gregory NEW 2/20/97

Oregon State University Marine Science Center

Bruce Mate NEW 2/20/97

Go to home page

October 22, 1996

To: Mr. Jay Nicholas, Science Team, OCSRI
Dr. L.J. Koong, Assoc. Dean, College of Agricultural Sciences, OSU
From: M. Borman, Department of Rangeland Resources

Subj: Review of Oregon's Plan for Conservation and Restoration of Anadromous Salmonids in Coastal River Basins

My approach to reviewing this draft plan will be to address specific sections, proposals, etc. within the plan itself and then to provide an overall assessment.

On the first page of the Introduction (vi), the following statement is written: ';Many populations of salmon, steel]head, and trout are extinct today; may populations are at risk of extinction; and relatively few are in a condition that may be considered healthy. The number of populations currently in each of these three categories is not known, and a debate over accuracy of the numbers only distracts people's attention from the seriousness of the problem." I disagree with the last sentence. For the sake of credibility, I think it is important to have at least an idea of the numbers in each category. Too many people question the credibility of those who are proclaiming pending disaster to assume that a general statement of need will motivate them to support recovery activities. Not everyone attributes a great deal of credibility to fish biologists or to the "environmental" groups that have petitioned for a listing. For those populations in trouble, it is important to identify and prioritize the factors responsible. It will then be possible to identify and prioritize solutions.

Introduction, page x: Of particular value to the OCSRI effort are the attempts to focus on 1) intergovernmental and community based collaboration and partnerships, 2) recognition that improving conditions for salmon will only be successful if the effort represents grassroots involvement, ownership, and commitment in a cooperative work environment, and 3) the process will emphasize a voluntary versus a regulatory approach. A listing under ESA will not likely generate the grassroots, local ownership and commitment, and voluntary efforts that are far more likely to result in near-term efforts to initiate management to induce long-term habitat improvement that is suggested as necessary for increasing populations to sustainable levels. An ESA listing is much more likely to result in confrontation, litigation and delay in implementing habitat improvement programs and projects on a watershed by watershed basis.

Page xii (Historic Perspective of Coho Abundance): The number of 1.25 million adult coastal coho at the turn of the century is based on an assumption of a 40% harvest rate by gill-netters and an average of 500,000 harvested. What is the basis for the 40% harvest rate assumption? If projections based on other assumptions also result in estimates of 1 million plus fish, an identification and justification for the bases of those assumptions should be included in the discussion. Throwing these kinds of numbers around without justifying them taxes your credibility.

Page xii (Goals for Coastal Coho Salmon): These production goals based on assumption laden models merit discussion. Refer to my discussion on Section V (Listing).

Page xii (Life History and Habitat Requirements of Coho Salmon): It is noted that Oregon lies near the southern boundary of the range of coho salmon in North America. It should be noted that population fluctuations are more likely to occur near the boundaries of ranges of any given species if conditions that influence habitat are changing. It has been noted in the literature that climatic changes have been occurring in the interior northwest and that we are in a relatively rare (historically) warm and dry period. If the same situation is occurring on the coast, then it would be expected that temperatures would be higher than historically occurred and that a natural reduction in fish abundance should be expected due to adverse rearing conditions. An evaluation of climate influences and changes should be part of this analysis and factored into plans for goals.

Page xiii ((Life History and Habitat Requirements of Coho Salmon): On what basis has ODFW identified 94 populations of wild coho salmon on the Oregon Coast? Again, credibility is an issue.

If spawning during mid-November through February during periods of high flows has any influence on spawning success rates, that should be discussed. Presumably coho have evolved with the ability to spawn under high flow conditions. Not everyone reading and attempting to make sense of this draft plan has a fish biology background. It is important to explain the implications of timing of various aspects of the life cycle for those of us who are not fish biologists. This is more completely addressed on page IV-4, but not completely enough or with enough explanation.

Page xiv (Habitat Requirements): Cool temperature requirements for rearing are described.

Repeating from above, it has been noted in the literature that climatic changes have been occurring in the interior northwest and that we are in a relatively rare warm and dry period. If the same situation is occurring on the coast, then it would be expected that temperatures would be higher than historically occurred and that a natural reduction in fish should be expected due to adverse rearing conditions. An evaluation of climate influences and changes should be part of this analysis and factored into plans for goals.

Page xiv (Analysis of Risks to Oregon Coho ESUs): What is the relative magnitude of the factors identified with respect to their influences in reducing salmon production?

Page xv (Hatchery Risks): Are egg collections being made from wild stocks? If so, is that having a negative impact on natural spawning of those wild stocks?

Page xvi (Public Expectations for Quick-Fix): The education and outreach programs must be factual rather than emotional. Reasonable management objectives and actions must be clearly articulated based on quality information relating to resource needs. If demands are not reasonable or cannot be justified, then compliance is not likely.

Page xvii: It is stated that the leadership that has brought the Plan to this state of development must be continued. Is this a political statement? Are you lobbying for retention of the current administration? If so, is it appropriate? It needs clarification.

Page I-2 (paragraph 3): It is stated that "Data have been sufficient to demonstrate that freshwater rearing environments have been significantly altered from historic conditions and from conditions that are optimum for the species. The current adverse effect of the ocean environment has been well documented and appears to be consistent with large-scale climate and oceanic cyclic events."

Large-scale climate changes also occur over the land. Such changes have been documented for the interior northwest. Perhaps such an evaluation should be attempted for coastal systems with respect to a potential adverse impact. I am also wondering about describing historical conditions as having been "optimum" for coho. Given continual climatic change, I doubt that conditions were often, if ever, optimum.

Page I-2: The statement that limiting factors must be identified and addressed watershed-by-watershed is appropriate. That is much more likely to occur more quickly under this plan than under an ESA listing. An ESA listing is likely to delay collaborative, cooperative efforts that are necessary for the watershed councils or other collaborative efforts to function appropriately.

Page I-5 (Element 3): Establishing quantitative objectives for habitat improvement will require watershed-by-watershed evaluation. Management of contiguous landscapes will require a great deal of landowner cooperation. Incentives and a positive social environment will be necessary to elicit broad scale landowner cooperation. An ESA listing will not generate a positive social environment. This plan, if properly fleshed out and administered, is much more likely to achieve desired results with respect to habitat improvement than an ESA listing.

Page I-6 (Element 6 - Monitoring): An appropriately designed and targeted monitoring program will be essential to determine trend in achieving goals and objectives. If the monitoring program is either not appropriately designed or if it is not implemented and maintained, it will not be possible to evaluate the impact of OCSRI activities. This part of the Initiative must be very carefully evaluated and implemented.

Page II-2 (Goal 4): Strategy 4.d (promote adaptive management) will require flexibility within the "rule

making" activities of the regulating agencies. Will they change their bureaucratic mode of action?

Page II-2 (Goal 5): Strategy 5.b (develop active outreach and education programs) must be based on knowledge. If education and outreach are based on best-guesses, then that fact should be made clear. The education and outreach effort will require adequate funding and leadership to coordinate efforts and provide quality control.

Page II-3 (Goal 7): What does strategy 7.c mean?

Page II-3 (Goal 8): Does strategy 8.c (establish appropriate environmental benchmarks ...) include a time frame for population levels? If so, this will likely set unrealistic expectations and result in failure due to lack of control over major factors such as ocean conditions, etc.

Page IV-7 (Predation on salmon and steelhead): Pinniped predation is discussed briefly, but I have also been asked about avian predation. Has anything been done to evaluate the magnitude of avian predation at certain critical times and/or locations?

Page V-2 (Production levels of healthy populations): The Umpqua and Rogue basins are noted as having especially high summer water temperatures. Oregon is on the southern edge of the coho range. The Umpqua and especially the Rogue basins are on the extreme southern edge (for Oregon). Air temperatures in those basins are typically higher than in basins to the north. Water temperatures should be expected to be higher.

The models used to generate potential numbers of coho suggest that under current habitat conditions, coho production could range from 100,000 to approx. 1 million (adverse ocean conditions to excellent ocean conditions). The authors of the plan have revised the estimate of potential production at full seeding (given current habitat conditions) to probably lie in the 100,000 to 400,000 (northern ESU) and 5,000 to 20,000 (Rogue Basin) fish. Current population estimates range from 50,000 to 80,000 coho (page xii) under adverse ocean conditions. This suggests that at this time, habitat conditions are not the most limiting factor or that the numbers are not very solid (or both).

Page V-4 (Population Abundance Modeling): A rather quick review of the Habitat-Based Life Cycle Model suggested tremendous variability in model output projecting expected populations for 1993-1995 based on starting populations during 1977-1979. The 95% confidence interval included 0. This suggests that the 100,000 abundance estimate under adverse ocean conditions may be overly optimistic due to natural conditions and lack of good quality habitat or the assumptions of the model are not very good (probably due to lack of sufficient information).

People have a tendency to take numbers, as presented in this document, literally and seriously.

Output from this model should be presented in the context of its extreme variability.

Page V-6 (Spawner-Recruit Model): This model suggests that spawner densities > 1/3 full seeding provide much less risk due to short episodes of low ocean survival than do spawner densities < 1/3 full seeding. It also suggests that with extended periods of low ocean survivaL the initial advantage of larger initial population size is lost. Is 20 years a short or an extended period of low ocean survival? Do we have any

real idea of what full seeding is? Based on the population abundance model (above), it is not at all clear that we do have a good grasp of what constitutes full seeding. We should be very careful to base listing criteria on these models that produce highly variable results. It will require a much closer analysis of the models and their assumptions to give them a really credible evaluation.

Page V-8 (Proposed Listing Criteria): How is "endangered level populations" defined? Why is three times the endangered threshold used to define a threatened status? On what basis is the number 4 adjacent basins used to consider a GCG as endangered? This all seems rather arbitrary.

Is it defensible?

Page VI-A-II- 12 (Incentives): The proposed incentives programs appear to be rather weak.

Section VI (GWEB and Watershed Councils): When combined with a reasonable package of incentives and a research based education program, appropriate activities by the watershed councils are the most likely

avenues to a positive trend in habitat improvement over time.

Watershed assessments will identify limiting factors. Work plans will provide the blueprint for addressing those limiting factors. Incentives will provide the means of accomplishing needed improvements. Research based education will provide the understanding needed to motivate people to identify problems (limiting factors) and to search for solutions.

Page VI-A-I-10 (ODA management actions): SB 1010 will require some time and resources to develop overall water quality management plans. If done in a cooperative effort with watershed farmers and ranchers, these plans are likely to achieve buy-in by those landowners. This scenario is much more likely to achieve positive results than a top down regulatory approach which we will not likely have the will or the resources to enforce on any kind of scale anyway.

The $2000 grant program is not enough to do much. The incentives program needs far more resources.

The Riparian Zone Management Program (ODA) should make an attempt to coordinate with county extension personnel. Even with requested resources, ODA is not likely to have sufficient personnel to cover the geographic area of coho.

Page VI-G- 1 (Monitoring): The monitoring program as described is ambitious and will require a firm commitment of resources to initiate new monitoring activities and to consistently compile and report the results in a timely manner. Monitoring tends to be one of the first activities put on the back burner when resources become tight. It is virtually impossible to know whether or not management actions are producing desired results (positive trend) if an appropriate monitoring program is not conducted and reported in a timely manner. Adaptive management based on monitoring results is critical for directing resources to activities that are more likely to result in positive trends. Wasting resources on ineffective activities because monitoring was neglected is a sure way to reduce support for this OCSRI effort. Adaptive management requires a commitment to flexibility in changing policy which will require flexibility in "rule making" by the agencies involved. Bureaucratic inertia will be detrimental to achieving positive results for the fish and for maintaining support for OCSRI.

Page VI-G-5 (Salmon Sub-Benchmark): Are salmon and four gene conservation groups on the coast considered to be subbasins? This needs some editing for clarification.

Page VI-G-6 (lnterim Indicators for OCSRI): In the ODA section, the following terms are used without definition: "adequate vegetative buffers", "exposed streambanks", "restored vegetative buffers. " Each of these should be defined and the definitions justified. Properly functioning condition assessment (see below and ODF indicators) would be an appropriate indicator tool for agricultural lands as well as for forestry. Landowner cooperation is necessary to conduct PFC assessments on private lands.

Page VI-G-6 (Interim Indicators for OCSRI): In the ODF section, properly functioning condition should be referring to riparian zone rather than just to riparian vegetation. PFC encompasses hydrology, soil, and geology as well as vegetation.

Page VI-H-2 (Need for mapping core areas): Under the ODA example evaluating the need for fencing is used as the example. This is symptomatic of virtually everyone's thinking when it comes to methods to use for managing grazing on agricultural lands. How about allowing management plans in compliance with SB 1010 watershed management plans to be the criteria rather than the absolute reliance on fencing? Don't force fencing where it is not needed. Fencing is more than a one time installation effort. It requires a great deal of maintenance, especially after floods. Remember your emphasis on "adaptive management" in the monitoring section. Allow room for creative solutions rather than the general bureaucratic "fence it" mentality. Fencing may indeed be the management tool of choice much of the time, but it should not be mandated as the only option.

Page VI-I-6 (Public Meetings and Technical Assistance): The Outreach Team is proposing to offer technical workshops, staffed by qualified instructors, to provide practical suggestions and/or project ideas for fish-friendly management. This is a good idea, but it will require a fair amount of lead time and organizational effort to organize, advertise, and provide quality workshops. This tends to be a time consuming and expensive proposition. A centralized effort to organize such workshops should be included in the funding package proposal. OSU is a logical coordinator of this type of effort, but resources are limited and will require augmentation.

Page VI-J-3 (Proposed budget): Adequate cost-share grants for landowners and communities will be critical for funding habitat improvements. Small landowners in particular will generally not have the resources to implement habitat improvement projects without financial help. Relief from conflicting and/or overlapping bureaucratic requirements will also be needed.

Page VI-J-7 (Environmental Health): Cost-share grants to help design and implement habitat restoration and protection, as well as fencing, etc. are great, but long-term maintenance is also likely to be a significant cost. An incentive program to help with maintenance requirements would be beneficial in the long run. Otherwise maintenance tends to get deferred and benefits are lost.

Page VII-A-5 (ODFW Hatcheries): What does a shift to native or wild type brood stocks imply? If this means intercepting and extracting eggs from native or wild fish, then it seems to me that the result is a reduction in native/wild spawning in natal streams. Given the concern over a decline in such spawning, this seems to me to be unacceptable.

Page VII-A-8 (Science Team Findings): The lack of detail on techniques to be used, quantitative objectives, timetables for implementation, funding requirements, or expected degree of participation in voluntary programs is troublesome to some degree, but it should also be expected. The only way to know what efforts are needed on a local basis and what results can be expected is to provide this OCSRI effort an reasonable opportunity to be implemented and to monitor appropriately. A reasonable time frame (perhaps 10 years) will be needed to adequately assess whether or not the proposed approaches are being adopted and are having the desired effect. An ESA listing will probably not expedite the recovery process because of probable landowner resistance. It will more likely impede progress to improving habitat, especially on private land for which resources are not adequate to ensure enforcement of ESA mandated requirements. With respect to agricultural lands, give SB 1010 a chance to work and provide incentives for voluntary efforts on the part of the landowners.

APPRAISAL OF THIS OCSRI PLAN

The stated premise of the OCSRI is that limiting factors will be identified in a basin context and that solutions to addressing those limiting factors will be implemented through a Watershed Council context involving all management entities and stakeholders. This is an appropriate premise and is facilitated through the OCSRI process. It will be much more difficult to achieve positive results through an ESA listing which will probably not facilitate private landowner participation. Because of the land ownership patterns in the range of coho, private landowner participation has been identified as essential to the success of reversing the apparent decline of coho. If carefully administered and managed on an adaptive basis, the OCSRI proposed plan is likely to elicit buy-in and collaboration by stakeholders, including small scale landowners. This proposed plan is much more likely to result in a long-term positive trend for coho than the top-down regulatory approach that an ESA listing will generate. The OCSRI plan should not be expected to provide significant benefits in the short-term. Results will occur based on a quality education and outreach program and an adequate incentive program. People need to understand the fish requirements, what habitat needs are and how to provide them, and they require the resources to help make the necessary improvements.

The continued cooperation among the state agencies is essential to show Oregon's citizens that this is an important enough initiative that the agencies are being forced to overcome natural bureaucratic turf protection tendencies. OCSRI has made much progress in that realm and must continue to foster the cooperation both for the beneficial effects on the ground and to provide the example to others.

Much more needs to be developed in the areas of appropriate educational efforts and in developing adequate incentive programs. OSU, GWEB, and the watershed councils are all important to success in these endeavors. Of these, OSU is conspicuous by its absence and should be playing the lead role in providing research-based education.

Return to top of page.

December 2, 1996

Jay Nicholas
Oregon Department of Fish & Wildlife

FAX: 737-2456

Oregon Coastal Salmon Restoration Initiative - Comments on Draft Plan

In reviewing the Oregon Coastal Salmon Restoration Initiative? I enlisted the assistance of Bill Robbins, College of Liberal Arts Associate Dean and Professor of History, and Sheila Cordray. Associate Professor of Sociology. Both of these faculty members are highly regarded for their expertise on environmental issues, and I respect and value their opinions highly.

Their comments are attached for your information. Thank you for giving us the opportunity to provide input on this important project.

Sincerely,

Kay F. Schaffer
Dean

October 28, 1996

TO: Jay Nicholas
Oregon Department of Fish and Wildlife

FROM: William G. Robbins
Associate Dean, College of Liberal Arts

RE: Review of Draft Plan, "Oregon Coastal Salmon Restoration Initiative"

[The reviewer is a historian and the author of several books, including Hard Times in Paradise: Coos Bay, Oregon, 1850-1986. Next year the University of Washington Press will publish his recently completed environmental history, Landscapes of Promise: The Oregon Story, l800-1940.]

The problems confronting the survival of anadromous fishes in Oregon's coastal river basins are systematic, the consequence of deeply ingrained cultural practices that have become increasingly intrusive as the industrial age has advanced. The resolution to the concerns addressed in the Draft Plan-"the conservation and restoration of anadromous salmon and trout in coastal river basins--will require the implementation of a dramatically new *cultural* vision toward the river basins in question. I strongly urge the authors of the draft plan to make this explicitly clear in the Preface. Population projections, the development of destination resorts, and the continued expansion of urban coastal centers suggest that this will be an imposing task.

If restoring salmon to respectable numbers is the *real* and *primary* objective, then state and federal agencies must assume greater responsibility for enforcing *existing* environmental statutes and regulations and in implementing more rigorous land-use practices. The architects of the Draft Plan should be aware that coastal salmon populations have plummeted *since* the passage of Oregon's historic land-use legislation in l973. *If* the intent of Oregon's land-use program was to provide "a basic level of resource protection through the adoption of enforceable local comprehensive land use plans," then a reasonable citizen could assume that land-use laws have failed to protect coastal salmon populations.

My major criticism of the Draft Plan is the tendency of *too many* state agencies to address the issue strictly in quantitative terms, when in reality--as the "Appraisal of the OCSRI Plan" concludes (p. VII-B-1)--"No scientific protocol exists that clearly defines how one might weigh all the elements of the OCSRI Plan and judge its adequacy." The Plan appears to be internally contradictory in this respect. Early on it cites "the need to establish quantitative objectives for populations and risk factors, including timelines for collecting limiting factors" (p. I-5). Then the Plan acknowledges that habitat features--arguably the preeminent issue in restoring salmon runs--will be difficult to quantify. Fish can be counted and the volume of water in a stream can be measured, but the historical and cultural interface with landscapes is *qualitative* and should be treated as such.

One simply cannot turn historical and cultural behaviors and their effects into quantitative units.

The sections that assess the "Critical Elements" and management measures (VI-A-B-C-D) to restore salmon populations read more like a laundry listing of programs and initiatives that exist mostly on paper and that have little *realistic* prospect of being enforced in the field. Moreover, the lengthy catalog of agency "Management Measures That Support OCSRI" leaves the reader with an impression of optimism, that state and federal units already possess the tools and are taking the initiatives to effect the changes required to restore salmon populations.

One of the more intriguing discussions in the Draft Plan is section VI-F, "Agency Positions Regarding the Role of Enforcement in Support of Oregon's CSRI." One of the major public criticisms of state agencies over the last several years is their failure to enforce *existing* environmental regulations. In that context, it is interesting (especially to a historian) that the two primary state agencies responsible for habitat oversight--the Oregon Department of Agriculture and the Oregon Department of Forestry--favor voluntary and cooperative approaches to meeting environmental requirements. The Department of Agriculture announces that it "prefers to handle enforcement issues internally to maintain credibility with stakeholders and peace of mind within the agricultural community." For its part, the Department of Forestry seeks a "balanced program.... achieved through education . . and effective communication." The response of other state agencies to the issue of enforcement, especially those on the frontlines in the salmon discussion, is to take a more insistent approach to the question. The authors of the Draft Plan may want to look more closely at the two departments mentioned above, especially in light of the requirements it might take to avoid having coho listed as endangered species.

The Preface to the Draft Plan (p. v and x) argues "that all Oregon citizens share responsibility for the changes in the landscape that have hurt salmon and, likewise, we all share responsibility for restoration." This statement involves matters of scale and scope and, to a lesser degrees identity. In the sense that the problems with the imperiled salmon runs are systemic and cultural, there is a shred of truth to the responsibility issue. However, sizable numbers of our constituency, especially the Native American people among us, would reject the notion of widely shared responsibility. Nowhere in Governor Kitzhaber's two letters attached to the Draft P]an is the "shared responsibility" thesis mentioned. I strongly urge the authors to delete such references from the Preface and its attachments. The issue is *not* blame but changing behavior and that necessarily involves some constituencies more than others.

Please consider changing the wording in the introductory sections to Chapter IV to reflect reality. The word *risk* is employed with reference to harvest *levels*, hatchery *problems*, and habitat *conditions*. These are not risk factors in the true meaning of the word. Habitat conditions reflect cultural practices, and although they may place salmon populations at *risk*, habitats themselves are not risks! There is a problem with language here.

William L Lang (Portland State University and I have written the "bookend" essays for the highly acclaimed Oregon State University Press book, The Northwest Salmon Crisis: A Documentary History. In an interview following publication of the book, Lang remarked that the catastrophic decline in salmon runs was "a human crisis as well as a salmon crisis. The way we are responding to the plight of the salmon is reconfiguring our collective moral identities." Lang's comment points to the significance of the OCSRI initiative. All of the present scientific findings indicate that the prerequisites for healthy salmon populations are healthy biological conditions. If we as a culture cannot secure and protect conditions deemed healthy for salmon, then, it is very likely that our "collective moral identities" will be altered as well.

A few random suggestions: The Draft Plan is badly in need of common sense editing. Some sections are so suffused with scientific jargon as to be nearly unintelligible. A quick read of the paragraph at the top of p. V-7 illustrates my point. Because this document is in part a political document, it is important that the language be accessible to a wide readership. Also, be wary of the use of unidentified acronyms.

Comments on draft plan for the Oregon Coastal Salmon Restoration Initiative
Sheila Cordray, Department of Sociology, Oregon State University

The developers of the OCSRI invite comments on two aspects of the plan (VII-B-1), specific elements and overall likelihood of success. My comments address the latter rather than the former. As a sociologist, my interest is in the organizational elements of the plan rather than in the specific recommendations.

The OCSRI is a complex plan aimed at dealing with a complex situation. It has become increasingly apparent over the past thirty years that environmental situations do not have simple causes or straightforward solutions

and that traditional methods of solving problems are not going to work. The OCSRI is an attempt to develop a nontraditional way of addressing the situation. The nontraditional features of the plan are in the breadth and scope of the coverage, however, rather than in the actual execution.

The strongest feature of the plan, and a remarkable accomplishment, is the identification of a variety of human and natural processes that have contributed to the current decline of salmon populations. The plan does a very thorough job of identifying those processes and specifying what might be done to alter or reverse them. All possible organizations and agencies are included and specific goals identified. By itself, almost every element of the plan seems sound and achievable, if funding becomes available. I'm sure you don't need me to point out that the passage of Measure 47 in the recent election makes that "if" more speculative.

Even given adequate funding, the difficulty that I see is that while each social and natural process is understandable and probably changeable, the interaction between them is not. It is the interactive and cumulative processes that make this a "wicked problem." Wicked problems are not amenable to human intervention and control because each and every "solution" in one area or agency has implications for other areas. The consequences may be in areas that do not appear to be related. It is not so much the complexity as the interaction that creates wicked problems. This is not the fault of the planners. Neither our theoretical nor applied tools are well developed in the area of social change. I have not read the entire 3,000 page document but the part I read does not suggest that these interactive features are being addressed. I would suggest that the next step in planning would be to develop some of the theoretical and applied tools needed to understand and plan for interactive and chaotic effects.

One other feature of the plan which needs more attention concerns the nature of bureaucracies and organizations. These two types of organized human activities have cultures which are not always easily changed by participation in a program which is outside the scope of their normal activities. Each of the government bureaucracies and other organizations mentioned in the OCSRI has its own mandate, its own charge. Activities outside that mandate, or tangential to it, must, by the very nature of the social organization, take second place to the central tasks. For some of the agencies, restoration of the salmon is of primary importance. For others, cooperation will be determined by the resources of the organization. My suggestion is that the planning committee should include a specialist in bureaucratic and organizational management who could identify the most effective ways for all agencies to participate.

Return to top of page.

November 13, 1996

MEMORANDUM

TO: G. B. Dalrymple, Dean, COAS

FROM: W. G. Pearcy

SUBJECT: Comment on the Oregon Coastal Salmon Restoration Initiative

Attached are my comments on the OCSRI. I welcome any comments that you may have. I will send a copy of these comments directly to Jay Nicholas.

cc: J. Nicholas
J. Good

Comments on the Oregon Coastal Salmon Restoration Initiative

W. G. Pearcy, Professor Emeritus
College of Oceanic and Atmospheric Sciences

I have been asked to review the draft of Oregon Coastal Salmon Restoration Initiative (OCSRI, hereafter, "the

plan"). The basic question is adequacy of the plan to ensure restoration of coastal coho ESUs. I believe that the plan has adequately outlined all the general elements needed to initiate restoration, but it lacks details on specific actions, and their priorities, to preserve "core" populations of coho salmon. As it stands, the plan provides an excellent framework to which details can be added in the future, but it may not be sufficient to avoid listing of coastal coho by the National Marine Fisheries Service.

Identification of the major factors that have contributed to the decline of the ESUs is the first of nine critical elements of the plan. It is unclear scientifically how this important element will be resolved. Ocean conditions are recognized as a major cause of poor survival and declining populations. Therefore, partitioning survival into freshwater and marine components is important. How can we evaluate the restoration efforts of freshwater habitats if survival there is confounded with ocean survival? Consider this scenario. If ocean conditions improve in several years and coho survival increases, how will we know how much credit to give to the actions of this plan? As stated in the attachment, there are no direct measurements of marine survival for Oregon's wild coho. This should be a Research Need: to estimate fry-to-smolt (freshwater) and smolt-to-adult (marine) survival in key streams or watersheds, either from direct measurements or from modeling. This partitioning of survival, incidentally, was a key recommendation of the workshop on Estuarine and Ocean Survival of Northeastern Pacific Salmon held in Newport, OR in March 1996.

There are some indications that another regime shift to the pre-1976 conditions is occurring now, although it's premature to conclude that better climatic conditions are eminent. In the past, cooler coastal waters, intensified upwelling and early upwelling have also been accompanied by cooler and wetter winters in Oregon.

Hence, favorable marine and freshwater conditions for salmonids may be coupled. This, it seems to me, argues again for monitoring both freshwater and coastal habitats. Planning is currently underway to monitor ocean conditions of Oregon and Washington (PNCRS-Pacific Northwest Coastal Ecosystem Regional Study, and NSF's North Pacific GLOBEC which will focus on salmonids). These efforts should be mentioned in the plan. They will offer outstanding possibilities for coordinated research that will provide essential information on the influences of the marine environment on production and survival of salmon.

I agree with the critical need for long-term monitoring capable of detecting increases/declines in populations and for tracking the results of implemented measures. This will require better methods of data collection. I found little discussion on scientific evaluation of the effects of proposed modifications of the freshwater habitats. Can a comparative approach be used contrast characteristics of healthy vs. weak stocks, considering the history of watershed uses and impacts, hatchery influences, etc.? More thought, I believe, should be given to hypothesis testing and experiments as a basis for adaptive management. I suggest a chapter on Monitoring and RESEARCH.

The problems of monitoring are recognized in the plan. Coordination of multi-agencies, long-term funding, and effective leadership are all needed to implement the monitoring program. This is a critical element of the plan and needs further development.

The Watershed Councils are pivotal to improvement of riparian and freshwater conditions for salmonids, especially on agricultural land. They look good on paper. But do the work? Procedures need to be described that will insure effective conservation and improved land stewardship in each council. Rules for riparian protection need to be established and enforced for agricultural land. The condensed plan could allay some doubts by citing some of the accomplishments of the South Coast councils presented in the Attachments. However, strong guidance may be needed for some councils. What are the carrots? The clubs? What are the time tables?

Although long-term research is needed to determine the effectiveness of actions to restore depleted salmonid stocks, I also believe that it is prudent to take immediate actions that may improve freshwater survival and full seeding of suitable spawning grounds. Measures that are easy to implement that are known to improve habitats should be implemented as soon as possible. They should not await identification of critical reaches within each stream or limiting factors of each watershed as these may take several years to determine.

Tax incentives for riparian protection is an excellent method. Specific programs need to be developed to improve water quality and riparian habitats.

Restoration does require a long-term effort--for reasons given: decadal fluctuations of ocean productivity, the time needed to effect significant changes in stream habitats, and the number of generations needed to rebuild stocks. This Oregon plan should attempt to establish recovery protocols that will withstand the whims of

politics, changes of governors, and the temptations to withdraw monies and diminish efforts after wild stocks rebound due to temporary changes in ocean conditions.

Return to top of page.

November 3, 1996

To: Jay Nicholas, OCSRI Coordinator, Governor's Office of Natural Resources

Fm: Jim Good, College of Oceanic and Atmospheric Sciences/Extension Sea Grant Program

Subj: Comments on Oregon Coastal Salmon Restoration Initiative

Attached are my comments on the salmon plan. I have also submitted these to Jay Rasmussen (Extension Sea Grant) and Brent Dalrymple (Dean of Oceanography), so you may receive them as part of a larger OSU submission as well. I think you are off to a great start with the draft. The real challenge ahead will be to sort out and synthesize all the ideas you will receive for improvements. It's a HUGE job.

If you like some of the ideas I have suggested and want them written up more succinctly to fit into the plan, I'd be happy to provide you with suggested text inserts on disk. I mentioned this at the Sea Grant meeting you attended last week. My address and email/phone are on the comments. Good luck, Jay.

Comments on Oregon Coastal Salmon Restoration Initiative

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The draft OCSRI is an excellent start in the development of a comprehensive recovery strategy for coho salmon and anadromous species generally. The main theme of my comments is that one of the key elements of aquatic ecosystems that support salmon-wetlands-is not adequately addressed is OCSRI. This is particularly true for habitat restoration sections, where the emphasis is almost exclusively on riparian zone and stream habitat rehabilitation. This emphasis is not surprising, since it reflects the emphasis of existing institutions, such as the Watershed Health Program. Nevertheless, without additional emphasis in OCSRI on the role of wetland restoration in salmon rehabilitation, the recovery programs being developed by state and federal agencies, watershed councils, communities, and others will be incomplete.

Many of my comments are based on the draft report, *Wetland Restoration Policy: Issues, Options, and Recommendations* (September 1996), which was separately delivered to the OCSRI coordinator, Mr. Jay Nicholas. A number of comments refer to specific portions of that draft report. Key suggestions are summarized as follows:

- DLCD should update its inventory of coastal restoration sites required by Goals 16 and 17 with emphasis on the role such restoration might play in salmon recovery.

- DSL should develop a comprehensive wetland restoration policy and integrate this policy into watershed management through GWEB and other state agencies.

- GWEB should incorporate wetland restoration into the watershed health program and watershed action program development process.

- GWEB should add a regional action planning component to its mission, focusing initially on the two Evolutionarily Significant Units for coastal coho; this could be a new element that will blunt criticisms of OCSRI that suggest it is nothing more than a collection of existing programs.

- An ocean conditions element should be added to the monitoring program.

- A restoration actions/projects element should be added to the monitoring program. Program outcome monitoring under this element should be linked to the environmental conditions monitoring to serve as a basis for determining cause-effect linkages.

- The education and outreach plan is incomplete and would benefit from a structured planning process to identify audiences, goals and objectives for each audience, proposed programs and actions to achieve those goals, and costs, responsibilities, and time frames involved.

- Education and outreach need to be linked with an explicit technical assistance plan.

- Before establishing new incentive programs, existing programs, such as the 1989 Resource Conservation Trust Fund should be funded.

SPECIFIC COMMENTS

SECTION Vl-A: PART 1: STATE AGENCY MEASURES TO SUPPORT OCSRI

DLCD Management Measures that Support OCRSI

Phase I measures:

1. DLCD should develop a brief paragraph on the Oregon Coastal Management Program (OCMP) and its implications for salmon restoration, abstracting information from Section Vl-C (Oregon's Land Use Program). The potential for the OCMP as a salmon restoration tool should be discussed more thoroughly here or in Vl-C. The OCMP is already in place and has a long history of successful interagency coordination.

2. Along with the Goal 5 riparian provision (DLCD 2), implement new Goal 5 rules for wetland protection, especially for streamside and off-channel habitat for coho salmon. For plan purposes, this could be done by adding wetlands to DLCD 2. In practical terms, this will require some additional thought and development by DLCD.

Add Phase II measures:

1. Goals 16 (Estuarine Resources) and 17 (Coastal Shorelands) require identification of wetland restoration opportunities in estuaries and along the shorelands of estuaries up to the head of tide (often 2040 miles upstream in coastal rivers from the Coquille north). DLCD should provide CZM funding, possibly to watershed councils and/or cities and counties, to update the inconsistent restoration site inventories in these tidal portions of coastal watersheds. This may require DLCD including a wetland task as part of its soon-to-be updated CZM 309 Assessment and requesting funding to conduct the inventories. Given the impending listing of coho, it could be considered for a 309 "Project of Special Merit." This would be one of the most concrete things DLCD could do for the OCSRI effort.

Suggested language:

DLCD XX - **Coastal Wetland Restoration Site Inventories**
Update wetland and streamside restoration site inventories for tidal reaches of ali coastal rivers and streams using CZMA Section 309 or 306 funds, working with local watershed councils, and coastal cities and counties.

DSL Management Measures that Support OCRSI

1. DSL 8 - this item focuses on facilitating more wetland restoration and enhancement, but the actions

proposed to achieve this objective are *very limited*. DSL should evaluate proposed wetland restoration policy improvements in the recent report, *Wetland Restoration Policy: Issues, Options, and Recommendations* (Good and Sawyer 1996) in developing a more robust list of potential actions for integrating wetland restoration into the salmon initiative. Specific examples are included throughout this set of comments, but can be summarized as:

- establishing specific restoration policy goals, including a "net gain" of wetlands, integration of wetlands as an overall component of aquatic ecosystem restoration, and focusing on landowner partnerships
- establishing a nested ecoregion-watershed-site planning framework for wetland restoration
- development of a hydrogeomorphic (HGM) wetland classification system and functional assessment methodology as an assessment tool; working with riparian mangers to extend the HGM framework to riparian and in-stream habitat classification and functional assessment, so as to have a unified aquatic ecosystem classification and functional assessment framework
- integrating wetland restoration into the watershed health program, and including adding the director of DSL to GWEB as an ex-officio member
- integrating wetland restoration site identification and inventory into the DSL wetland conservation planning process (SB 3) and the DLCD Goal 5 inventory requirements (through DSL administrative rule), and requiring inventories to include information on how an inventoried site might assist with restoring salmon or other related ecosystem functions
- removing disincentives and increasing incentives for wetland restoration
- establishing a wetland restoration site inventory (with information on restoration potential for various functions, including salmon) and a "restoration banking" program of sites with particular potential for ecosystem improvements

DFW Management Measures that Support OCRSI

Add:

ODFW should consider establishing a series of "reference standard sites" for different stream, riparian, and wetland classes or types (using an HGM framework). These could serve as the basis for developing reference standards for restoration and as general design templates for restoration projects. Such a system could lead to a more quantifiable basis for setting functional restoration benchmarks for coastal salmon.

SECTION VI-C: WATERSHED COUNCIL PROCESS AND GWEB

GWEB and Wetlands
Wetland restoration throughout coastal watersheds offers significant potential to promote salmon restoration, yet is not well addressed in the watershed health program (WHP) (see Good and Sawyer 1996, p. 63-65 for detailed assessment of the WHP relative to wetlands restoration). Good and Sawyer outline specific options for incorporating wetlands restoration into the WHP to form a more comprehensive aquatic ecosystem restoration effort. These options, outlined below, are based on two premises. The first is that there is general agreement that wetland restoration has significant, unrealized potential to contribute to salmon restoration and other fish and wildlife needs in coastal and inland watersheds; to the maintenance and improvement of stream, lake, and estuarine water quality; to flood damage reduction and base stream flow, and to watershed health generally. The second premise is that the present WHP and other watershed restoration programs operating in the state do not adequately address wetland restoration assessment or opportunities.

Option 1: Establish a separate watershed program for proactive, nonregulatory wetland restoration, following the Massachusetts and Washington models, with WHP coordination.

Option 2: Add a wetland restoration component to the existing WHP, amending ORS 541.350 et seq. by adding appropriate findings, goals, watershed assessment and action program requirements for wetlands, and funding mechanisms.

Option 3: Modify the WHP more substantially, integrating wetlands as part of an overall aquatic ecosystem

restoration program. Such a comprehensive program would address restoration opportunities in streams, lakes, wetlands, lands riparian to these aquatic habitats, and associated uplands.

Option 4: Using elements of preceding Recommendations 1 through 3 and, based on DSL's SB 3 authority (see Recommendation 1), administratively develop wetland restoration goals, ecoregion and watershed assessment methods, and HGM, coordinating closely with GWEB, member agencies, and local watershed councils.

Each of these four options could be implemented through existing, although somewhat modified authorities, through existing agencies, and through existing or newly-formed local watershed councils.

Addition to GWEB Advisory Structure
One immediate action that would serve to begin an improved GWEB-wetland restoration connection is to add the Director of DSL to GWEB as a non-voting member.

Watershed Assessment Under the GWEB Watershed Council Process
My reviews of existing watershed action programs suggest that more standardized watershed assessment procedures need to be developed for use by watershed councils. Also, present assessments do not adequately address the wetland component of aquatic ecosystem assessment (especially important in low gradient areas), nor do they use standardized, comparable assessment tools, such as HGM (discussed above). They also make insufficient use of available historical data, such as soils maps, original public lands surveys, Corps of Engineers historical data, etc. to determine historical conditions that would be useful in identifying restoration actions and serving as targets for restoration actions.

Add a Regional Problem/Solution Analysis Component to GWEB Responsibilities for OCSRI
One of the early criticisms of OCSRI is its fragmented nature of actions, particularly at the state level and its too heavy reliance on local watershed councils for the critical habitat restoration component. This criticism might be addressed by establishment of a science-based, ESU-level problem identification and regional priority-setting process. Such a process could involve the science team that developed the monitoring program, focus more on ESU-level and Gene Conservation Group-level issues, and provide suggestions to watershed councils on how to handle core areas, buffers, and other regional issues. Integration of habitat issues with other habitat functional concerns, such as flooding and water quality could also be addressed in a multiple-function framework. GWEB, with its watershed responsibilities, would be the logical convenor of such a forum. Others besides the science group would need to be brought into a regional process, including representatives of state and federal agencies and watershed councils. Such a process would go far toward blunting the fragmentation criticisms being leveled against the OCSRI plan.

SECTION Vl-D: OREGON'S LAND USE PROGRAM

Add language on the following:

Goal 16, Estuarine Resources, requires state and federal agencies to "...assist in identifying areas for restoration" and gives examples of appropriate restoration. Most local estuary plans have identified some restoration sites. However, the existing inventory of sites needs to be compiled and updated. This should be a priority task for DLCD in the OCSRI, with emphasis given to upper estuary sites that could be restored and provide good rearing habitat and refugia for coho and other salmonids during floods.

Goal 17, Coastal Shorelands, also addresses restoration sites, but focuses on their use for regulatory mitigation. This inventory should be compiled (as per above recommendation) and sites evaluated for their potential to contribute to nonregulatory wetland restoration that would benefit salmon.

SECTION Vl-E: LEADERSHIP AND INSTITUTIONAL CHANGES

Would recommend adding Oregon Emergency Management (OEM) to the mix of agencies involved in salmon management because of their role in flood damage mitigation. Flood damage mitigation activities can affect salmon in two ways. Some post- or pre-flooding mitigation activities have the potential to adversely affect salmon habitat, such as diking, excessive riprapping of streambanks, etc. Others, however, have the potential for positive impacts, such as restoration of riverine and floodplain wetlands that can serve as long- or short-term storage for high flood flows as well as temporary refugia for juvenile salmon. FEMA mitigation funds under the Stafford Act may be available periodically for this purpose. For these reasons, OEM needs to be in the salmon restoration loop. They need to think about salmon as they administer their flood mitigation

programs.

SECTION Vl-G: MONITORING, BENCHMARKS, AND INTERIM INDICATORS

These comments are offered without examination of the detailed "attachments," so should be considered with that caveat.

First, the monitoring program seems adequate as far as it goes. However, at least two additional components are needed, especially if the program is used as input to adaptive management. These are "ocean conditions" and "restoration project and activity" monitoring. In addition, the monitoring program should serve to link restoration actions to watershed environmental conditions and changes in these conditions. This link is not apparent in the plan.

1. **Ocean Conditions**. Ocean conditions need to be monitored as background against which habitat and other management measures can be evaluated for success. Specific variables or indicators of variables should be identified in collaboration with oceanographers, and an appropriate data collection and analysis framework established. Such a program should rely on remotely sensed data and existing, available data to the extent possible because of the prohibitive cost of oceanographic field data collection. The salmon ecosystem background papers prepared for the Pacific Northwest Coastal Ecosystem Regional Study (PNCERS) by David Greenland (Physical and Climatic Conditions) and Dan Bottom (Ocean Salmonid Ecosystems) could serve as a guide to designing such an ocean conditions monitoring program. These could be obtained from PNCERS coordinator, Dr. Greg McMurray at DEQ. This is a critical need for understanding and interpreting watershed and other data.

2. **Restoration Actions/Projects Monitoring**. The proposed monitoring program does not have a restoration projects/actions reporting and monitoring element. It should. Without such an element, it will be impossible to discern the linkages between watershed health monitoring (the monitoring program now proposed) and actual on-the-ground restoration program activities and actions of agencies and watershed councils. Without a means to discern such linkages, adaptive management will remain a nice concept, not a reality. Without a good idea of what projects or actions work well and what ones do not (and why), you can not link causes and effects. Good and Sawyer (1996, p. 46) outline steps in the design of a restoration project that suggests how such monitoring might fit into the individual restoration project process.

Specifically, GWEB's benchmark "percentage of restoration projects found to be effective (by monitoring)" needs to be developed as a separate and fairly elaborate component of the monitoring program. Each agency needs to evaluate its benchmarks for linkages with the watershed health indicators already in the monitoring program. It is unclear how For many of the benchmarks, it is unclear what Generally, the benchmarks will are good as far as they go, but more detailed monitoring of agency program outcomes and watershed restoration actions is needed. For example, As implied above, this program outcome monitoring should also be part of the formal monitoring program.

On paper, it is apparent that the group who prepared the ambitious monitoring plan are different from those who developed benchmarks for agency actions. The link between the two needs to be explicitly made. This will not be an easy process. Both environmental conditions and the outcomes of agency programs and actions need to be monitored and interrelated. Agencies have a poor track record in monitoring program outcomes, although database, GIS, and other tools readily available today make it easier. This will require a new level of data collection discipline.

SECTION Vl-H: CORE AREA MAPS

Despite the disclaimer in the text of the plan, the core area maps will and probably should be used to help implement effective habitat protection programs. At the very least, lands adjacent to core areas that are slated for future development or other uses that might threaten salmon should be considered for outright acquisition, purchase of conservation easements, other less-than-fee programs, or similar management measures. Such core areas also might be where cities and counties, under new goal 5 requirements, require larger riparian buffers. Core areas might also be priority for funding restoration projects that would further enhance the opportunity for salmon recovery. There is a long list of possibilities. The plan should not sidestep these questions, despite their political sensitivity. Otherwise, it may come back to haunt the OCSRI process. One way to address local and political sensitivity might be to ask counties and local watershed councils for recommendations for protection of core areas as part of their plans or watershed action programs.

SECTION VI-I: OUTREACH AND EDUCATION

The education plan as currently written seems to be more public relations focused than public education, although some of the proposals, such as curriculum developments for K-12 are excellent long-term measures. It is appropriate for agencies to educate their traditional clientele in the areas they have responsibility for. However, there needs to be more overall coordination of educational activities to maintain public credibility. The same basic messages need to be conveyed. Agencies tend to be tied to their constituencies in ways that align them with their constituencies, rather than with one another. This needs to be addressed.

Giving some overall coordination responsibility to the state agency that has informal education and outreach as its mission-OSU Extension-has some benefits. OSU Extension probably has better potential for getting out some of the overall salmon restoration messages than do individual state agencies, although OSU has its internal divisions and views as well.

Education and outreach need also to be integrated with technical assistance. Some aspects of technical assistance-one-on-one property owner assistance on project implementation, for example is just another kind of education effort. Information and materials development will make technical assistance more consistent and help achieve goals. Interdisciplinary "cross-training" should also be part of this technical assistance process.

Developing a more comprehensive education and outreach strategy is a need. One model that would cover part of this need is the Lower Columbia River Estuary Program Public Outreach and Involvement Strategy (1996). Additional elements might also be needed, such as training institutes and short courses for watershed managers, and "master watershed manager" program, analogous to master woodland manager (a program of OSU Forestry Extension). A clear, comprehensive process for such an outreach and education planning effort needs to be a priority task.

SECTION VI-J: ECONOMIC INCENTIVES

Before establishing new habitat conservation programs, the Oregon State Legislature should appropriate funds to begin implementation of existing programs, beginning with the Oregon Resource Conservation Trust Fund established by the 1989 legislature (HB 3482). This program was established to promote recycling and land protection, but was never funded. Because a plan is already in place to implement this program, it could be easily modified to fit the current situation and begin operation quickly. Funding could be as originally planned-a surcharge on disposable packaging and products-or some other method related directly to the purpose of the statute, such as bottle deposits. The Resource Conservation Trust Fund, if funded, could be instrumental in protecting core habitat areas for salmon, either through outright purchase or areas or through conservation easements that allowed landowners to retain the land but provide protections for salmon.

Return to top of page.

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October 31, 1996

Jay Nicholas
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Dear Jay,

After reading the OCSRI a couple of times, I'm impressed. It took a tremendous amount of work by you and others and unprecedented leadership by the Governor to get the ball rolling. Just the process of putting the plan together has already netted results in cooperation between agencies toward a common goal unheard of previously.

I do have some concerns and suggestions.

Goals, Strategies and Overall Direction

To build long term (20+ years) community and political support we need to address all the values produced by a watershed, clean water, abundant water, flood dampening, etc. not just fish. The possibility of ESA listed fish is a tremendous wedge to get the door open but so is clean water. The overall goal should be to have ecologically healthy watersheds which will produce fish, clean water, etc.

To address that issue another goal needs to be added to the plan. The development and continuation of balanced community based watershed councils to manage sustainable natural resources across ownership boundaries needs to be a very high priority. The plan mentions the importance of watershed councils to implement the plan but doesn't state it as a goal.

Also, for the councils to be effective, they need to have a sound plan, dollars and strong technical support from state agencies, federal agencies and educational institutions.

Nuts & Bolts

Core Areas: The plan emphasis on core areas raises some concerns. The protection, enhancement, and maintenance of core areas is important; but since many if not most of the core areas are on public lands or industrial forest lands it's easy to drop back into the trap of let the other guy do it (forest or public land owners). If we don't address all the issues in the watershed including management in non-fish bearing streams, wetlands and estuaries, we are bound to fail.

The Coquille Watershed Association has put a lot of energy and resources in riparian and wetland restoration on the low gradient and tidal reaches of the system, even though these projects, except wetland restoration, won't benefit fish for many years to come. They are high priority because; these are the most degraded sections of the basin where we will get real water quality benefits (turbidity and temperature), this where most of the private lands are and is where we built the towns, farms and roads, and most of the people live. An probably the most important the community believes they can make a difference. Not to ignore the core areas most of the CWA sponsored instream projects are clustered around strong fish producing areas adjacent to BLM, USFS or industrial forest lands.

Agency Actions: I'm glad to see all of the proposed actions by the state agencies, it's time. I am concerned that ODA's actions needs to be expanded. ODA should be a part of watershed technical teams and they need people on the coast. Also, the phase II recommendation of a 10 person riparian group is redundant. They need to be part of the watershed tech teams. Maybe all agency folks that are in the field need to have as part of their job description, participation in a watershed technical team.

Rule Changes: The Forest Practices Act needs to address protection of intermittent and non fish bearing streams. It doesn't help to blow out the head walls.

Also all the overlapping rules need to be addressed. It's hard for me to make sense of much of the rules and nearly impossible for most landowners. We need to address what we're trying to accomplish; ecologically healthy watersheds.

Outreach/Education: This part of the plan needs to be strengthened. The agency outreach is basically a PR effort which is important but won't alone get us to the desired goal of ecologically healthy watersheds producing those goods we all want; fish, clean water, etc. The landowners and the public need to understand, how we got to where we are, and what trade offs are necessary to reach the goals. That can only come from long term educational commitment based on good science and a fair discussion of the trade offs.

I would suggest that OSU through its research and extension function could be a key component. We have the field staff and research and respect of private landowners to do that -- but only if we recognize our own biases and address the real issues. OSU needs to be one of the key partners.

Finally for the long term, coastal school districts and community colleges also need to be at the table. Locally Coos Bay, Myrtle Point, Coquille and Southwestern Oregon Community College have programs that are beginning to address watershed issues. Those efforts need to be expanded.

Jay, again, the OCSRI is a heck of a start. Please give me a call if you have any questions.

Sincerely,

Paul Heikkila
Sea/Grant Extension Agent

cc: Jay Rasmussen

Return to top of page.

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October 22, 1996

Jay Nicholas
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Dear Mr. Nichols,

Thank you for the opportunity to review and comment on the Oregon Coastal Salmon Restoration Initiative. I have been working with watershed councils for 2 1/2 years and serve as the chairperson of the Technical Advisory Committee for Curry County. I have developed many restoration projects and delivered many educational programs for individual landowners and watershed councils.

Enclosed are my personal comments pertaining to the plan. It would be a pleasure to discuss the plan in more detail or answer any questions. I could also give you a tour of watershed council projects completed by Curry County. I look forward to meeting with you in the future.

Sincerely,

Derek Godwin
Watershed Management
OSU Extension Service, Curry County

Overall Support of Initiative
I am a strong supporter of the Initiative. Through my position with the Oregon State University Extension Service, I will provide research-based information, educational programs, technical support, and other related services to support the Initiative.

The following statements are aimed at specific parts of the plan. If no comment is made in an area, this infers general support. Obviously, due to the timeline, the plan should be considered a "living" document that changes over time.

Elements of a Conversation Plan
Establish priorities for action--I agree with the methodology for establishing priorities through watershed councils on a basin by basin level. Remember, the most successful watershed councils did not prioritize by core areas in the beginning. They prioritized based on landowner involvement and how much the site could teach others how to manage differently. Priority should first be given to areas with strong landowner commitment. Second, the core areas should be secured, and third to improve habitat and populations in

suitable recovery areas nearby. The South Coast watersheds have enough cooperation with landowners to begin the second and third steps in prioritizing projects, but most coastal areas are not at this stage. Remember, to be successful we have to invest in **community** restoration efforts that in turn address the core areas and improve habitat. Otherwise, we have restoration projects and plans without community support that die locally and/or lose political support.

Goals and Strategies

Goals 1 and 3--There are a huge number of barriers that are seen by private individuals and not agencies. Reading both of these goals leaves me with the impression that small changes will be made that help reduce barriers, when major changes that reduce a large number of barriers will be ignored. For example, their are many overlapping duties of state and federal agencies for dealing with private land management. Conducting business for years and years with the same role within agencies have allowed us to accumulate rules, regulations, processes, procedures, etc. that overlap and are not necessary. We need to take a strong look at agency duties from a local resource manager perspective. As an extension agent working with local watershed councils, 15-50% of my time (depending on the project/educational program) is spent explaining to private individuals how regulation processes work, how to get through the steps in conducting on-the-ground projects, explaining agency data and information on health of resources, and providing technical expertise that agency personnel are not providing (when it is their procedure). In addition, I have spent a huge amount of time getting agencies to communicate, re-organizing agency data for distribution, and holding multi-agency meetings to solve local problems. These are very serious problems that keep grass roots efforts from being successful.

Goal 6--Again, I understand that we need priorities and we need to focus efforts in core areas. HOWEVER, restoration is long term, and we need to build "community restoration" that establishes strong partnerships before focusing on core areas.

Remember, communities vote and support these programs. Agency driven watershed councils and priorities will not replace community partnerships.

Landowners must first understand how they are positively/negatively affected by restoration projects. Once they realize how important they are in restoring ANY (their land or someone else) part of a watershed, they will support the whole restoration plan. Coquille, Coos, South Coast, Lower Rogue, Applegate, and other watershed councils have proven this before the Initiative was written.

Goal 9--We need another goal that states the plan's commitment to establishing viable sustainable working watershed councils. After all, they are the main conduit for restoring our watersheds.

Goal: - Watershed Councils that represent a balanced cross-section of the local watershed's community will provide a sustainable means of managing natural resources across ownership boundaries and endorse community-driven decisions and local employment in restoration projects.

Survey 9a - Establish dependable long-term source of funds to support watershed councils (coordinator funding, seed money to establish non-profit status, seek local monetary commitments from large land owners/ managers, etc.).

Strategy 9b - Establish inter-disciplinary group that identifies obstacles on a local level that block growth ofthe watershed council process/decision-making/ etc.

Other strategies relating to watershed councils are mentioned in the plan.

Team Approach

Oregon State University was left out. They provide a huge number of programs to public and private entities that directly and indirectly manage the state's natural resources. Of course OSU does not have any regulatory authority, but the educational programs provide large impacts to resource management, probably more than most agencies.

Listing

One major fact that concerns me the most is that the goals for recovery on a basin by basin level may not be appropriate (too high or too low). Every discussion with ODFW regarding historic and present coho numbers uses limited data that is so variable (high standard error) that it is a best guess. The fact is that a target will be given for a watershed/stream/ESU and we will have to meet it or we have not achieved our goals. We need to

ensure that the target can be moved based on the "best scientific information available". This seems obvious, but I have not heard or seen this commitment written in any plan or strategy.

Summary of State Agency Measures

I could provide comments on these actions each agency will be implementing, but these comments should go to the agencies directly. Here are a few comments related to all agencies:

1. This plan should review agencies roles that tend to overlap (mentioned previously) and consider reorganizing to better fit the public's needs. This does not mean to just work cooperatively on individual programs, but work in partnership (one program where a number of agencies implements their part). These agencies should support watershed councils in developing watershed assessments and action plans. These action plans should give the desired conditions for the watershed, and the agencies oversee their parts of the plan. With this scenario, there would no blanket regulations. Multi-specialist technical advisory committees would produce water quality standards, BMPs, forest practices, etc. in an action plan format for a particular watershed. This will solve watershed restoration issues while addressing landowner concerns (resources, economical, etc.). Furthermore, the plans are living documents that change over time with new information being added.

2. Oregon State University has been left out ofthe picture. We need to have management measures added to this section. Again, our clients are predominantly private landowners/managers that contribute to the health of our watersheds.

Federal Agency Measures

The federal programs have a huge impact on the health of our natural resources. Most federal agencies have been very supportive of restoration projects and watershed councils in local areas. However, they are managed from a top down approach hat does not allow the local ranger districts and forest supervisors to fully participate in the watershed council process. Presently, the USFS provides technical expertise to review projects and help with watershed assessments for some watershed councils. This has been a huge help! On the other hand, the watershed councils should be working on total watershed management and restoration decisions and not just private lands. I envision having the watershed councils specialize in restoration for the whole watershed (public and private) and make recommendations to the landowners/managers. This would mean that public agencies would provide staff time to the watershed councils to assist. I also envision this process being less costly for the agencies and private landowners involved with the council, because the restoration plans will be done cooperatively by people specializing in these areas. My involvement with the public agencies has seen a huge amount of staff time go into restoration planning and not into projects. Furthermore, since the restoration work will be designed and administrated by one group, this would produce sustainable restoration work and trainings for local contractors.

Land Use

My main comment is that a lot of County plans provide too many blanket practices related to resource protection, and the plan is developed by county planners and limited public involvement. The local planners and people developing the comprehensive plan should be required to work with the local watershed council technical advisory committee. These plans could be a lot more useful if tied with watershed action plans and have more technical support on natural resource management.

Change

- Add OSU to the list of cooperating agencies.
- Make sure federal agencies are at the table and committed.
- Create a limited number of teams (3 at most) and rely on local approved technical advisory committees. The more teams working make it harder for local grass roots organizations to communicate and change policies.

Enforcement

Each landowner/manager should have to sign on to an Action Plan and county/city land use plan to show commitment. If they don't follow these or decide not to sign, they will be subject to blanket rules and regulations that are presently enforced, or they could submit their own Habitat Conservation Plan. This should allow agencies to spend less time enforcing groups following a plan, and spend the normal time on individuals unwilling to cooperate. Through my experience, I am positive that a landowner is much less likely to get away with a violation if he/she is part of an active council versus not active. Priorities will still have to be established for correcting the offenders. Just remember, there will not be enough money to support all

agencies in raising their means of enforcement. We should pool resources and limit the number of violators through educational programs.

Monitoring

- We need standards to follow for monitoring (by all agencies)
- We need regional databases to enter results
- We need review by technical advisory committee of data
- We need to develop new ways of collecting and analyzing data locally - lets look at California Dept. of Fish and Game. They have a Stream Restoration Manual with monitoring protocols and computer discs to be used to analyze data locally.
- We need to share equipment and expertise (GIS for all partners, not separate systems for each agency)

NEW - 2/20/97

Return to top of page

Comments on
OREGON'S COASTAL SALMON RESTORATION INITIATIVE
AUGUST 1996 DRAFT
Paul W. Adams
OSU Forest Engineering Dept.
November 15, 1996

Preface to Comments

These comments are based on a relatively brief review of the OCSRI summary document, & some limited examination of portions of the supporting attachments.

SECTION & PAGE	COMMENTS
Introduction p. xi (Science Team)	The Science Team is almost entirely composed of state and federal agency personnel. While much relevant and valuable expertise resides in government agencies, questions of limited perspective and objectivity are raised when academic and private sector experts are almost entirely lacking.
(Related material in Attachment II also was examined)	Similar questions are raised because nearly all of the Team members are fisheries biologists or aquatic ecologists, at least with respect to the Team tasks of interpreting and predicting the effects of restoration measures related to land use and of recommending emergency management measures. Conspicuous in their near absence are individuals with primary expertise in watershed processes, land management, hydrology, and water quality dynamics.
	Because both the proposed OCSRI actions and the potential emergency measures developed by the Team are essentially policy proposals with very significant soci-economic dimensions, the unique perspective of social scientists is another noteworthy omission.
	The significant weakness noted above could, to some degree, be addressed by rigorous peer review processes for the Science Team products and the OCSRI plan. However, these processes are not described in sufficient detail to judge their potential

effectiveness. Of particular concern with such reviews are such elements as: 1) number, competency and diversity of reviewers, 2) time and other resources directed to the review, 3) how review comments are evaluated and incorporated, and 4) overall quality and consistency in the application of the above elements.

Generally, a process similar to that used for technical journals (multiple anonymous reviewers, independent referee, etc.) can promote quality of the final products. To date, however, this reviewer has seen few indications that many of the key elements of such a process have been or will be used in the OCSRI.

p. xiv-xv (Analysis of Risks)

Although acknowledged as a potentially incomplete list, the omission of the historical practice of "stream clean-up" among the human activities affecting salmon production is surprising, especially with respect to coastal Oregon streams where the practice was relatively widespread.

The outline of risk factors does not clearly indicate if the analyses of these factors relative to the OCSRI accounted for and varied between historical vs. current and projected influences. Such a distinction is very important for habitat risks related to forest practices and other management factors that have shown dramatic improvements in recent years.

Essential Elements of Plan P. I-1

Two important elements apparently have been overlooked, one that should occur before and one after the current list. First, prerequisite to the other 9 elements: Verify the validity of the ESU's and population status. Second, subsequent to addressing the other elements, consideration should be made of key actions to be taken where restoration has and has not been achieved.

The list of 9 elements infers that initial, short-term actions are of paramount importance. The list does not give a strong impression of the potential need for ongoing measures.

p. I-2 (Element 1-ID major factors in decline)

The possibility of determining the relative importance of influence factors (i.e., "proportional blame") seems to be dismissed very quickly, which suggests that political and scientific considerations are of comparable importance. If this is the case, this reality should be admitted rather than inappropriately attributing the problem solely to the limitations of science.

If an accurate assessment of proportional influence is indeed very difficult or impossible, then an evaluation of the effectiveness of recently improved management measures (e.g.,

forest practice standards) becomes increasingly important in identifying priorities for OCSRI among the broader scope of potential measures.

A related key question that is not considered is whether current (not historical) management practices are making the salmon problem significantly worse. Thus, the implicit assumption seems to be that everything done now significantly adds to the problem and must be improved. This perspective would not contribute to OCSRI plans that are consistently cost-effective.

The OCSRI presumes that factors limiting fish production will be identified in each watershed. This is an important goal, but it is unclear whether there will be adequate technical expertise available locally to conduct this very challenging task.

Essential Elements p. I-3 (Establish priorities)

It is noted that NMFS has identified high priority watersheds for coho conservation and restoration. Although the rationale for selection is described as "legitimate," the scientific basis and validity remain in question because of the limited scope of expertise within NMFS for assessing complex watershed, land use and geomorphic relationships with fisheries.

	It is subsequently noted that OCSRI will not establish a single list of priority watersheds, but no clear rationale for this lack of prioritization is given. A rather confusing scheme that would apparently generate multiple or overlay priorities is then briefly described.
P. I-5 (Establish objectives)	The OCSRI appropriately recognizes the importance of setting quantitative objectives for populations and risk factors, as well as related timelines.
	Some of the listed concepts for OSCRI plan development are so broad and vague as to be almost meaningless (e.g., "conserve and restore natural watershed processes," "conserve high quality refugia," "conserve connectivity").
p. I-6 (Establish monitoring)	This section briefly describes monitoring to evaluate population changes, habitat, and management measures, but does not explicitly mention the vitally important goal of establishing clearer cause and effect links among these factors.
p. I-1 to I-8 Introduction	Conspicuous in its absence among the 9 critical elements of a conservation plan is explicit recognition of the importance of diverse (e.g., training for agency staff, landowners, contractors, etc.) and substantive educational efforts needed to support both the design of detailed conservation plans and their effective implementation.
Goals & Strategies p. II-1,2	The strategies to "improve communication and coordination" (1b) and "reduce duplication of effort" (4c) are very welcome and important to include here because of the scope of participants involved in OCSRI. However, more explicit recognition of the importance of establishing clearly defined roles and specific leadership among the diverse agencies and other participants is needed to help ensure that these and other key strategies will be successful.
	Strategy 5a is relatively unclear and infers that all agencies will conduct significant educational programs, despite the currently widespread lack of expertise in educational design and delivery, and limited targeted resources for adult education.
Team Approach p. III-4	ODF describes its intentions to have "a balanced program of education, enforcement, and monitoring." Use of the term education here inaccurately describes what often is provided by ODF staff, which more accurately would be termed "technical assistance" (e.g., site-specific forest practice recommendations).
p. III-5	OPRD describes its role in "educating...the public about resource management." Although OPRD clearly has expertise and experience in public land management, it is unclear if its public education efforts have sufficient perspective and resources for a strong treatment of issues related to private land ownership and enterprise.
Factors Responsible p. IV-1	As in the introduction, the list of factors does not include the important practice of stream clean-up. Also, there is no clear distinction made about differences between historical versus contemporary factors.
p. IV-5	The seemingly factual state that "summer flows are lower because less water is retained in upriver areas" is inappropriately broad and largely unsubstantiated conjecture that should be much more carefully qualified or simply deleted.
Production Goals V	Rigorous peer review of this section is especially important because of the degree of uncertainty and scientific judgement involved, as well as the strong implications for policy decisions. In such instances, scientists may inexplicitly mix personal values and preferences with seemingly impartial technical analysis.
p. V-1	It is unclear what data, if any, has been used to support the statement that "...extended periods of low marine survival result in only the best freshwater habitats supporting viable coho populations."
p. V-2 to V-7	The reliability of the population prediction procedures used here seems to be heavily dependent on the quality of the input data, yet there is not description of this data or its collection from which to judge this quality. This is particularly important with iterative calculations (e.g., estimated stock sizes after 10 generations) that can

	compound even relatively small errors in the data or coefficients that are used.
Agency Measures VI	Among the many agency and activities listed, there is generally very limited description of how the key private sector participants (e.g., landowners, managers, and operators) will be identified, contacted and motivated to be involved in OCSRI.
Agency Measures ODA p. VIAI-10 & VIAI-11	The information on actions related to this important land use category is very brief and sketchy, so it is difficult to judge. However, some of the key actions described seem relatively limited (e.g., several landowner workshops), given the scope of lands and practices that have potential for significant contributions to habitat and population restoration. Even some of the proposed Phase 2 activities (e.g., public relations videos, pre-SB1010 program) seem to lack a central focus on the primary OCSRI goal, i.e., restoration through substantive management actions.
ODF p. VIAI-12 to VIAI-17	The ODF measures listed and described here strongly demonstrate the contrast that exists in fisheries protection and restoration between forest and other lands. Although the policy approaches and specific actions proposed for other land ownerships and uses undoubtedly must differ, the on-the-ground results currently produced on forest lands (even without augmented action through the OCSRI) could readily serve as a target for other lands.
ODFW	Phase 2 actions or a separate heading for these actions are not given.
ODOT	It is unclear why the Phase 2 heading is listed three times.
OPRD	Although OPRD interpretive/education actions would take place on rural park lands, the large proportion of urban residents likely to be involved would argue for a broad scope of information that addresses both rural and urban restoration issues.
Some or All Agencies	Related to the above comment, a major targeted program for awareness and education of urban residents seems essential to the success of OCSRI and other key restoration efforts. These residents need to clearly understand that urban actions and demand for low-cost natural resources have been a primary driver in the human impacts on fisheries, and thus they must share in the actions and costs of restoration.
WRD	The proposed actions to install and expand the network of stream gauges is vital to substantially improving our understanding of watershed functions and their relationships with fisheries, land use, and other critical water resources issues. The cost and seemingly routine nature of gauge installation and monitoring sometimes are emphasized disproportionately to their less tangible value. However, there is simply no adequate, low-cost substitute for long-term records from a widespread and hydrologically diverse network of gauged streams.
WRD8a p. VIAI-34	This is a past action, not a current or future one. How is this information being used now or in the future?
Agency Measures p. VIAI-37	Plans for adding large numbers of staff are listed with little or no discussion of the specific needs for or benefits from such staff.
Federal Agencies p. VIB-1	This is glaring in its omission, especially given the scope of coastal federal lands and their potential role in restoration through recent and very substantial increases in water resource protection on federal lands.
Watershed Councils & GWEB VI-C	Much attention and substantial resources have been directed to watershed councils as a primary mechanism for local watershed restoration efforts, and as indicated here, OCSRI would significantly expand this approach. These councils clearly have had some successes, but it should be noted that this approach remains relatively new and unstudied and the proposed funding and activity levels are substantial.
	Thus, prior to making major shifts in resources, it would seem very advisable to conduct a detailed evaluation of the watershed council approach, including key strengths and weaknesses, benefits and costs, etc. Such an analysis could help direct council funding toward its most important and effective functions, and avoid duplication of effort with existing organizations and programs. This analysis might also reveal key agency support roles or complementary programs or policies that are needed for watershed councils to achieve their potential.
p. VIC-4	It is noted that the most effective watershed councils have paid coordinators. Other

	key advantages not mentioned are greater accountability and reduced likelihood of a conflict of interest or inappropriate advocacy based on personal values or preferences.
p. VIC-7	This description of the contents of a watershed action plan is potentially valuable in promoting consistent and comprehensive planning documents.
Land Use Program p. VID-7 to 9	If the NOAA/EPA draft findings are correct, some major human activities (e.g., agriculture, urban development, marina use) that significantly contribute to water resource impacts are currently not being addressed. Similarly, although new LCDC rules require riparian protection on non-forest lands, effective implementation remains a key question and protection along smaller streams may be very limited. It remains unclear how OCSRI might further evaluate and address these potentially serious problems.
Leadership & Institutions VI-E	In surprising contrast to the tone of most of the previous sections, the selected NRC quote and the subsequent discussion about leadership and institutional change seem to support a top-down model for dealing with the salmon problem. In addition, despite the comments about the importance of leadership, the respective roles and specific leadership responsibilities among the various state agencies involved with OCSRI remain undefined.
Role of Enforcement VI-F	The "legal hammer" is an important approach for environmental protection, but for issues involving diverse and sometimes conflicting public values (e.g., economics and environment) regulation may be a divisive or inefficient means for achieving desired goals. Also, many factors contributing to the salmon problem are historical rather than due to current actions, and the most effective restoration efforts could focus on education or incentives. This section and other parts of the OCSRI plan include little substantive discussion of such considerations, probably due to a lack of significant involvement of social science expertise.
OSP p. VIF-12	The justification for a shift from harvest enforcement to habitat and environment enforcement is not very clearly expressed and does not include specific discussion of resource allocation and cost-effectiveness concerns. For example, the level of training and expertise needed to support such a shift may be substantial. Also, harvest enforcement provides very direct and current benefits, and negative impacts could quickly magnify if control of violations is even slightly decreased when staff are redirected to other enforcement duties.
Monitoring VIG	This is an important section with a number of strong points, including: a) the table of key tasks/status/finding, b) the list of obstacles and opportunities, and c) the material on benchmarks and interim indicators.
Adaptive Mgmt. p. VIG-3	It is stated that cause and effect relationships can be determined using data from the OCSRI monitoring program. This may be possible with some very carefully designed sampling protocols, statistical analyses, and expert interpretation, but as a blanket statement this seems overly optimistic and perhaps misleading. Monitoring is not research and this statement simply contributes to confusion between the two.
p. VIG-6	The ODF proposes using BLM criteria for assessing "properly functioning" riparian areas. It is unclear what these criteria are and whether they have been published or subject to scientific review. This question is raised given the level of judgement inferred by the above quoted terminology.
Core Maps VI-H	The necessity and value of maps are addressed here, but their power (as a negative) and limitations are not directly disclosed or discussed. Although often viewed as visual "facts," maps are always approximations that have a significant basis in human judgement. Thus, they are subject to technical error as well as personal value preferences. Also, in the context of a functionally diverse and spatially complex issue like fish populations and habitat, a heavy focus on maps may inadvertently over- or under-emphasize certain component factors to a degree that interpretation and decisionmaking is impaired.
Outreach and	The location of this topic toward the end of the OCSRI document and the level of

Education VI-I	detail provided strongly suggest that this component is considered to be of secondary rather than primary importance in salmon restoration. Yet no significant analysis and justification is given for the overall allocation of attention and resources to the very diverse options (e.g., regulations, education, incentives) for achieving restoration.
(Related material in Attachment VI also was examined)	The oversight described above provides another clear example within the OCSRI plan of a key weakness from a lack of significant consideration of the social sciences. Similarly, it is very striking that only 1 of the 13 organizational members of the "Outreach Team" (p. VI-I-2) has education as its primary mission and area of expertise (i.e., OSU Extension/Sea Grant). In addition, representation by only public affairs personnel may have further biased the perspective and plans away from education and towards public relations (content of Attachment VI supports this).
	Use of the term "outreach" in this section is vague and confusing. This section would thus greatly benefit from specific definitions and discussion of the important differences between a) public relations, b) technical assistance, and c) education.
	In its "shotgun" approach, the plans outlined in this section show little evidence of a clear strategy and design process for key public relations, technical assistance, and educational actions. Such a strategy and design would include identification of priority target audiences, information/assistance/education objectives, and primary approaches and subject content. The "Identification of Stakeholders" section (p. VI-I-3) only addresses a small part of such an effort and again seems to stress public relations activities.
	Another important dimension of a focused strategy and design process would be consideration of the levels of action that are needed, from awareness-building to the development of knowledge, skills, and abilities. Other potentially powerful social science information would also be applied, such as "learning styles" and "diffusion of innovations" concepts.
Outreach & Education p. VI-I-1	The statement that OCSRI requires "educational efforts to change the views of Oregonians" sounds like a call for a propaganda program rather than education. The latter would provide sufficiently broad and relevant knowledge (e.g., social, economic, and environmental facts) to allow Oregonians to <u>make an informed decision themselves</u> as to whether or not a change in their views is warranted.
Funding Options VI-J	A summary table with key actions, participants, funding sources, and dollar amounts would provide a helpful overview of what is proposed.
	Very large dollar and other expenditures are being proposed, but it is unclear whether the proposals were developed following an assessment of the relative cost-effectiveness of the diverse actions that could contribute to restoration. As with the outreach and education proposals, the overall appearance is that of a "shotgun" approach to financial resource allocation.
p. VIJ-11 (research needs)	The proposed research programs focus solely on technical studies. Highly conspicuous in its absence is any policy or other social science research, especially given that "an effort of this...governmental, and social magnitude is unprecedented." (Preface, p. v)
p. VIJ, 12-16 (incentives)	Generally, the proposals represent very positive and creative ideas that deserve further analysis and potential development and implementation.
p. VIJ-15	The proposal to decommission forest roads is not well-supported by available research, especially given its high cost and potential for limiting future access and local resource management (e.g., control of wildfires and related watershed impacts). Statements that forest roads are a major negative impact on fisheries are frequently heard, yet aside from situations of clearly restricted fish passage, these impacts (i.e., specific cause and effect links) and their historical vs. contemporary

influence remain poorly documented and defined.

Related to the above comments, the discussion of road mileage and statement that "rather than limit mitigation...to improved passage and improvements, Oregon should set an example...for decommissioning roads..." show virtually no evidence of a substantive analysis of the roads/fisheries issue, while at the same time strongly suggesting a value-based antipathy towards forest roads.

It should also be recognized that much of the impacts of roads occurs within the first few years of construction, and that decommissioning activities (e.g., culvert removal) could simply create a second period of soil disturbance and instability at a time when this is least desirable.

Appraisal of Measures VII

The question posed on p. VII-1 cannot be answered by any one reviewer because of the scope of expertise necessary for a thorough analysis of this complex problem and the diverse responses proposed in the plan. Those who have raised this question should thus view the individual answers they receive with considerable caution, and that some type of interdisciplinary panel or team review is likely to be needed to generate the type of carefully considered answers that are desired.

For this reviewer, one of the key underlying questions that remains to be answered is: "If we build it (better habitat), will they (the fish) come?"

NEW - 2/20/97

Return to top of page

From Pat Corcoran
Extension Sea Grant
Oregon State University
November 4, 1996

My general view is that the OCSRI is necessary, *but not sufficient,* to ensure that coastal coho will sustain naturally reproducing populations. I consider the Plan to be a strong initial effort by state government to stimulate public and private activities toward achieving the mission of the CSRI.

_One of the points of understanding stated is "the effort will only be successful if it represents grassroots involvement, ownership and commitment in a cooperative work environment"...and that the CSRI will emphasize "voluntary vs. regulatory approaches." The political reasons for the above are pretty obvious to readers, but nowhere in the Plan is there any acknowledgement that this is harder and probably more expensive to do than a top-down regulatory approach. Without substantial financial and in-kind support loaded on the front end to help watershed councils meet their very high expectations, the councils will not succeed.

_The CRSI is fundamentally about people and how we can work better together to restore habitat for salmon. Ecological strategies and projects are subordinate to having people willing to implement them on a voluntary basis. As I look at the Plan I get a strong impression that salmon habitat restoration as primarily a technical problem that can be "fixed" if only people would get on board. I imagine this is due in large part because the writers of the Plan are primarily experts in technical fields. As the adage suggests "to the man with a hammer, all the world's a nail." A successful effort of restoration requires a balance of both technical and process support. What I don't see in the Plan is any value placed on supporting the "people" side of the issue.

_The entire tone of the Education and Outreach element of the plan reflects a mindset that the state and its agencies have the answers and if only those people "out there" would do what we say everything will be fine. A better approach is to admit the state has part of the solution, and local residents have part of the solution. The preferred image is not of a school teacher lecturing students, but of consultants working together with clients to fix a common problem. Examples (italics mine) of the "expert paradigm" reflected in the Plan include:

- "Implementation of the initiative requires consistent educational efforts to change the views of Oregonians..." Propaganda is about changing peoples minds to agree with you, education is about engaging people in constructive dialogue where everyone can learn more the issue.
- ..."critical that the state reach out to these populations and bring them into the process to given them ownership in the initiative". The premise of the Plan is that the focus of watershed restoration is the watershed, and watershed councils. The mindset reflected in this sentence is that "Salem is the center of the universe", that people "out there" need to be brought "into" our process. And why? "... to give them ownership in the initiative." "Ownership" is not something that can be "given." Ownership is involvement in something understood to be yours.
- "Without the involvement of the public, the salmon will most likely not return...Outreach efforts are important and effective ways of including the public. The Plan's success is predicated on a bottoms-up approach, but this language exudes a top-down point of view. The terms "involving" and "including" in the above sentence strongly suggest that "We" (the non-public) are gracious enough to "involve" or "include" You (the public) in Our process. Would the state be comfortable with: "Without the involvement of state agencies in watershed restoration councils the salmon will likely not return...council education efforts should find ways to include state agencies." Probably not, but that language is more in alignment with the mission of the plan than the existing Plan language. the OCSRI is not about nominal involvement by the public, this is about public "participation" as co-equals. The history of forest management plans and their subsequent law suites emphasize the need for true collaboration in designing the Plan.

_The Outreach and Education Plan as written is not a Plan, or even a strategy, but a compendium of what others are already doing in terms of spin control. "Out-reach" implies an authentic seeking to engage people in learning about the problem. The Outreach Team consists of the "public affairs representatives" of a variety of state agencies. This group is charged to accomplish "...both the short-term and long-term goals..." of the Plan. An Outreach and Education Plan would properly begin by engaging local watershed councils and other affected parties (including state and federal agencies) to identify what they need to know to work toward achieving the mission of the Plan. The Team could then focus on developing a strategy to help people learn and share relevant information and experiences.

_The focus to date of the Outreach Team has been exclusively on "content", and nothing on the "process" of mutual learning to solve the problem, which is the basis of the Plan. Maintaining a "list" of educational materials that are "available to all interested parties" seems to be the "short and long term plan." No attempt to engage residents and agencies in meaningful dialogue is even hinted at. What is offered is exclusively "content-out-of-context." The following are cited as outreach and education: educational displays to be used at fairs, briefing reporters, brochures, briefings with key agricultural groups, alerting mine operators in coastal areas about the CSRI, information packets for watershed councils, articles describing agency actions, media tours, TV spots, a few public meetings, a video to road masters, letters to water users and others "informing them" about CSRI and "asking for their support of CSRI", flyers, and periodic newsletters. This is neither education nor outreach, and does not reflect a commitment to education commensurate with the mission on the Plan. Yet, the Plan refers to this as a "comprehensive and inclusive outreach and education effort..." Nominal lip service is given to "allowing" the Outreach Team to "utilize the skills and experience of federal and local agencies/organizations to expand its views." This reflects the command-and-control approach to "dealing with issues" rather than "learning our way through difficult problems toward solutions we can all support."

_The tracking of progress as stated suffers from internally defined measures that meet the needs of "public affairs representatives" rather than salmon. Establishing "a day each year" to celebrate accomplishments of on-the-ground projects (deemed successful by the public affairs representatives of the Outreach Team!), a speech

by the governor, and an annual report are offered as "...mechanisms for encouraging progress and diligence." This is an embarrassing statement coming from the State of Oregon, a state viewed as a national leader in benchmarking progress.

A more meaningfull method for tracking success would be to first identify the practices and procedures of ALL state agencies that are not in alignment with the mission of this Plan. These practices are considerable and diverse, but not irreversible. For example, the DOT's effort to replace highway culverts so that fish can pass through them. (Not too difficult, very effective, great PR.) More difficult examples might include moving agency attitudes from "public involvement" to "public participation and partnership." Benchmarks measuring alignment between the practices and the Plan would then need to be established and tracked. This would be a tremendous demonstration of commitment to the Plan by the state. Federal and local governments, as well as the private sector, could follow that lead and identify which of their current practices counter the mission of the Plan and establish measures to track their alignment (or departure) with that mission.

_The "Budgets for Outreach" section (?) is comprised of TWO SENTENCES. The message is clear: either partners fund this through existing agency budgets once you get them, or the governor (might) fund them through existing agency budgets before you get them. Identifying new money is not even suggested. If the report began with this section it would have saved everyone an awful lot of time reading the rest of the plan. The key to the entire CSRI is community based collaboration and partnerships. This is fostered through education and outreach. How about a "brochure", "media event", and "newsletter article" explaining how the CSRI will succeed without funding of its key component?

NEW - 2/20/97

Return to top of page

The outreach portion of the CSRI Plan is well organized and thought out. Its outreach team is representative of the needed agencies that can provide help or materials. The proposed educational materials are comprehensive and seem to be objective.

There are several major areas of educational concern which I have that don't seem to be represented in Section VI-I. The concept for outreach is more top to bottom. My past experiences show that internal outreach is more effective when it can be accomplished. That concept is strongly supported by Extension history where you get key clientele to "pass the work" by example, or associated projects.

Outreach efforts needed for identification:

1. The present and past outreach efforts of Extension programs, Sea Grant and the University don't seem to be acknowledged or recognized. We've done a lot in education outreach with watersheds, estuaries, riparian zones and water quality.

1. I don't see the place for "internal" outreach efforts by Cattlemen's Assoc., Dairy Assoc., timber companies, gravel extractors, water assoc., Farm Bureau, etc. There are programs and places for their efforts that are more effective than agency efforts.

2. Some of the fish "user groups" (sportfishermen, river guides, commercial fishermen, tribes, environmentalists, etc.) need to be placed into the outreach role directly. Some participate through watershed councils and STEP programs, but most of them just "fish" and take.

3. We really need to outreach to three major groups that are hard to reach and are generally uneducated about salmon problems.

A. Local coastal business owners - motels, restaurants, etc. They cater to the coastal tourist and fishermen but are really ignorant of the resource problems.

B. Realtors and land developers - a major education problem within the whole salmon picture. They are influential (politically and financially) with county land use practices and water use.

C. Senior Citizens - this may seem like a strange group, but they are becoming a major portion of the coastal population. The majority of them (90% or more) are very ignorant of the salmon resource problems and effects. However, they demand to use resources concerning fish (water, land use, fish extraction, etc.).

Many years ago I learned that if you have a poaching problem in a local stream, the best way to solve the problem is to use ex-poachers to "educate" the problem people. Our outreach efforts need to be more within the user groups than from without.

A great deal of the outreach programs that are being used seem to only "preach to the choir." We reach those who are already aware of the problems. We need to make sure we get to the industry, agency and public entities who need the educating.

Tim Waldvogel

Sea Grant Extension

NEW - 2/20/97

Return to top of page

Review of the
Oregon Coastal Salmon Restoration Initiative

November 28, 1996

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As a faculty member of the College of Agricultural Sciences at Oregon State University, I have been asked to review the Oregon Coastal Salmon Restoration Initiative. I am a member of the Department of Fisheries & Wildlife, and my professional expertise is in the areas of stream ecology, fishery biology, and riparian ecology. I have based my review comments on the August 1996 Draft of the conservation and restoration plan.

The **Oregon Coastal Salmon Restoration Initiative** (OCSRI) presents a challenge for Oregonians. On one hand, the OCSRI is a landmark process in our state's history of addressing natural resource issues in a coordinated multidisciplinary approach. On the other hand, the current plan is not sufficient to eliminate the need for listing coastal coho salmon as endangered under the Endangered Species Act and the need for a recovery plan. The danger for Oregon is that the public's attention will be focused on the current deficiencies and we will lose this opportunity to build a more coordinated approach to natural resource management.

The OCSRI recognizes salmon as an integral part of Oregon's cultural identity--much more than a small collection of species or a commercial commodity. It emphasizes wild populations and the environments that

support them. Cautious use of hatcheries is an important principle that must be remembered as the plan is put into practice. Under the OCSRI, directed commercial harvest of coho salmon under this period of severe decline would not be allowed. If coho recover, it also will be important to exercise greater caution in setting future harvest goals and practices than we have demonstrated in the past.

The most fundamental question is whether the OCSRI plan is adequate to conserve and restore stocks of salmon and trout along the Oregon coast. If so, formal listing of declining stocks as threatened species would not be necessary. The plan lays out nine critical elements that are well designed and would form the basis for an effective restoration program. The challenge for the state of Oregon is developing and implementing actions for each of these elements. One of the most important elements of the plan will be effective implementation of agency programs and existing regulations.

In my evaluation of each of the elements of the plan, I asked four simple questions:

Does the action make a difference on the ground, in the stream, or to the fish?

Is the action a change from the practices and policies that we have been using in our pst efforts to protect the coastal salmon?

Are there explicit guarantees that the action will be taken?

Has the state or federal government demonstrated their willingness to commit people and financial resources to implement the action?

Coordinated State Commitment to Salmon Restoration

The ultimate success of the OCSRI plan rests on the efforts of the people of Oregon to improve the habitat and survival of existing stocks. The commitment of the public will be a direct result of the leadership by the state of Oregon, which will be demonstrated in the coordinated efforts of all state agencies related to management of fisheries, land, and water. The goal is frequently stated in restoration programs but is rarely achieved. Oregon proposes to focus the efforts of 14 state agencies to restore coastal salmon. The OCSRI plan accurately recognizes that this coordination is essential and the Planning Team indicates an initial step in that direction. In the long run, the plan will require commitment of each of those agencies from the people on the ground to the heads of each agency. The varying degrees of proposed actions from the 14 agencies indicate that much work still remains and that leadership from the Governor's office is still needed to raise the level of commitment across the different state agencies.

Recognition of Factors Responsible for Declines

The OCSRI plan accurately identifies the major factors responsible for the decline of coastal salmon. The plan does not try to downplay or excuse many of the major human impacts, such as harvest of salmon, hatchery programs, and habitat degradation. It is troubling to see that three of the eight pages summarizing factors related to salmon declines are devoted to predation by marine mammals. Given the scope of factors nd their historical role in salmon populations, this emphasis on marine mammals is far out of proportion to their influence in the current status of coastal salmon stocks. It will be critical for the state to focus on human actions that have diminished the salmon populations and recognize marine mammal populations and changing ocean conditions as the dynamic ecosystem setting in which these populations have evolved and existed for millions of years.

Production Goals

One of the strengths of the OCSRI plan is the identification of production goals for coastal salmon stocks. This explicit analysis of historical salmon abundances and basin-by-basin analysis of current performance provides a clear target that can be analyzed and refined by all participants. Because explicit production goals are the center of the on-going restoration program, the plan needs to identify a process for reviewing the production goals and the methods used in their development and an on-going process for future revision based on new information and techniques. It is possible that the Action Integration Team might play this role, but the plan does not state that and the objectives of the Action Integration Team differ slightly from technical review.

The production goals identified in the plan appear to be lower than I would anticipate. Historical abundances of coho salmon (pre-1990) were approximately 1,500,000 adults north of Cape Blanco and 60,000 adults south

of Cape Blanco. The production goals for the northern ESU were 141,000 fish at 3% marine survival, 370,000 fish at 5% marine survival, and 924,000 fish at 10% marine survival. For the Rogue River basin, production goals were 5,000 fish at 3% marine survival, 17,500 fish at 5% marine survival, and 90,000 fish at 10% marine survival. The levels identified as fully seeded based on current habitat are 100,000 - 400,000 fish in the northern ESU and 5,000 - 20,000 fish for the Rogue River basin. This means that the levels identified as fully seeded are roughly 8% - 30% of historical abundances. This seems surprisingly low, and it raises serious questions about our goal for restoration. Even if these numbers represent full seeding, it will not be wise for the state to aim for the bare minimum as its goal with no margin for uncertainty or gaps in our information base.

The production goals identified in the plan appear to be lower than I would anticipate. Historical abundances of coho salmon (pre-1900) were approximately 1,500,000 adults north of Cape Blanco and 60,000 adults south of Cape Blanco. The production goals for the northern ESU were 141,000 fish at 3% marine survival, 370,000 fish at 5% marine survival, and 924,000 fish at 10% marine survival. For the Rogue River basin, production goals were 5,000 fish at 3% marine survival, 17,500 fish at 5% marine survival, and 90,000 fish at 10% marine survival. The levels identified as fully seeded based on current habitat are 100,000 - 400,000 fish in the northern ESU and 5,000 - 20,000 fish for the Rogue River basin. This means that the levels identified as fully seeded are roughly 8% - 30% of historical abundances. This seems surprisingly low, and it raises serious questions about our goal for restoration. Even if these numbers represent full seeding, it will not be wise for the state to aim for the bare minimum as its goal with no margin for uncertainty or gaps in our information base.

The thresholds of wild spawner abundance raise even stronger concerns about the goals relative to historical populations of salmon. The northern ESU has a threshold for threatened status of 14,190 fish and a threshold for endangered status of 4,730 fish. This means that we are setting the threshold for threatened status at 1% of historical levels and the threshold for endangered status at 0.3% of historical levels. This also means that the threshold for threatened status is 14% of lowest production goal and the threshold for endangered status is 4% of lowest production goal. Unless I misunderstand the application of these thresholds and goals, it seems that were are setting very low standards for performance and allow the stocks to fall far below our overall goals before moving to a formal listing. Given the highly variable nature of freshwater environment, ocean environment, and climate coupled with the uncertainty in our understanding of the stock dynamics, we should incorporate an explicit margin of safety above our projected thresholds to account for environmental complexity and technical uncertainty.

The description of production goals appears to be based on the assumption that only high quality habitat is used at low seeding levels, and that poor quality habitat is used only at high seeding levels. If this assumption is incorrect, the actual levels of production would be lower than projected because the poorer habitats would not support as many fish. Even when low numbers of adults return, they migrate to their natal streams. If the habitat there is in poor condition, there is no evidence that they will move to another basin or stream reach in search of high quality habitat. This assumption and other technical aspects of the proposed production goals require thorough review before they are implemented.

State Actions - The Bottom Line

The OCSRI relies heavily on voluntary efforts of all citizens of Oregon. As nervous as this makes people who have greater confidence in explicit regulatory guidance, restoration of coastal salmon simply by regulatory action will fall far short of the benefits that are possible if a responsible citizenry understands and supports the goals of resource conservation and restoration. This broad based understanding and support on the part of the public is highly unlikely unless the State of Oregon demonstrates its commitment to the goals of the OCSRI through development of innovative approaches and implementation of its existing programs to the fullest extent possible.

Watershed councils have emerged as a major tool for responding to regional environmental issues. This important process emphasizes the state's commitment to ground-based efforts, and local ownership will be critical to the long-term success of these efforts. Outcomes are likely to be highly variable from community to community. This makes it difficult for NMFS to assume that these actions will be adequate to avoid a listing under ESA.

The listing of the proposed management measures that support the OCSRI plan provides the clearest evidence for evaluating whether this plan is going to do anything different for coastal salmon and their habitats than we have done over the preceding decades that led to the current declines. The agencies present both encouraging examples of innovative new approaches and discouraging reliance on past policies. Each agency needs to be

asked what they can do that would make a real difference for a specific habitat or a specific stock of salmon.

Management measures proposed by some other state agencies create doubts that their proposed measures would help salmon much. Actions proposed by these agencies, especially the Oregon Department of Agriculture, are brief listings of current programs and are not substantially different than their past actions. The importance of floodplains, coastal lowlands, and estuaries in the life history of coho salmon and other salmonids calls attention to the role of agriculture in the recovery of coastal salmon. ODA's proposed actions fall far short of the potential steps that would benefit salmon.

The recognition of funding constraints on restoration efforts is refreshingly honest. It also highlights the degree to which the success ofthe OCSRI will require commitment not only of the state agencies but also the state legislature in supporting this critical program. Though it is not explicitly stated in the plan or evaluated in the management measures of the state, the legislature must be an equal and constructive partner in the future of coastal resources if this plan is to be effective or recognized as an appropriate context for responding to potential for species becoming endangered in Oregon. To some degree, the role of the state legislature is reflected in the Phase 1 Actions and the Phase 2 Actions, but even the Phase 1 Actions currently are hampered by the limits placed on the relevant agencies.

One of the major shortcomings of the OCSRI is great disparity in the commitments of the 14 agencies involved in developing the restoration plan. Oregon Department of Fish and Wildlife considered these questions seriously and offered new actions. ODFW has been most responsible for salmon in the past, so their leadership is appropriate and expected. In this restoration plan, ODFW has proposed more innovative and conceptually sound practices than their past programs. Oregon Department of Forestry provided several new actions, though they relied too heavily on the sufficiency of recent riparian rule changes. Though improvements are needed in both of these agencies' responses, they put actions on the table that were not available before this plan.

Several agencies -- Department of Environmental Quality, Division of State Lands, and Water Resources Department -- proposed a few new programs or actions. Others offered to reprioritize existing programs and policies to consider salmon, but the final change in their actions remains to be seen.

Oregon Department of Agriculture showed a disturbing disregard for the seriousness of the status of coastal salmon, and fundamentally presented a brief description of their existing voluntary approaches with little focus on the specific consequences of current practices on salmon. The agricultural lands are located on the lowland rivers, flood plains, and tidal streams that historically were some of the most productive habitats for salmon, but now a small fraction of the spawning or rearing occur in these reaches.

ODFW provides the most extensive array of new and innovative actions, though there are serious questions about their ability to implement these practices in view of the budget shortfall that they are currently experiencing and the many questions surrounding funding of state agencies in general. Several management measures proposed by ODFW are consistent with recommendations of the recent review of the Pacific salmon by the National Research Council and are some of the first regional programs to implement these innovative measures. Other practices are positive but more limited steps that could add to the collective success. Some efforts will have little effect on the salmon, but might increase the public's levels of confidence or credibility of the

Specific Agency Programs and Projects

The following section provides brief comments on the proposed actions of the participating state agencies. Many of the proposed actions are part of existing programs, but many of the actions that I have characterized include recent policies, regulations, revisions. For selected programs that have major impacts on salmonid populations and habitat, I have included brief observations of the effectiveness or limitations of recent programs.

DEQ

New actions:

- *Enhanced 401 Certification Program-water quality impact review for **any** state or federal permit*. This authorization and process is an important element of OCSRI but it will require more staff and funds

though it is listed as Phase 1. Without additional support, major changes in the short term are unlikely.

Existing programs:

- *Implementation of new state water quality standards*. Though the specific standards have changed for the state, the differences for coastal streams will be minor. The major uncertainty will be the state's ability to implement the standard through BMPs. planning, voluntary programs, and enforcement. The past history of enforcement has been weak, but development of BMPs such as the Riparian Rules of the Forest Practices Act have made significant changes in riparian management.
- *Prioritization of water quality limited waters on 303(D) list for TMDL development*. Prioritization is a critical step given limited staff and funds. Why is this not addressed in Phase 2 funding?
- *Watershed council support*. This important process is changing the state's response to environmental issues, and local ownership will be critical to the long-term success of these efforts. Outcomes are likely to be highly variable from community to community. This makes it difficult for NMFS to assume that these actions will be adequate to avoid a listing under ESA.
- *Coastal nonpoint control program*. Again, it is unclear that the agency is adequately staffed to respond to this program. No explanation is offered for the source of "additional staff for permit application and compliance review".
- *Tillamook Bay National Estuary Program*. The Tillamook basins are important components of the coastal salmon habitat, and this effort adds significantly to OCSRI. This program is untested and the outcome remains uncertain.

Phase 2 actions

- *None proposed*. Why are no additional programs proposed under Phase 2? The agency is severely hampered by lack of staff and funding. This is a critical opportunity to change the level of state support and it appears that DEQ is missing the chance to increase the effectiveness of its programs.

DLCD

New actions:

- *Implement New Goal 5 Rules for Riparian Protection*. This expansion of the State Land Use Program is badly needed. The existing planning process has been more successful than most states in the U.S. It is based on partnerships and workplans, so the progress will be gradual unless new funds and staff are added.

Existing programs:

- *Statewide Land Use Program*. The importance of this visionary and innovative program cannot be overstated. Land use zoning provides the most tangible evidence of the potential effectiveness of the restoration plan. The program has been in place for more than 20 years, but the salmon have continued to decline. This means that development of new state programs with full commitment of the Governor's office and the state legislature are essential if the OCSRI is to be effective.
- *Implement the Coastal Nonpoint Pollution Control Program (CNPCP)*. This program will require new actions by at least six other state agencies. The sources of funding and staff are unclear.
- *Periodic Review of comprehensive plans and ordinances*. Though it provides a new emphasis on salmon, it is still largely advisory and the availability of expertise on salmon is limited in the local jurisdictions.

Phase 2 actions

- *None proposed*

DOGAMI

Comment: Recreational and small commercial dredging operations dig up stream beds, destroy invertebrates, and deposit silt during critical low flow periods. Nothing is stated about these operations. The section on DSL indicates that there is a temporary administrative rule, but it appears to be mostly be a reporting of location, size, and timing of operations less than 25 cubic yards. Does the state not have the ability to apply the same criteria and scrutiny to these resources uses that it applies to all other land uses? Does the Mining Act of 1872 still prevent the state from protecting its environment?

New actions:

- *GIS maps*. When will this be available? When would the state expect them to make a difference in coastal programs and planning?

Existing programs:

- *Concentrate mine inspections on coastal areas*.
- *Looking for turbid mines*.
- *EPA program on construction of egress to side channels*. This is an on-going and voluntary program. It is closely linked to a critical component of salmonid life histories, but the degree of response by operators is uncertain.
- *BMP manual for mine land reclamation*. If it has been prepared, has it influenced operations on then ground?
- *Voluntary enhancements and award system*. Voluntary efforts, awards, and incentives should be included, but their effectiveness is unknown and likely to vary greatly.
- *Discussions with BLM and USFS*. How does this provide anything new? Has DOGAMI not been discussing salmonid habitat issues with BLM and USFS? If not, why not?
- *Annual reclamation awards*. Voluntary efforts, awards, and incentives should be included, but their effectiveness is unknown and likely to vary greatly.

Phase 2 actions

- *Characterization of groundwater*. Groundwater is an important issue in the lowland reaches of the coastal and its river valleys. Where is the recognized links to salmon? How will the agency apply this information to OCSRI?

DSL

New actions:

- *All removal-fill activities will be subject to state scrutiny and operating conditions, not just those less than 50 cu yrds*. This is an important improvement in river mining operations. Why was this not mentioned by DOGAMI?
- *Establish BMP for removal-fill activities*. This is a complicated issues. This will not be a trivial effort and will require a substantial number of resource professionals. With all of the new efforts in OCSRI, where are the additional funds and staff?
- *General Authorization revised to road and culvert replacement, prefer bridges over culverts, vegetation over rip-rap*. These are useful changes, but where will the policy and guidance be documented. It is always difficult to turn established practices around because we are always more comfortable with things we have done in the past. The term "bioengineered" should be clearly defined throughout the plan. I guess that it will always be more comfortable to include the term "engineered" when talking to engineers, but I suspect that it will always reinforce human intervention over ecological processes.
- *Watershed attention to GA related to erosion control, streambank stabilization and placement of large wood, facilitate fish habitat enhancement (eliminate gabions, replace culverts, "bioengineered" approaches), wetlands restoration and enhancement projects*. These are positive changes, but the concerns about the dominance of artificial engineering approaches identified in the previous action apply here as well. Are replaced culverts designed for 50-yr or 100-yr flood events? Larger would be wiser in the long run.
- *Guidelines for individual permits*
- *Permanent rules for recreational placer mining*. See general comment for DOGAMI. The administrative rule is temporary. Will the permanent rules cover more than just timing, location, and volume? Will BMPs be established? How can any placer mining be justified in streams that support salmon? If logging operations caused the same channel disruption, egg mortality, invertebrate mortality, turbidity, and siltation that a placer operation causes, it would be prohibited.
- *Replacement of push-up dams*. This is a positive step at a detrimental practice. The alternatives require continued review as well.
- *Surcharge for gravel removal*.This is a useful step that will generate funds. This is one of the few revenue generating actions identified. Can others be developed?

Wetlands inventory focused on coast. This temporary reprioritization is necessary, but the state should have an explicit plan to redirect the inventories throughout the rest of the sate as soon as an effective information base is developed.

- *Strict enforcement of water pollution regulations for state-owned submerged and submersible lands*. This is an example of the state demonstrating its commitment to OCSRI and leading by example. **The state should review and reprioritize its leasing of all state-owned submerged and submersible lands and riparian lands.** If the state dedicated its lands to stream and salmonid restoration, it would send a strong signal that the state is serious about restoring its common resources. This would have even more effect than enforcing water pollution laws on state lands that it should be enforcing anyway. More actions like the dedication of state lands are needed in this plan.
- *Designate scattered tracts for conservation*. This is a positive step. See comments above.
- *Clarify jurisdiction over woody debris removal*. This is an important issue for salmon habitat and stream management in general. The state has stepped away from this issue and did not take such actions after the flood of February 1996. Large wood has been demonstrated to play a critical role in the habitat and refuge for salmon, trout, and other aquatic organisms. If the state is serious about this, it should move quickly to establish and enforce a policy as quickly as possible.
- *Analysis of recruitment onto individual gravel bars and limit removal to annual recruitment*. This sounds like a positive and long overdue action. In reality, it is an extremely difficult issue because it requires basin and river reach scale approaches. Simply measuring depths of gravel on a single bar is not appropriate or effective. This will require development of technically credible methods and will not be implemented for several years.
- *Measuring recruitment required on all DSL gravel removal permits*. Same comment as above.
- *Define"acceptable adverse impacts"*. Will ODFW be involved in this determination (see DSL3)?
- *MOA for communication and coordination on removal-fill permits and emergency authorizations*. This should have minimal impact because such coordination and communication is already required under several state statutes. Unfortunately, consultation is frequently lacking in emergency situations. Instead, we have seen breaching of sand dunes and loss of wetlands in the recent past. As a result, this may improve an undesirable level of existing communication between resource management agencies.

Existing programs:

- *Improve fish habitat on Elliott State Forest, South Slough Estuary Conservation Plan*. These are on-going programs. It is unfortunate that we have to identify them as actions in the plan, because it would have been more responsible if these lands had been managed more appropriately before we arrived at this level of salmon decline. The issue surrounding watershed management and salmon habitat have been recognized and highly visible since the late 1950s. It is regrettable that it has taken 40 years for the state to lead by example on its common public lands rather than simply meeting the standards required of private land owners.

Phase 2 actions

- *More wetlands inventory*. This is needed but not really new.
- *Added field staff*. This is necessary but true for all state agencies.
- *Computer system for tracking cumulative impacts*. I assume that a "systems environment" is a computer system. If this means keeping track of locations, volumes, and details of operations, this will not require elaborate systems. If it truly intends to analyze cumulative impacts, it will require development of a spatial model of cumulative impacts, which is not a trivial or quick task.

ODA

Comment: No other section of the OCSRI presents so little evidence of development of actions that would influence the status of coastal salmon. In less than two pages, seven recent but existing programs are briefly described with little mention of their application to salmon or their habitat.

The OCSRI will be seen as an innovative and potentially effective program if ODA takes a leadership role in the management of streams and salmon habitat. Population growth and organization seriously threaten Oregon's agricultural lands. They offer more wildlife and aquatic habitat than urban and most rural residential lands. But they have reduced the quantity and quality of lowland stream and riparian habitats. New policies and voluntary programs could change those conditions, because the agricultural habitats have a much higher potential for recovery than the urban lands dominated by concrete and permanent structures.

I encourage the state to develop a balanced set of initiatives that will build on ODA's existing relationship with land owners but also create clear and innovative guidance that will truly make a difference on the ground.

Existing programs:

- *SB1010*. These actions will apply only to water quality limited streams. ODA has accepted voluntary farm plans instead of developing specific guidance or BMPs for agricultural practices. Programs with explicit BMPs can be effective, and the Oregon Forest Practices Act is a nationally recognized example of a successful program. I strongly encourage ODA to develop more explicit guidance that addresses riparian management and salmonid habitat.
- *CAFO Program*. This is an existing program which DEQ has started to enforce in recent years.
- *Federal Hire the Fisherman Program*. This is a recent federal program. Does ODA provide the technical leadership in this program? If so, does its staff have the knowledge of salmon ecology and habitat necessary to make it effective? I thought that ODFW was providing the on-the-ground guidance for this program, but I could easily be mistaken.
- *GWEB SWCD $2,000 Grant Program*. These projects are good steps in the right direction. Guidance from resource professional knowledgeable about salmon and stream ecology again is critical.
- *ODA-GWEB SWCD Landowner Workshops*. These workshops are useful tools for getting information out. The programs for these workshops should be coordinated with the OCSRI Science Team to guarantee consistent and effective messages to the public.
- *SWCD Watershed Council Coordinator Support*. Part of an existing program. See previous comments on the importance of watershed councils.
- *SWC Commission Planning and Implementation Grant Program*. This has been on-going since 1981. There is little evidence of this program being directed toward restoration of salmon habitat. This will require new leadership and cooperation from agencies with experience with salmon ecology.

Phase 2 Actions:

- *Stewardship outreach program and education*. These efforts will be important in the outreach. ODA will need to work closely with ODFW and state universities to develop and review approaches to be sent out to the public (as stated in the description).
- *Accelerated SB1010 Program and courtesy CAFO compliance audits*. This approach "focuses on voluntary, collaborative efforts". Voluntary efforts, awards, and incentives should be included, but their effectiveness is unknown and likely to vary greatly.
- *Technical assistance to landowners for riparian zone management*. If this action is a Phase 2 action (requiring new funds), but this indicates that it is a response to declining availability of experts from ODFW. Wouldn't it be more effective to allocate these new funds to ODFW for this purpose? The current ODA staff lacks technical expertise in salmonid ecology and stream ecology. At the very least, these should be joint agency positions to encourage better cooperation between the two agencies.
- This section illustrates a challenge for the OCSRI. It states that "the positive rapport that exists between ODA and agricultural stakeholders provides an opportunity for quick development of partnerships and cooperative efforts toward salmon restoration that is not possible by other agencies." ODA is correct in its assertion that its close relationship with land owners is a strength that could benefit the restoration effort. At the same time, it illustrates the reluctance of the agency to lead the agriculture community in future actions that differ from traditional practices. The decline of salmon in coastal Oregon is a signal state agencies must lead the public in developing more effective practices for maintaining and restoring its valuable natural resources.

ODF

Comment: Though ODF has worked hard to develop more effective riparian management practices in recent years, its monitoring efforts have been directed at physical characteristics of streams and riparian areas. It has relied on ODFW and DEQ for most biological assessments (with the exception of some of the trout distribution surveys). Future actions will be more effective if ODF insures that biological sampling is included in its aquatic inventories and monitoring. Staff assignments from ODFW or DEQ could provide short-term integration of biological expertise.

New actions:

- *Modify MBPs for stream crossing structures to allow upstream and downstream movement*. This would make recent changes in stream crossing BMPs effective for fish passage rather than just hydrologic

function and persistence.

- *25% in-unit leave tree placement and additional voluntary retention along type F and n streams*. This is an important addition to existing practices on forest lands. The newly revised rules substantially increased protection for larger streams, but several experts (myself, Dr. Bob Bilby) testified to the final Board of Forestry meeting (when the new rules were adopted) that the revision would still be inadequate on small streams if costal salmon were considered for listing. This provision is a critical addition for those small streams. (Unfortunately, its credibility is weakened by its voluntary limits (see previous comments on the variability of voluntary efforts). The state would have a much more defensible position if these provisions could be presented as new riparian rules as long as the salmonid stocks are considered at risk of extinction. If conditions change because of effective restoration or improve ocean conditions, these constraints would be eliminated. I realize that this is a touchy issue, because industry interests have legitimate concerns that this would simply ratchet the constraints in the current rule system. Perhaps a formal agreement about the switch between required and voluntary actions could minimize this concern.
- *Sediment BMP review*. This is a good idea and should be linked to the results of the Flood Monitoring project.
- *Tillamook Bay Watershed restoration of roads and culverts*. The road systems of the Tillamook watersheds were built haphazardously after the Tillamook fires for salvage. Analysis of these roads and remedial actions are needed.
- *Northwest State Forest Lands Management Plan*. This plan uses OFPA as a starting point. This is a logical basis but ODF should look aggressively for areas that could be strengthened.

  South Siletz, North Fork Coquille, South Fork Coos, Coos River, Coquille, Siletz, and Sixes monitoring (GP, BC, Menasha), industry survey of fish presence/absence, Watershed Analyses (Coos, Millicoma, upper Siletz, south fork Siletz, Ecola Creek, Kilchis). If these assessments are going to contribute to the OCSRI, I assume that the data collected in the monitoring and assessment will be publicly available through ODF and ODFW. Recent inventories funded by industry coalitions have not been publicly available. If future measurements and analyses are not openly available (including raw data), the state should not base its actions and policies on the reported findings.

<u>Existing programs</u>:

- *Road erosion and risk analysis, fish presence survey*. This is a useful continuation of an existing program that increased everyone's awareness of the importance of small stream habitats and vulnerability of many of these habitats.
- *Fish habitat evaluation on state and private lands*. (on-going but major success story)
- *Recent revision--culvert size to meet 50-yr floods, road construction, skid trail construction, riparian management areas, significant wetlands, forest chemical use, hardwood conversion, wood placement incentives, wood placement guidelines*. Recent riparian rule revisions strengthened forest practices. These revision made substantial improvements on large streams, but extensive riparian alteration is still possible on small streams. These steep reaches are most vulnerable to road failure and landslides. While these revisions are critical improvement, they are not adequate to eliminate the need for additional measures where salmon stocks are at risk.
- *Storm monitoring program*. The storm monitoring program will provide useful information about the performance of forest lands in the winter floods of 1996. Unfortunately, ODF did not receive the full budget requested and biological monitoring was eliminated. This is especially critical for interpreting the consequences for salmon. Phase 2 funds should be directed to correct this omission.
- *FPA and Water Temperature Monitoring*. These measures are critical for adaptive management. They would be more effective for OCSRI if they are expanded to included biological responses.
- *Clearcut limitations*. This is a useful but existing regulation.
- *Elliott State Forest Habitat Conservation Plan*. This plan was designed primarily as a plan for old-growth-dependent species and spotted owls. The OCSRI Science Team should have it reevaluated to insure its effectiveness for salmon and riparian restoration.

<u>Phase 2 actions</u>

- *Fish presence survey*. Continuation of this program will build on an important database.
- *ODF Monitoring*. Continued and expanded monitoring is critical for adaptive management. Inclusion of biological measurements is badly needed.
- *Liability limits*. If landowners are cooperating with state programs to restore salmon habitat, they should not be penalized for their cooperation through litigation. Within the limits described in the OCSRI, this is a useful step that demonstrates the good faith of the state and people of Oregon. This

should not be confused with limits on the ability of the state to revise regulations or land use rules, which is not a desirable policy.

- *One-stop shop for landowner for technical information and financial assistance*. Such streamlining is advisable where possible. It will require even more coordination between agencies.
- *GIS for range of coho*. Is this tied in with ODFW's state GIS systems for fish and wildlife resources in Oregon?
- *Watershed assessments*. Watershed information will improve the long-term planning and development of restoration efforts for coastal Oregon.
- *Elimination of 25,000 Bf Exemption Harvest Tax used to support "stewardship assistance"*. This represents another revenue generating action. More should be developed.

ODFW

New actions:

- *New escapement goals*. Production goals are a cornerstone of this plan (see earlier discussion). Regular external review will be important to guarantee that these goals are sound.
- *Wild adult and juvenile salmon production information*. This database will greatly add to the restoration effort, but it will require a new funds and additional staff. This should be listed under Phase 2.
- *Information base for restoration*. Making the extensive ODFW database available will enhance restoration projects but it should be tightly coupled to watershed characteristics. I would encourage development of watershed information files that automatically accompany this kind of information.
- *Habitat restoration evaluation*. This is a necessary but risky element in the restoration plan. We must be honest with the public and let them know that our restoration techniques have limited testing. There is a high degree of uncertainty associated with any stream or watershed restoration method. The results may be decades in coming and many approaches may not work in the long run. All of the intensive restoration methods are secondary to effective conservation of existing resources and habitats. The public will instantly think of these kinds of projects in a regional restoration effort, but we must continue to advise them of the limitations of band-aids on damaged systems.
- *Policy on management of salmonid predators, research on predator impacts, predator management*. See previous comments about the dangers of depicting the natural predators as a major problem. These organisms have co-existed for hundreds of thousands of years. The emergency of two-legged predators over the last 150 years has eclipsed their impact on the salmon. Having destabilized the habitat and food chain, we cannot expect to restore the salmon by the decimation of other native species. All major reviews in recent years have concluded that salmon make up a small proportion of the diet of bird and mammal predators. Most conclude that marine predators are a minor factor in the decline of salmon. Expending substantial resources on research, policy development, and management systems would have an equally minor consequence on their restoration and could run the risk of contributing to a new decline in coastal species.
- *Use of volunteers*. Involving the public is an important element of then plan, but the state should carefully consider how to use public groups and volunteers mostly effectively. No one likes to be made to look foolish. If later evaluations conclude that volunteer efforts were misguided or poorly organized, public trust (what little exists) will disappear.
- *Gene conservation strategy and reduced numbers of hatchery releases*. Our track record and understanding of hatchery policies, release strategies and use of brood stocks justify greatly decreased emphasis on use of hatcheries in the restoration or conservation of salmon stocks. Any artificial culture (even with wild brood stock) interjects artificial selective forces and increases unforeseen risks to existing wild stocks. One of the most serious limits is the tendency for hatcheries to mask declines in wild fish and increase human pressures because the extent of their decline is not recognized.
- *Develop genetic guidelines*. These guidelines are badly needed and will require on-going external review.
- *Mark all hatchery coho*. This is an important step that signals how seriously Oregon is taking the issue of salmon decline and potential impacts of hatchery supplementation. This should be retained at all costs, even if OCSRI does not come into being.
- *Use hatcheries to rebuild wild runs*. This is a high risk element for the reasons described above. If we ever practice adaptive management, this will be the time. If we cannot gather relevant information and incorporate its results in a timely manner, then we should eliminate hatchery introductions on any declining wild stock.
- *Evaluate effectiveness of using hatchery reared wild fish*. See comments above.
- *Curtail fishery impacts and maintain closures on most coastal rivers and bays*. Appropriate harvest management is an essential cornerstone of restoration and future salmon management. A century of overharvest has precipitated much of the current decline in west coast salmon. We need to act more

wisely with our remaining options. Coastal communities need to recognize that we can never return to the harvest systems and allocation systems of the past. This is reflected in the OCSRI plan.

- *Develop management strategy for future harvest*. In many ways, this is as important as our harvest policies during a period of critically low populations. If salmon abundances increase in the future, we must be ready to manage the stocks more effectively. This will require on-going external review. It also emphasizes the challenge to develop a coordinated policy for all of western North America and commit to a joint U.S.-Canada policy and stop treating Alaska as a separate country.
- *Develop selective ocean harvest techniques*. These harvest techniques that can focus on specific groups of fish will increase the effectiveness of the restoration effort, but they are largely unproved.
- *Develop terminal coho fisheries*. Oregon will establish itself as a leader in salmon management if it successfully develops terminal fisheries for coho salmon. The NRC review if the status of pacific salmon highlighted terminal fisheries and important tools for mixed stock management. This will also require education of the public so that they will see the importance of accepting slightly lower quality of fish in the market in return for assuring our future to have these fish in the market. This is one of the most important elements in the OCSRI.
- *Reduce effects of trout stocking*. This really falls under stocking and hatchery practices in general. Hatchery practices for all species should be coordinated and adhere to the same standards of conservation. We also need to avoid the trap of focusing on salmon and treating native trout as less desirable species.
- *Develop improved adult abundance predictor*. Better models and predictors of all coastal species and life history stages are needed. The needs far outstrip the existing staff availability. This should be a component of Phase 2 requests.
- *Evaluate hook and release mortality, monitor marine survival*. This information is a component of the models described above, but is relatively lower priority. It should simply be integrated into the development of such analytical systems.
- *Provide technical assistance*. ODFW plays a central role in OCSRI. The dependence on ODFW will require expansion of funding and staff. The opposite is now occurring in ODFW. The state general fund contributes less than 3% of the agency budget. A new system of funding allocation needs to be developed and will require the support of the state legislature.
- *Improve riparian tax incentive program*. This action requires attention of leaders in the state who understand land owner issues and business management. Riparian incentive systems have offered few incentives and have had marginal success. OCSRI will make a major contribution if it can create incentives that people actually want and are willing to seek out.
- *Protect instream flows*. This action is an important aspect of habitat restoration, but it will require more support than has been demonstrated in the past. ODFW has been attacked for its attempts to secure necessary flows for the aquatic communities of the state's waters. The state legislature and the Water Board will need to lead in this effort. If it is simply left to ODFW, it will be used against the agency that is trying to carry out the responsibility that Oregon has given it.
- *Close adverse fill and removal areas*. This is an excellent idea and is linked to existing legislation. DSL and DOGAMI need to take a lead with ODFW serving as advisors.
- *Prevent large wood removal*. See previous comments under DSL. This issue has been overlooked and is important not just to coastal salmon but to all streams and rivers in the state.
- *Provide technical assistance to watershed councils and public*. ODFW is playing a central role in OCSRI. The state needs to staff it adequately to carry out the plan. If not, this program will be an empty shell and we will place the salmon at greater risk because we will have created the illusion that we are doing something.
- *Landowner Stewardship Program*. This action is useful for giving the public an example of how it can make a difference.
- *Direct habitat restoration where it will do the most good*. See previous caution about habitat restoration techniques.
- *Promote habitat restoration*. See previous caution about habitat restoration techniques.
- *Promote beavers*. This approach to restoration offers less risk and greater potential for benefit because it uses a part of coastal ecosystems that directly benefit salmon and are far below historical levels.
- *Use hatchery carcasses*. Loss of carcasses has reduced coastal productivity. With appropriate attention to potential disease problems, this would be a wise practice regardless of the restoration initiative.
- *Restore instream flows*. See comments above.
- *Fish habitat improvement tax credit program*. This would be a useful incentive after guidelines are developed for habitat restoration.
- *ODFW job rotation*. This policy could provide important technical information for agencies without fisheries professionals on staff.
- *Screening diversions less than and greater than 30 cfs*. This makes good sense. It just makes you wonder why we have waited till now to take this action.
- *Develop screening compliance program*. All agencies should address the approaches for compliance and

enforcement. A common policy and philosophy should run through the entire plan. The section on enforcement demonstrates that such a common philosophy is unfinished.

Phase 2 actions

- *None proposed*. Surely I misunderstand the document. ODFW is the central state agency in the OCSRI. Why are no additional programs proposed under Phase 2? The agency is severely hampered by lack of staff and funding. This is a critical opportunity to change the level of state support and it appears that DEQ is missing the chance to increase the effectiveness of its programs.

ODOT

Existing programs:

- *Stormwater pollutants in 1995 as part of National Pollutant Discharge Elimination System*. Stormwater drainages in urban areas can be major sources of toxic contaminants. Because many of the coastal towns are located at the mouths of rivers and in the estuaries, improvement of stormwater systems and minimization of runoff is needed, particularly in the future as these urban populations grow. Remediation for problem areas should be accelerated.
- *ESA*. Response to endangered species is not just advisable--it's the law and the state should set an example by moving aggressively in areas where it has the potential to adversely affect species at risk. The proposed actions are simply a sequence of projects. Where is the policy? Is the state surveying for rare or endangered species along in right-of-ways and new transportation projects?
- *IPM vegetation management*. Herbicides are applied extensively along roads by state and county road crews. Major rivers are generally avoided but vegetation frequently show signs of application immediately across small streams and ephemeral channels. How will projects change? Are post-operation inspections documented and recorded? How will we know if future operations meet our objectives?
- *Hazardous materials*. Does the state evaluate compliance for projects handing and disposing of hazardous wastes?
- *Certification to minimize water quality impacts to streams*. This program is relatively new so there is no track record. OCSRI gives the state the justification to aggressively develop this program so that it is more than a federal accounting exercise. How does ODOT plan to implement the evaluation and response components of the 401 program?

Phase 2 actions

OCSRI Program Manager. How will the program manager of ODOT be linked to ODFW? What type of expertise is the state looking for in the Program Manager?

- *Culvert inventory, assessment, remediation*. What are the design criteria for culverts in ODOT projects? I assume that state roads are required to carry the flow for 100-yr flood recurrence events. If this is not correct, the state should revise its policy.
- *Visible sediment sources*. This action seems to be the type of activities that could be incorporated into routine operations. Why not implement these actions now? Why does it require Phase 2 funding?
- *Participate in Watershed Councils*. See comments on watershed councils for DEQ.
- *Incorporate environmentally sensitive design*. Why should this wait for additional funds? Why would the state not improve its operations now? This is fundamental to any public action.
- *Storage and use of wood*. Again, this is a good idea but why wait for Phase 2? The state has to dispose of wood in any operation. Why not implement a storage plan now?
- *Erosion control handbook*. This is a good idea. Will it be coordinated with similar efforts by ODF and SWCD?
- *Aggregate permit review*. What is meant by "need for possible mitigation at shut-down"? Does the state have a contractual obligation where aggregate removal is occurring on state waters on floodplains?
- *IPM-modify spray program*. This is described in Phase 1. How will this effort differ?
- *Bioengineering - use of vegetation over rip-rap*. This is a good idea but again why is it in Phase 2? This would not require new funds.
- *Wetland mitigation and fish habitat*. The state should attempt to consider historical conditions as a basis for future actions. Many of the pasture wetlands mentioned in this effort commonly were streams prior to drainage modification.
- *BMPs for accidental spills. Are these BMPs not currently available? The state is required to have a spill*

response plan, and it is reviewed by EPA. Are BMPs not identified in that plan?

- *Allow ODOT to retain surplus lands that have riparian, wetland, and fish habitat value*. **This is an important action and definitely should be part of Phase 1!** This is an easy success for the state, and OCSRI should move quickly in this effort. The state should develop a coordinated policy with all land management agencies and develop a tracking system so that these lands can be quickly included in conservation and restoration planning.

OEDD

New actions:

- *Polyculture project*. How will this action benefit wild salmon? It will be a small portion of the salmon market and will not modify consumption of salmon.

Existing:

- *Distribute existing funds from USFWS for watershed restoration*. Have wild salmon and stocks at risk been identified as the top priority for these funds?
- *Animal wastes management*. This is an important area for operational development but equal attention to habitat degradation in animal operations. Does OEDD fund any projects to develop better livestock operations?
- *New water treatment facilities*. These systems are often placed in streams and riparian areas. The state should review policies on siting and building for these facilities. Even when pumping is used, these facilities are often located in floodplains. As a result, they eliminate valuable floodplain habitat and are vulnerable to future damage by floods. Damage to these systems was widespread in 1996.
- *Recommendations to regional strategy boards to avoid projects that have no adverse impacts on fish or their habitats*. Why not encourage restoration at the same time?
- *Water and wastewater funding applicants*. What environmental policies have been developed for reviewing these applications? See comment on water treatment facilities above.
- *Watershed council coordinators*. These programs are linked to SWCDs and historically have been focused on drainage and erosion control. Unfortunately, they have been a primary factor in the loss of wetlands and floodplain habitats. These programs need new guidance to accomplish the objectives of the OCSRI.

Phase 2 actions

- *None proposed*.

OPRD

New actions:

- *Disposition of down wood*. This is a critical action for OPRD. Guidelines for park management of trees, snags, and down wood are badly needed. Creating wood habitat in streams is a good idea but the state should be careful not to damage other habitats by removing wood or wood functions in other habitats.
- *Improve fish habitat and riparian zones within OPRD lands*. This action is an important element in the leadership of the state in demonstrating effective methods and demonstrating the state's commitment. Restoration is in the early stages of development, and great caution should be exercised. ODFW will need to consult with OPRD as much as possible. These actions should be linked to properties and programs of DSL as well.

Phase 2 actions

- *Interpretive opportunities, develop large urban interpretive center*. The state should use the state universities and colleges to assist OPRD, DSL, and other agencies in educational efforts.
- Why are there no plans for habitat work or land acquisition in Phase 2?

OSMB

Comments: Oregon needs to develop better policies on wood in navigable systems. Navigation authorities are some of the first to call for removal of large wood from streams, rivers, and estuaries. There are very real

limits related to safety and navigation, but intermediate measures need to be developed and wholesale removal should be avoided. This emphasizes the need to coordinate policies wood for wood management, channel modification, and wetlands protection across all state agencies.

Existing programs:

- *Enforcement and review*. These are important actions but it seems that OSMB could be more proactive than simply enforcing existing laws and reviewing operations. What is the ecological basis of OSMB policies? Has ODFW consulted with OSMB in decisions on navigation? More explicit attention to salmon habitat and the consequences of channel alterations is critically needed.

Phase 2 actions

- *Increase waste pumping stations*. Useful action but it will have relatively minor consequences for wild salmon. Some of the direct impacts should have a higher priority for addition funds and staff.

WRD

New actions:

- *Assist in replacement of push-up dams*. This practice needs to be revised across the state. Development of clear policies and evaluation of compliance is critical.
- *Issuance of 550 pending instream water rights*. The state should move quickly on these water rights. This action should be one of the highest priorities because it has long-term benefits and is readily available to the state.
- *Re-examine appropriate instream flows*. This is a good idea but what will happen if many are not adequate? Are there plans for actions? Is the state committed to correcting inappropriate flow allocations immediately?
- staff gages
- *Increase compliance monitoring*. This is an important action that should be implemented as soon as possible.
- *Revise basin programs*. Good idea. Will ODFW have major input in the revisions?
- *Declare serious water management problem areas that will allow increased measurement and reporting on all water rights*. This will be useful if the state is prepared to increase measurements. Are staff and funds adequate?
- *GPS*. While this new technology is a nice addition to current operations, it does not greatly help wild salmon and their habitat. Why is this listed as an action?

Existing:

- *Review of pending water rights*.
- *Review of water use applications (rules adopted in 1996)*
- *Require screening on ponds*. Important action and it is long overdue!
- *Stream walkers to inventory diversions*. This is a badly needed program. What has happened? How will the results be linked to enforcement?
- *Priority on processing water rights transfers that benefit salmon*
- *Digitize water rights*. The plan indicates that the database will be available to resource agencies. This should also be available to the public.
- *Public information and outreach*
- *Groundwater studies in New River related to cranberry production*
- *Savage Rapids Dam Task Force*
- *Will "consider" closing fill-and-remove areas when recommended by ODFW and other agencies*. How strongly does WRD plan to support ODFW recommendations under OCSRI? Clearly, WRD must review the recommendation before implementation, but this process could be streamlined by establishing prior criteria that would allow immediate action in many cases. This would prevent the long review process that is common in WRD actions.

Phase 2 actions

- *Assist in replacement of push-up dams*. What is different from this action that was described in Phase 1? How would additional funds and staff be used?

- *Walkers to inventory diversions..*
- *Groundwater studies*. Where is the link to salmon? There are important links but the state needs to explicitly identify those links if this is part of a salmon restoration plan.
- *More GPS*. See previous comments in GPS above.
- *New watermaster districts*. Watermasters need closer ties to natural resource agencies, especially ODFW.
- *Additional compliance monitoring staff*. This is an important action
- *Off-stream storage to provide instream flows*. What kind of storage is intended? If streamflows are being altered substantially to provide storage, the consequences on salmon could be detrimental. Complex flow modification has generally damaged salmon populations rather than helping them. Building more dams and reservoirs would be a particularly bad idea.

Enforcement

The OCSRI demonstrates the extreme differences in the enforcement of natural resource policies and laws in Oregon's agencies. The success of the OCSRI. While the hammer of enforcement is not the strength of any attempt to restore ecosystems, weak or contradictory enforcement will undermine the effort. The OCSRI needs to clearly demonstrate the state's commitment to carry out natural resource policies and regulations. Coordination of the enforcement policies of ***all*** state agencies participating in the restoration effort is essential and currently lacking.

Monitoring

OCSRI does not sidestep the need for monitoring, and ODFW is currently designing a new monitoring program to support the restoration program. Unfortunately, the funds and public commitment to effective long-term monitoring have not been demonstrated in the past, and the question of whether the monitoring effort will occur remains unanswered. If monitoring is not developed management will be largely reactive rather than adaptive as described in the plan. The commitment of resources will require cooperation and active leadership from the Oregon legislature.

Many Oregonians express a desire for less intervention by the federal government, but the OCSRI illustrates the enormous benefits that we receive from the federal government. The plan calls for more than $22,000,000 in recurring funds for coastal salmon restoration and more than $30,000,000 in immediate non-recurring funds.

Outreach

The OCSRI does not use the state's universities and colleges very effectively. If education is a cornerstone of the plan, the state's education system should be one of its most effective tools. The Governor's office should work with leaders in elementary, secondary, and higher education to use the full strength of the state to inform the public and explore alternatives for the future.

General Conclusions

Is the current Oregon Coastal Salmon Restoration Plan sufficient to negate the need for formal listing of salmonid stocks at risk in coastal Oregon? No. Differences between agencies, dependence on voluntary actions in many critical areas, and questions about the level of state support for proposed actions make additional revisions necessary before it can be accepted as an effective plan.

Should we abandon the Oregon Coastal Salmon Restoration Plan and simply rely on the federal government to list the stocks and develop recovery plans? Absolutely not. The OCSRI is an attempt to focus the state's institutions to lead the public in the restoration of one of its most valued resources. If Oregon can demonstrate that it can take coordinated actions to reverse the decline of coastal salmon, our institutions will be strengthened and our ability to deal with natural resource issues throughout the state will be enhanced.

OCSRI is based on the Governor's leadership and has been initiated through the Salmon Strategy Team. This plan is an important start but the initial fragmented responses indicate a need for strong and immediate leadership. This plan represents a major change in the view of state agencies and their coordination. The Governor and the state legislature will need to act together to truly change the operations of state agencies.

The Governor's commitment to this plan is clear. The legislature's commitment is not as evident. In many ways, the success of the OCSRI now rests on the willingness of the legislature to support the restoration of salmon.

The OCSRI emphasizes a voluntary versus regulatory approach. This is positive in the sense that is recognizes that the decline of salmon has been caused by all of our social actions and will require a broad-based social commitment to reverse the decline. It is potentially weak because we have no strong evidence that voluntary programs have made major changes in Oregon's environment. Conversely, there are several examples where regulatory approaches caused environmental improvement. Accelerated actions on both fronts -- volunteerism and regulation -- are needed if the OCSRI is going to be successful.

Despite the limitations of OCSRI, by undertaking the plan Oregon has made a major advance in its ability to respond to regional resource needs. We will all be served if our concerns with the OCSRI can be focused toward developing an effective course of action. We can use this first draft as a framework for constructively addressing the future of coastal salmon in our state.

American Fisheries Society
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November 22, 1996

Jay Nicholas
ODFW
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Dear Jay:

As your request, I facilitated an Oregon Chapter AFS review of the Core Area Maps for the Coastal Salmon Restoration Initiative (CSRI). I was able to obtain reviews for most of the maps except for the North Coast. Following is a brief summary of the reviews. Detailed reviews will also be forwarded to you and to Steve Jacobs. In addition, maps with suggested changes will be given to Steve.

In my request for reviews, I posed three questions:

1. Does the overall mapping effort sufficiently cover critical habitat to protect and recover coastal populations?
2. Is water quality (and quantity) sufficiently covered by the identified habitat?
3. Does the identified habitat include and compliment previous efforts by Oregon AFS aquatic Diversity Areas and FEMAT?

In addition, Steve Jacobs had posed additional questions about errors of inclusion or omission, adequacy of information to explain each selection, documentation needs for selections, request for better coverage of steelhead, and timelines of revisions and updates.

Reviewers expressed concern about the geographic scope of the mapping process. All were concerned that core areas were mapped as distinct, linear tracts of streams separated from the rest of the watershed. At the very least, watersheds that contain core stream segments should be designated as core watersheds to distinguish these watersheds from those that contain no coho salmon (either historically or deemed unrecoverable). Because the CSRI is essentially a theoretical approach to landscape level restoration, it is critical that the plan explicitly recognize watersheds as the basis for restoring the ecological integrity of streams that will be necessary for long-term recovery of salmonids. Although some rationale was given for narrowing the focus of critical habitat in the CSRI mapping effort, our concern is that the importance of watersheds has been downplayed at a time when there is a greater need for watershed approaches to restoration. Even if the mapping effort was capable of identifying the most heavily used spawning and rearing areas for the purposes of emphasizing areas for protection and restoration, protection and restoration of coastal coho salmon will not be possible outside of a watershed approach. There was also concern that the lack

of a watershed approach might result in constant updating of "core" stream areas as more surveys are conducted or spawning shifts occur, and that this could lead to confusion in the public and among land managers and other agencies about what designates critical habitat for coastal salmonids.

In addition, the reviewers felt that critical areas of watersheds were ignored, possibly because of the approach in confining core areas to distinct stream reaches. For example, estuaries, lower valley reaches, floodplains, and wetlands were not included as "core areas".

Another concern expressed was the emphasis in selection criteria on known high density salmonid areas (adult and juvenile), which were often based on limited data (e.g. higher than average adults for 5 years). This approach raised questions about the potential influence on the choice of core areas by factors such as natural variation in spawning (spatial and temporal), and effects of artificial production and harvest on numbers of adults. Reviewers noted some inconsistencies in the way streams were chosen, and the lack of information about selection criteria. Some streams were apparently chosen from quantitative data while others were based on the best judgment of district biologists (which is one reason given in the mapping section for generating another set of critical habitat separate from previous efforts such as FEMAT or ADAs of the Oregon Chapter's effort).

In summary, while the review was generally supportive of the concept of identifying high-quality stream segments based on quantitative data, the results of the core area mapping should have then been used to identify critical subbasins for protection and restoration rather than specific, linear stream segments. A subbasin approach would more readily compliment previous efforts to identify critical habitat areas for coastal salmonids rather than just another list of streams.

Thank you for the opportunity to review these maps.

Sincerely,

Kirk Schroeder
Past-President

c Steve Jacobs
Jim Martin

NEW - 2/20/97

Return to top of page

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DATE: December 6, 1996
TO: Jay Rasmussen
FROM: Bruce Mate

RE: Review of Coastal Salmon Initiative

The CSI has a reasonably well done overview of the pinniped-fishery debate. It is quite simplified probably due to space constraints. The analysis of "Predation by (Birds and) Marine Mammals," begins on page IV-5. The comments of people responding to an Oregon Coast County Fair Survey in 1996 is a red herring. It does not constitute anything scientific regarding cause and effect relationships with salmon, seals and sea lions. It does reveal what most people can see of the issue and an attitude of some fair-goers which is not borne out by

present scientific opinion. It would be worthwhile to have a survey expert review the question(s) used in the survey to see if they lead respondents in a particular direction.

The pinniped population status" section is incomplete. The number of California sea lions presently attributed to Oregon is very similar to what was found in the late 60s and early 70s. The suggestion that there has been a large increase in the breeding population in California is a bit misleading and may be irrelevant. There is evidence suggesting the increase in California is merely a northward shift of some of the breeding population from Mexico. While it is not known what might be causing this redistribution within the range, there is no strong evidence for an overall increase in the California sea lion population in that eastern North Pacific. Regarding the increase in harbor seals in the State, it is doubtful that the population is anywhere near its historic abundance in places like the Columbia River before white civilization began extensively harvesting salmon, wood products, and hydroelectric power.

The review acknowledges the bias in various methods of assessing pinniped feeding habits. Additional emphasis might be drawn to the underestimation of large fish from fecal samples (a Sea Grant-sponsored study on the Rogue river) because pinnipeds tended not to consume the heads of large fish. The identification of fish prey species is often based on otoliths (ear bones in fish heads) which are undigestible. This results in an underestimation in the numbers of large fish consumed. On the other hand, pinnipeds apparently only need to bring large fish to the surface (to kill them). This is usually done by tearing out the belly. This results in shore-side observers (including fishermen and the general Public) concluding that large fish are all that is eaten by pinnipeds and that they waste fish by only taking one bite out of each. This is not true.

There are two approvals to be discussed: permits and funding. The assertion that the federal government rarely approves studies involving the collection of pinnipeds for the examination of stomach contents is not correct. According to National Marine Fisheries Service (NMFS) no research permits for collection studies by valid scientists have been denied since the Marine Mammal Protection Act (MMPA) was enacted in 1972. To the contrary, many studies have been granted such permits (permission). However, vocal animal rights groups have made it increasingly difficult for agencies to financially support such work. Researchers, agencies, and institutions may now be less enthusiastic to apply for research which involves lethal "sampling" (killing).

The review's suggestion that seals and sea lions take "whatever type of fish is locally or seasonally abundant" is not well documented. While it is clear the animals are limited to what is available, there is evidence of them moving from place to place apparently to take advantage of resources that are seasonally abundant and to seek out certain prey species while ignoring others. It is not known whether the latter are decisions based on ease of capture or just preference. I am not aware of any studies that have sampled pinniped diets sufficiently to quantify significant changes in diet "from week to week . . . throughout the year."

The discussion of "predation on salmon and steelhead" might be strengthened by acknowledging some of the studies which have reported salmonid consumption (including percentage of diet) off Oregon and in coastal rivers. Most of these, however, are not recent. The main point is that the higher consumption rates are definitely within rivers and estuaries rather than the open ocean.

The assertion that pinnipeds "commonly" take salmon and steelhead off sport and commercial fishing lines appears less valid than it was 5, 10, or 15 years ago. Perhaps because of a reduced number of ocean troll salmon vessels, theft from commercial fishing lines is down considerably. Further, the number of sport-caught fish being taken by pinnipeds in some river systems is also reportedly down (Paul Heikkila, pers. comm.). Words like "occasionally" or "from time to time" might be more appropriate now.

The review notes that California sea lions are absent from Oregon from June through August. It also ought to note that Stellar sea lions (which breed during much of that same period off the Oregon coast) are rarely found in rivers and estuaries at any time of the year. The document appropriately acknowledges the over-simplification of salmon predation calculations used by groups which consider pinnipeds as vermin. There is no mention that pinnipeds consume fish species which are predators of, and competitors with, salmon (whiting) and also parasitic on salmon (lamprey). There have been no serious attempts to quantify how much benefit there might be to salmon populations as a result of this consumption of competitors, predators, and parasites of salmonids, but it may be an important (more significant) ecological benefit to salmon populations. Anadromous lamprey moving upstream to spawn were the most common prey of seals and sea lions in the Rogue river in the late 70s.

The review accurately suggests there may be local problems on depressed fish stocks in areas with stream

passage problems but there is no scientific evidence to suggest that the initial depletion of any of these stocks was caused by pinnipeds.

There was no mention of "predators" under Element #3 (Objectives and time lines for correcting factors of decline, beginning on page I-5). With regard to the section on "protection efforts," the Marine Mammal Protection Act and subsequent amendments are not the primary factors restricting states in their activities. The primary difficulty appears to be the lack of (1) political will due to divergent public opinion and (2) funding. The State of Alaska has (with some considerable effort) resumed management of several species of pinnipeds after working out its problems in the compatibility of state and federal law. The State of Oregon should not expect a "quick legislative fix" but should be starting educational and research programs to better understand how pinnipeds may or may not effect salmon and other fish stocks so a well conceived future management plan (if justified) can be proposed, defended, and implemented with good public and political support. This will require some investment. While it's true that the amendments to the Marine Mammal Protection Act "do not provide any option for states to handle general predation issues coastwide," such broad scale solutions are not thought to be appropriate. There is considerable latitude within the Act to apply for, and receive research permits to conduct scientific experiments including collection of animals for natural history information (age distribution, food habits, and reproductive success) and even experimental management schemes without requesting "return of management" authority. The State has generally restricted its marine mammal activities to those funded by the National Marine Fisheries Service (NMFS). It is clear from the final paragraph what the western states are attempting to identify what research needs to be done in an attempt to attract funding. It might be a mistake for the State to pin its hopes for such important information on a government agency (NMFS) whose actions have been so constrained in similar situations (i.e. Ballard Locks). The issue may be a sufficiently important area of inquiry to warrant actual State investment if federal funding is difficult to acquire.

A number of managerial options might be considered. These could range from non-lethal harassment techniques designed to provide fish with at least day time relief during important seasonal upriver passage periods to the lethal removal of non-breeding (young) and reproductively "surplus" males from populations of abundant pinnipeds like California sea lions where they can be demonstrated to have substantial impact on depressed stocks. The removal of migrants males in Oregon would have a negligible affect on the reproductive potential of this species. It would be ill-advised (and not likely to be approved) for the State to attempt broad scale population reductions (culling) in the hope of reducing the predation pressure from naturally occurring species, like harbor seals, in their primary habitat. This is not "the solution." There is every reason to believe that natural predators like pinnipeds are important (and may be even essential) to the overall dynamics of the ecosystems which support salmon.

Return to top of page

Go to Peer Review:

- American Fish Society
- Invited
- Federal Agencies
- Industry
- Conservation/Environmental Group
- Public Comments
- Questionnaries

Go to home page

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PEER REVIEW 1996

COASTAL SALMON RESTORATION INITIATIVE

December, 1996

TABLE OF CONTENTS

AFS

Contact: Kirk Schroeder

American Fisheries Society
Review of Core Area Maps
Review of Life Cycle Model
Review of Monitoring Program

Steve Johnson
Jeffrey J. Dose, Fisheries Biologist, Umpqua National Forest
R.K. Nawa, C.A. Frissell (U of Montana), J.L. Ebersole, and W.J. Liss
W.J. Overholtz, Population Dynamic Branch
Grant Thompson, US Dept. of Commerce
Russell Lande, Professor

Coastal Salmon Restoration Initiative Committee NEW 2/20/97

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Chuck Huntington, Chair, Natural Production Committee - 1994-96
Jeff Dose, Excom, 1992-94; Chair, Auatic Habitat Committee - 1990-92

Go to home page

10/12/96

Kirk Schroeder
American Fisheries Society
Oregon Chapter
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Dear Kirk,

After reading Steve Jacob's memo asking the Oregon Chapter to review the Core Area maps for coastal basins, and spending a few hours looking at the maps and the criteria sheets, here are a few of my thoughts. You specifically ask that I address the questions that Steve Jacobs listed in his memo, as well as listing three of your own. I'll start with yours.

1... Does the overall mapping effort sufficiently cover critical habitat to protect and recover coastal populations?

No, I do not think it does. After looking at the maps, I'm left with the sense that there are inconsistencies in the way the core area were designated in different coastal basins. In some basins, the Science Team has elected to define core areas as entire subbasins, consisting of sizable geographic areas. A good example for coho salmon is the entire Five Rivers subbasin in the Alsea above Cascade Creek. In other basins, they have used a piecemeal approach, selecting only certain tributaries as core areas. An example of this would be in the upper Siuslaw, where certain tributaries are selected, but other tributaries, and the mainstem connecting them all, are excluded from the core area. I understand that the mainstem Siuslaw has temperature problems, and probably cannot support many coho during the summer rearing period, but the same can be said for the mainstem of Five Rivers, so that cannot be used as a rational for the difference in selection criteria for these core areas.

There are also examples on the maps of small isolated reaches of individual streams that have been given core area designation, while the rest of the stream and its surrounding subbasin are excluded. I believe selecting that the core areas in such a piecemeal manner disregards the importance of viewing the entire watershed as critical. If we define core areas as only the particular reaches where spawners were observed, or where better than average rearing conditions happen to exist, we downplay the importance of the health of the rest of the watershed in maintaining the water quality to that stream reach. This exercise will be used to help educate the public, and public officials, as to where the key spawning and rearing areas are. If we're defining core areas, we should define them large enough to encompass complete watersheds to stress to the public that we need to be thinking about watersheds, not individual stream reaches.

The Core Areas as presently defined totally disregard the important of estuaries and the lower valley floor portions of the coastal watersheds. While these areas are mentioned as important for migration, etc. these portions of coastal watersheds are ignored as "essential to the persistence of each population"--their definition of a Core Area.

There are watersheds that were not included as core areas that I believe need to be included. I found it interesting that none of the wilderness areas along the coast (Cummins Creek, Rock Creek, Drift Creek) were considered as Core Areas. These areas would seem to be key to recovery efforts. The watersheds have some of the best habitat that is left of coastal streams, and it seems odd that they would not be included. Also, there has been less hatchery impact on the direct ocean tributaries (Cummins and Rock Creek) than most streams in larger basins. These basins were identified in FEMAT and by the AFS Aquatic Diversity Area study, and I believe they should be included here as well. They would seem to clearly fall into the definition of a Core Area given in the introduction of the report.." coastal basins that are judged to be of critical importance to the sustenance of salmon populations that inhabit those basins".

Tenmile Creek, located between the Cummins Creek and Rock Creek wilderness areas should also be considered as a core area for steelhead and coho. We have five years of data on the fish populations this drainage. Estimates of steelhead smolts migrating out of this watershed average over 5300 smolts/year. Assuming a 5% ocean survival, that would suggest over 250 wild steelhead returning to this drainage to spawn each year. The coho habitat model the Science Team used to predict smolt production potential indicated Tenmile should be producing about 20,000 smolts/year. This potential far exceeds some other tributaries that were designated Core Areas. Also, this watershed is presently undergoing a major watershed restoration effort (removing roads & culverts, conifer release in riparian areas, and large amount of trees being placed into the stream channel). These efforts should increase the smolt production potential of steelhead, coho and searun cutthroat in the future.

2. Is water quality sufficiently covered by the identified habitat?

No, you can't really get a sense of how good water quality is in these watersheds by examining the Core Area maps. The Core Areas were chosen from a variety of criteria. Many were chosen by the presence of higher than average of adult spawners during the past five years. These areas may or may not have acceptable rearing habitat for juveniles during the following summer. Again, some of the Core Areas definitely include stream miles that cannot rear coho juveniles in the summer because of high water temperatures. I don't think that is necessarily based or wrong. As I said above, I would rather see the Core Areas consist of larger watersheds, and acknowledge there are water quality problems within the watershed. However, I rear that by designating certain streams as Core Areas, they will gain some status as being "acceptable habitat", while in fact they may have as many water quality problems as other streams in the basin that were not chosen as Core Areas. The bottom line is--because the Core Areas were chosen from such a variety of criteria they do not

represent streams or watersheds with above average water quality.

3. Does the identified habitat include and compliment previous efforts by Oregon AFS Aquatic Diversity Areas and FEMAT?

It seems to be a very mixed bag. The Core Areas were chosen using different criteria, and while there is some overlap, it is difficult to compare. The criteria sheets that were provided indicate when the Core Areas were also a FEMAT or AFS Aquatic Diversity Area. However, you can't tell how many FEMAT or AFS Aquatic Diversity Area streams are not chosen as Core Areas. It would be helpful to have a list of the FEMAT and AFS streams that were not chosen, and what the rational for their rejection was.

Questions from Jacob's memo

1. Are there significant errors of inclusion or omission?

I think I covered this already while answering your question 1.

2. Adequate information provided to explain each selection?

As I looked through the criteria selection sheets, one thing that was really unclear was the length of stream each reach represented. This is particularly important when the criteria selection was based on aquatic inventory data where the coho smolt production model was used to predict smolt production. There are estimates for smolt production in some streams of 10,000 - 30,000 smolts/mile. I suspect that many of these reaches were relatively short and filled with beaver dams during the summer surveys. This would inflate the smolt estimate, when the model predicted the beaver dams would remain throughout the winter. The bottom line here is that listing smolt estimates of 10,000 - 30,000 smolts/ mile is either very misleading (these estimates apply to only short stretches within the stream), or they are wrong. Research throughout the Pacific Northwest has consistently found smolt estimates to be more in the range of 1,000 - 2,000 smolts/mile. The way this information is reported on the criteria sheets certainly gives the impression that these streams are capable of producing unrealistically large numbers of smolt/mile.

3. How can we do a better job of identifying core areas for steelhead?

Because juvenile steelhead tend to use different parts of the watersheds as they rear, I think you'd have to define large Core Areas, i.e.--watersheds. Otherwise, you are not meeting the definition of identifying areas that "contain the resources and habitats necessary for the persistence of each population". In order to describe where our most important steelhead watersheds are, we need to begin a more systematic inventory of abundance. One approach would be to determine smolt production if a variety of watersheds, similar to the estimates being made in the Tenmile and Cummins creeks by ODFW researchers. This would at least allow some comparison of relative contribution between different watersheds in the coast range. In addition, increasing steelhead spawning surveys in the late winter and spring may be helpful. I think the bottom line here though, is that even with a stronger data base, drawing tight circles around certain streams may not be appropriate for a species that uses a large portion of a watershed during its two years of freshwater rearing.

4. How often should these Core Areas be updated?

Given the selection criteria, I think there will be a problem of Core Areas constantly changing. As more aquatic inventory surveys are completed, new streams would need to be constantly added. I think too, that some of the steams now listed will drop out. Particularly if actual winter habitat surveys are completed in streams, rather that relying on summer surveys to predict coho smolt production potential.

I think this will create a lot of confusion for landowners, managers, biologists, and the general public. I think a lot of this would be avoided if the Core Areas were drawn larger, generally consisting of entire subbasins. This would alleviate the need to constantly be updating the Core Areas.

Final comments and impressions.

My overall feeling is that while this has been a useful exercise, I think it creates about as many problems as it solves. I think they have generally abandoned, or at least downplayed the importance of the entire water shed by the way the Core Areas were selected. I think we would be better off if they had used this data to identify subbasins where there was overwhelming evidence of important spawning and/or rearing habitat -- compare it

to the AFS Aquatic Diversity Areas --and add these watersheds to the AFS areas if needed. I think what we have here is simply another list of streams. While some of the streams have hard quantitative numbers backing their selection, many of the selections are subjective, based on "best judgment" of district biologist -- the same criticism that was used to justify the need for a new list of streams. This will only get worst as we try to identity steelhead and cutthroat Core Areas.

I would suggest that we use this information to designate subbasins that would be appropriate to sample as indicator watersheds as part of a major monitoring program for wild salmonids in coastal Oregon. However, giving these watersheds some elevated status may prove counterproductive in the long run. I think there will be a tendency for land managers to assume that these Core Areas are the only important areas, and improved land use practices in other streams are not needed.

Sincerely,

Steve Johnson

Return to top of page.

September 25, 1996

Kirk Schroder, Past-President
Oregon Chapter, American Fisheries Society
PO Box 722
Corvallis, OR 97339

Dear Kirk:

This letter is in response to your request for my review and comment on the "Core Area" concept that is one of the components of the Governor's Coastal Salmon Restoration Initiative. Due to short timeframes and an extremely busy schedule, my comments are necessarily brief and cursory in nature.

First off, I agree with the concept. There is a need to identify important, high-quality stream segments so that informed decision-making can occur regarding the various uses of these freshwater ecosystems that are so important to the longer-term survival and recovery of coastal salmon. I believe that protecting and restoring the ecological integrity of these aquatic systems will be the cornerstone of any successful strategy to restore salmon to Oregon and the Pacific Northwest.

As was discussed on pages 5-7 of the Draft report, there are some serious challenges to be overcome if we are to meet the laudable goal of producing a science-based, repeatable product. Many of these obstacles were identified in the Draft report. In my review of the Selection Criteria for the Umpqua basin, I observed that fish abundance (both adult and juvenile) provided the preponderance of the rationale. This circumstance leads to what is, in my mind, a major source of inconsistency, namely, the influence of artificial propagation on these numbers. Also, natural variation and harvest can affect these numbers. There is also additional sources of error related to small sample sizes (<5 years) and highly variable inter and intra-annual quality control such as observer differences and inventory conditions, i.e., high flows and turbidities. It is also not clear if the ranges in abundance are means for the entire Core Area, or representative reaches, or the best reaches, or a combination o the above. Additionally, the inherent accuracy of using the aquatic inventory information is highly questionable. Most are not repeatable and we (US Forest Service) have certainly learned that the hard way. Same for using the information in a model to predict smolt numbers. We attempted to do that for our Forest Plans back in the late 1980's and found we could not empirically validate the numbers on any sort of a broad scale. We eventually abandoned that approach and developed a more ecosystem processes and functions approach, the Aquatic Conservation Strategy. Given all the previously identified obstacles in addition to those I identified above, the task appears to be extremely difficult and possibly not do-able at this time using the proposed methodologies.

I have long maintained that what is really needed is a Basin Assessment. This would necessarily be a multi-agency, interdisciplinary effort that would use existing information of many types: physical, geomorphic, hydrologic, and biologic. I have included some thoughts on the subject (attachment 1). As a part of, or as an

outcome of, the Basin Assessment, I suggest that each watershed (or a subset of watersheds) be evaluated by using a Matrix of Factors and Indicators to determine the existing baseline conditions. I have included, as an example, a couple of the geologic province-specific matrices that were developed by a group of Forest Service, BLM, and NMFS biologists and hydrologists (attachment 2). These are already in wide use by the federal land management agencies to facilitate consultation with NMFS under the Endangered Species Act. Much of the Umpqua basin has already had baseline conditions determined by using these matrices. As measures of ecologic integrity, I feel these and other research and monitoring (including bio-monitoring) information are much less variable than those proposed here. It's going to take some time to pull off a Basin Assessment, perhaps more time than the tight timelines the ODFW has been given for the CSRI. There is a high potential for the old axiom that says "There's not enough time to do it right, but always time to do it again" to occur here. That is a scenario I have faced too many times. It has many, many downsides that, justifiably or not, usually culminates in a distrust of our professional and scientific ability by the public most of serve.

Another observation I had was that of the 24 Core Areas identified in the Umpqua basin, only 8 occurred in FEMAT Key Watersheds. Additionally, all the AFS Aquatic Diversity Areas (ADA's) were included in these 8. I feel that those watersheds included in the Key Watershed list (and the ADA's) are good candidates for Core Area designation due to the inherent protection and restoration focus associated with this designation. I have less confidence with the others, due to the problems previously addressed and, particularly, due to the land use activities associated with them. Nearly all of these have extremely degraded existing conditions and the likelihood of restoring ecologic integrity to these watersheds is very low given the current land management paradigm. One possible way to address these inconsistencies is to segregate watersheds into two tiers, such as Core Areas and Potential Core Areas or Prime Core Areas (intact) and Regular Core Areas (presently not intact). These designations could be used to develop a two-prong strategy: a very high level of protection for the best (prime) and protection and restoration for those with the highest potential for recovery and to meet other goals, such as distribution problems. Again, A Basin Assessment is the best mechanism to determine which watersheds should be included in the strategy.

Finally, I have reviewed the maps and made some suggested changes based on information and professional judgment hat has been assembled over the years by myself and my colleagues in the BLM and Forest Service. My opinion is that there are some significant errors of both inappropriate inclusion and omission. I have returned the maps with my recommended changes on them. I have not included a Selection Criteria sheet to correspond with each recommendation due to time constraints and the wide variety of sources. These range all the way from published literature, dissertations, Watershed Analyses, Biological Evaluations and Assessments, monitoring activities, to simply personal observations. From a "big-picture" perspective, before my recommendations and especially after them, what I see here in the Umpqua is pretty good coverage of the North Umpqua and the upper South Umpqua sub-basins, fair coverage in the Smith River sub-basin, but poor representation of the entire mainstem Umpqua and most of the mid and lower South Umpqua sub-basins. These were historically very important coho and searun cutthroat areas and will need to be recovered substantially in order to effect recovery of the Umpqua stocks of those species.

Good luck with this endeavor. I realize that a number of dedicated fisheries professionals have labored long and hard to produce this, and all the other components of the CSRI. Despite these efforts, there really isn't a concrete, well established, science-based strategy in place to address the really tough issues. There appears to be a few tweaks of the status quo, which I don't feel will be adequate to achieve the overall goal of healthy populations of naturally reproducing salmon and trout. Given the social, economic, and political climate in this State, I find it highly unlikely that the Coastal Salmon Restoration Initiative, ad presently configured, will be successful in preventing further declines, let alone lead to recovery of coastal salmon stocks such that listing under the federal Endangered Species Act will be unnecessary.

Sincerely,

Jeffrey J. Dose
Fisheries Biologist
Umpqua National Forest

ATTACHMENT I

TO: Terry Brumley, Natural Resources Staff Officer

FROM: Jeff Dose, Fisheries Biologist
SUBJ: River Basin Assessment

SOME THOUGHTS ON HOW TO CONDUCT A RIVER BASIN ASSESSMENT FOR THE UMPQUA RIVER BASIN

The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and the aquatic ecosystems they contain. The strategy involves four major components: A system of Riparian Reserves; a system of refugia called Key Watersheds; a procedure entitled Watershed Analysis; and a comprehensive, long-term program of Watershed Restoration. There are several levels or scales of analysis within the Watershed Analysis procedure. These are, from broadest to most localized; Regional, River Basin, Watershed, and finally, Site. To be successful, analysis at all four levels is needed. Efficient and defensible analysis is essential to support management decisions involving commodity outputs, riparian reserve boundaries, and effective restoration strategies. Nearly all of the Forest Service's past experience has been at the site or project level. Only recently have we begun to experiment at the watershed level and much confusion and uncertainty has arisen regarding not only what the analysis should entail, but also where it should be conducted and for what issues or values should the analysis be undertaken. I believe the River Basin Assessment is the place answer these questions. Its purposes are, on river basin scale (like the entire Umpqua basin), to: a) identify watersheds and prioritize the sequence of analysis; b) identify the important issues and values and their distribution within the basin; and c) describe dominant physical processes of relevance and the interaction of ecosystem components. To that end I offer the following thoughts on how to conduct a River Basin Assessment for the Umpqua River basin.

WHO: Ecologists, fisheries biologists, hydrologists, geologists, geomorphologists, other earth and biological scientists.

This would need to be a TECHNICAL work group, not a political, administrative or policy group.

This work group would, however, need sanctioning from the above.

AGENCIES:

ODFW - District and Research
BLM - Coos Bay, Roseburg and Medford
USFS - Siuslaw, Umpqua, PNW
US Geological Service
Soil Conservation Service
National Marine Fisheries Service
US Fish and Wildlife Service
US Environmental Protection Agency
Douglas County Water Resources
Oregon Department of Forestry
Oregon Department of Environmental Quality

Other Possibles:

American Fisheries Society
Pacific Rivers Council
National Biological Survey
Oregon Department of State Lands
Oregon Department of Geology and Mineral Industries

WHAT:

Start with base map at 1:26,270 or larger and, Ask participants to bring any information they may have to prepare the following overlays:

- Streams
- Land ownership
- Roads

- Harvest layer
- Potential Vegetation (by Series)
- Land use, both existing and future
- Fish distribution, currently and historically
- Distribution of "at risk" stocks, status
- Major geological province
- Existing conditions of watershed processes and fish habitat
- Some description of quality/source of the condition information.
- "Key" watershed boundaries

    - From ROD
    - From Oregon AFS

- Human constructs - dams, mines, water intakes, outfalls
- Water quality information

    - Is TMDL limited?
    - Description of source of the information

- Metropolitan areas

GOALS:

1. Be able to tie overlay information to and evaluate relative to Aquatic Conservation Strategy objectives.

2. Describe existing and desired conditions.

3. Identify critical refugia for all stocks "at risk".

4. Identify restorable nodes.

5. Identify connectivity breaks.

6. Prioritize restoration in the Umpqua Basin by:

    a) Where there is best chance of success.
    b) That is responsive to stocks "at risk".

7. Identify limitations to restoration due to:

    a) Existing conditions
    b) Land ownership
    c) Land Use
    d) Processes/functions of watersheds

8. Identify appropriate restoration actions based on:

    a) Stock status/species requirements
    b) Geological context
    c) Land ownership and land use
    d) Existing vs. desired conditions
    e) Development and discussion of options

PROCESS:

1. Contact appropriate agencies and personnel.

2. Meet for 2-3 days to agree upon what is relevant information. This would be a "core" group of 5-8

technical people.

3. Collect relevant information. This could entail a significant amount of time by all participants over a 1-3 month period.

4. Hold 4-7 day meeting to:

a) Fill in overlays with as much detail as possible.
b) Discuss, agree upon and document process for analysis of the information.
c) Conduct an analysis, describe in terms of "natural" watershed functions and high quality habitat.
d) Write up results, identify:

- Issues and values of concern
- Determine appropriate scale
- Existing limitations/impediments by:

Stock and species
Major sub-basin

5. Commission a core group of Federal agency personnel to make recommendations for highest priorities for analysis and restoration based on the above results.

6. Distribute the recommendations to all entities for comment and further recommendations.

7. Arrive at a decision point and implement.

I realize that attempting to pull something like this together, with all the different agencies will not be an easy task. I also realize that there is not a consistent data base from which to make the overlays, there will be "holes". However, pulling something like this together, warts and all, seems to me to be greatly superior to the "roll your own" process we are presently using. There appears to me to be a great deal of misunderstanding and confusion as to what, where, and why regarding conscientious implementation of the Aquatic Conservation Strategy and achievement of its objectives. The short time frames and relatively large appropriations did not help in 1994. A review will likely determine that effectiveness and consistency with maintaining or restoring "natural" processes and functions was not widely achieved. I believe the primary reason for these shortcomings was going right to the site-specific part of the analysis, our traditional approach, with a generally superficial watershed scale analysis and no river basin scale assessment at all. I hope the above process, or something similar, will be conducted prior to planning and implementing our 1995 program.

/S/Jeffrey J. Dose
Forest Fisheries Biologist

ATTACHMENT II

INSERT "TABLE 1. MATRIX OF FACTORS AND INDICATORS"

INSERT "TABLE 2. CHECKLIST FOR DOCUMENTING ENVIRONMENTAL BASELINE AND EFFECTS OF PROPOSED ACTIONS"

Return to top of page.
Go to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Date: October 18, 1996
To: Kirk Schroeder, Oregon Chapter, American Fisheries Society

From: Rich Nawa
Subject: Coastal Salmon Restoration Initiative--Review of core area component in Southwest Oregon

This is a response to your letter dated September 7, 1996. My judgments are based on ten years experience studying salmonids and their habitat in Oregon and Washington. As technical advisor to the Illinois Basin Watershed Council, I have provided written evaluations of watershed assessments and proposed projects.

Question 1. Does the overall mapping effort sufficiently cover critical habitat to protect and recover coastal populations?

No.

The mapping only identifies water bodies (i.e. stream segments). There is no mapping or explicit identification of critical watersheds upstream of critical water bodies. For example, all lands upstream from the critical core area on Sucker Creek (Illinois R.) are critical to maintaining the ecological function of the designated core stream segments.

There is no mapping or identification of critical wetlands associated with stream water courses (i.e. floodplains, beaver ponds, secondary channels etc.). These smaller scale wetlands (distinct from the main stem stream) are often up to a hundred meters from the primary channel. For example, the entire floodplain of Sucker Creek has potential for developing coho salmon habitat not just the mainstem channel which is currently designated as a core area.

The number of core stream segments is inadequate. For example there are no core segments designated for coho salmon south of the Rogue River. Only 26 and 19 percent of anadromous habitat was designated core in the Illinois River and Lower Rogue hydrologic unit. Apparently, there was little communication about the densities of steelhead and other salmonids in remote streams managed by the Forest Service and BLM. If habitat was stratified by ownership the lack of core areas on public lands would be magnified. More core areas need to be identified on public lands, particularly roadless areas.

Question 2. Is water quality [*quantity] sufficiently covered by the identified habitat?

No. As stated previously, there is no explicit identification of areas upstream or adjacent to core areas which will need protection to ensure desired ecologic functioning of core areas into the future (e.g., no explicit identification of critical watersheds upstream of core stream segment; no explicit identification of critical floodplains adjacent to core stream segments.) Water withdrawal is a major limiting factor for salmon in the Rogue basin. There is no explicit identification of necessary flow regimes to ensure that salmon can make full use of the core areas identified. Water pollution continues to be a major killer of fish in the Rogue Basin. The Talent irrigation district recently spilled chemicals into Bear Creek (Rogue Basin) which killed thousands of juvenile salmonids.

Question 3. Does the identified habitat include and compliment previous efforts by Oregon AFS Aquatic Diversity Areas and FEMAT?

Yes and No. The core areas are limited to waterbodies which to not include associated watersheds. Both AFS and the FEMA included watersheds. However, the core areas include stream miles on stream systems passed over by both FEMAT and AFS (Slate Creek, Williams Creek, Evans Creek and others (see Table 1 for comparisons in the Rogue Basin).

INSERT "TABLE 1. WATERSHEDS AND WATERBODIES IDENTIFIED BY OREGON AFS; KEY WATERSHEDS IDENTIFIED IN FEMAT; AND CORE AREAS IDENTIFIED BY COASTAL SALMON RESTORATION INITIATIVE FOR ROGUE RIVER BASIN, OREGON.

Question 4. Are there significant errors of inclusion or omission?

Significant errors of omission exist.

The Committee on Protection and Management of Pacific Northwest Anadromous salmonids (1996, Upstream: 206-209) describes the usefulness of classifying waters using methods described by Moyle and Yoshiyama (1994. Protection of aquatic biodiversity in California; a five tiered approach. Fisheries 19(2):6-18). Natural watersheds and water bodies are systematically classified into 3 groups: (1) relatively pristine;

(2) severely degraded, probably not restorable. Watersheds in the Klamath Mountains Province (which includes southwestern Oregon) were classified using Moyle and Yoshiyama's classification system (See R.K. Nawa, in prep. A Conservation Plan to Protect and Restore the Ecological Integrity of Aquatic Ecosystems in the Klamath Mountains Province). Systematic classification of all watersheds demonstrates the opportunity for protecting and restoring many more stream systems in the Rogue Basin than those identified in Table 1 (See Nawa's Conservation Plan - Appendix A, Figs 4b, 5b and 12).

Research by C.A. Frissell, W.J. Liss and R.K. Nawa demonstrate the usefulness of stream and valley classification to identify stream segments with high potential for productive salmonid habitat (i.e., potential core areas). In general, alluvial valleys, terrace bound valleys and alluviated canyons are highly productive (C.A. Frissell 1992. Cumulative effects of land use on salmon habitat in Southwest Oregon Coastal streams, PhD. Thesis, OSU; R.K. Nawa et al. 1992. Life history and persistence of anadromous fish stocks in relation to stream habitat and watershed classification. Progress Report prepared for ODFW. Appendix A). Valley classification types are roughly equal to the "unconstrained" classification type in ODFW stream surveys. Valley classification maps are available for southwest Oregon, Euchre Creek, Sixes River, Salmonberry River and Pistol River (R.K. Nawa et al. 1992. pages 9, 71, 73, 74, 75; Frissell's thesis). The use of stream geomorphology would have greatly increased the number of core stream miles. Exclusion of alluvial valleys as core areas are probably in error. Exceptions are streams that are too warm (lower Sixes River) or too unstable due to extreme sedimentation (lower Euchre Creek).

For example, the draft salmonid core area map for the Illinois River excluded lower Sucker Creek as a core area. This stream reach is in an alluvial valley. A snorkel survey this summer found high numbers of salmonids in lower Sucker Creek (data being compiled by Randy Frick, Siskiyou N.F., Grants Pass). Sucker Creek qualifies as a core area from its mouth at least to the left Fork. (It must be noted that during drought years, water withdrawals for irrigation caused lower Sucker Creek to lose surface flow resulting in the death of many rearing juveniles. This year enough water was left in the creek to maintain perennial flow.)

Wild chinook salmon (not outplanted Elk Creek hatchery chinook) in Euchre Creek use the upper watershed (sections 25 and 24) (See Frissell's thesis).

Question 5. Is adequate information provided to explain each selection?

No. There is no explanation why areas were classified as "non-core." No explanation of why watersheds above core areas were not included. No explicit identification of floodplains and wetlands associated with core areas.

Question 6. If not, how should selections be documented?

Each watershed/waterbody should be evaluated systematically using methods developed by Moyle and Yoshiyama (1994). Watersheds should be classified as nested hierarchies (e.g., Rogue R., Illinois R., East Fork Illinois R., Sucker Cr., Grayback Creek). Watersheds which contain alluvial valleys should be prime candidates as core areas.

Question 7. Few areas are identified for steelhead. How can we do a better job identifying steelhead core areas?

Forest Service stream survey data would reveal many steelhead core areas. Most stream surveys sample 5-10 percent of the habitat. A computer wizard should be hired to work out the bugs in the SMART database. A program is needed which will convert fish numbers at measured habitats to fish densities at the reach level (fish/m or fish m2).

I have recorded high juvenile steelhead densities in the following streams: Squaw Creek and upper Beaver Creek (South Fork Umpqua R.); South Fork Chetco River; Euchre Creek (upstream of Cedar Creek for at least 4 miles); Edson Creek, Dry Creek, Middle Fork Sixes, upper mainstem (Sixes river). The South Fork Sixes River would probably qualify as a core area for steelhead, but a debris jam has blocked adult migration just above Bee Creek.

Question 8. How often should these jobs be revised and updated?

The fish numbers which support the designation need updating every year (every 3 years in marginal or difficult access areas). Habitat needs to be evaluated every 5 - ten years. Broad classification of stream valleys

needs to be done only once with some occasional fine tuning. Once fish have been documented for several years in a reach at respectable numbers the stream reach should be identified as core. Fluctuations from year to year should not be a basis for establishing or dropping a core area. It should be noted that environmental conditions often cause distribution anomalies (low water during spawning migration, turbidity, drought etc.).

Conclusion

I believe the Core Area approach is seriously flawed for the following reasons:

1. No watershed context

The core areas are linear stream reaches. The implication is that the streams themselves are targets for project work. Emphasis on stream courses invites questionable project work in streambeds and on streambanks while watershed protection or rehabilitation is ignored. For example, potentially harmful streambank stabilization projects were approved by the Illinois Valley Watershed Council while upland and wetland forest protection is ignored.

The core area maps provide no explicit indication of the value of stream reaches and associated uplands upstream from the core areas. Areas upstream provide the water quality needed by coho to flourish. In other words, the maps imply that stream reaches upstream of coho core areas have the same designation (non-core) as watersheds where no coho occur. Where is the explicit indication of "core watersheds" within which core reaches occur?

2. Emphasis on known high density salmonid areas limits opportunities for future recovery.

I do not question the need for protection of stream reaches that have high relative productivity. Unfortunately, the core area strategy appears to be grounded in managing for fisheries production (i.e., harvest) rather than well distributed populations across the landscape. For example, no coho core areas appear south of the Rogue River. As coastal population of coho dwindled, south coast streams were written out of the equation for coho production in favor of chinook. Are we to continue to manage for extinction of coho in Southwest Oregon because of the historical artifact that the coho runs could not support a commercial ocean fishery? Apparently the answer is yes.

3. Core areas are geographically vague.

The core maps imply a single thread system where salmonids spawn and rear. This representation may be adequate for chinook salmon and steelhead trout, but is misleading for coho salmon. Coho salmon often use secondary channels and isolated ponds or pools that are detached from the mainstem creek or river. These wetlands are often missed in most stream surveys. Recently I snorkel surveyed Sucker Creek from its mouth to Grayback Creek (Illinois River Basin). Many, if not most, coho were found rearing in secondary channels and isolated pools.

ANNUAL PROGRESS REPORT

FISH RESEARCH PROJECT

OREGON

May 19, 1992

PROJECT TITLE: Life History and Persistence of Anadromous Salmonid Stocks in Relation to Stream Habitats and Watershed Classification

PROJECT NUMBER: F-122-R

CONTRACT PERIOD: 1 October 1990 to 30 September 1991

Prepared by:

R.K. Nawa
C.A. Frissell
J.L. Ebersole
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Department of Fisheries and Wildlife
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Corvallis, Oregon 97331

For:

Oregon Department of Fish and Wildlife
2501 SW First Avenue
P.O. Box 59
Portland, Oregon 97207

INSERT "VALLEY SEGMENTS AND GEOMORPHIC REGIONS" MAP

"SIXES RIVER, CURRY COUNTY, OREGON"

"EUCHRE CREEK, CURRY COUNTY, OREGON"

"SALMONBERRY RIVER STREAM CLASSIFICATION"

"VALLEY SEGMENT CLASSIFICATION, LOWER PISTOL RIVER, CURRY COUNTY, OREGON"

Interim Report: A Biodiversity Conservation Plan for the Klamath/Siskiyou Bioregion

Reed F. Noss, PhD., Principal Investigator
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Co-investigators: James Strittholt, Ph.D., Pam Frost, Ken Vance-Borland, Rich Nawa, and Carlos Carroll

A research project developed on behalf of the Siskiyou Project and funded by the W. Alton Jones Foundation and the Foundation for Deep Ecology, with staff support of J. Strittholt and P. Frost provided by The Wildlands Project, and in cooperation with other regional conservation groups, universities, and government scientists.

SECTION I: INTRODUCTION AND SUMMARY

Conservation planning at the scale of the bioregion or ecoregion has become the accepted standard among conservation biologists, activists, and agencies and organizations worldwide.[1] Ideally, each bioregion of the world would have its own scientifically defensible and popularly supported conservation plan. These plans should be map-based and interlinked both physically (across space) and strategically to form a global strategy. Furthermore, each plan should be implemented within an "adaptive management" framework, where information derived from ecological monitoring and research is used to revise or adjust the plan over time. Thus, each plan should be continually evolving and responsive to new biological and social realities.

[1] For a comprehensive treatment of regional conservation planning see R.F. Noss and A.Y. Cooperrider, Saving Nature's Legacy (1994, Island Press) and the two special issues of Wild Earth magazine (1992 and 1995/96) devoted to The Wildlands Project.

Federal, state, and local governments occasionally fund or develop conservation plans. Well-known examples include the Northwest Forest Plan and the natural Communities Conservation Plan for coastal sage scrub in southern California. Unfortunately, the results of such government-sponsored plans are usually disappointing. Many millions of dollars are spent producing plans that are not subjected to (and usually would not pass) scientific peer review, and the final plans are often severely compromised by political pressure from commodity and development interests. Therefore, citizen groups and independent scientists in some regions have taken on the task of producing conservation plans that are as free as possible of political meddling. Working with budgets one or two orders of magnitude smaller than government-sponsored projects, they seek to develop plans that apply the cutting-edge principles and technological tools of conservation biology, are open to full peer review, are community-based, and--above all--are biocentric and based on the needs of all native species.

We are working on just such a plan for the Klamath-Siskiyou bioregion of southwestern Oregon and northwestern California. This region of some 4 million hectares (10 million acres) is widely acknowledged as a global center of biodiversity in the temperature zone.[2] Yet, it has almost defied comprehensive scientific analysis. With its enormous geological and biological complexity and straddling two states, the Klamath/Siskiyou region is extremely difficult to study. Yet, studying it and protecting it is urgent.

[2] See the excellent book by D.R. Wallace, The Klamath Knot (1983) and other papers cited in Section 1 of this report (the Wild Earth article by Vance-Borland et al., 1995/96).

Although it remains one of the wildest regions of the Pacific coastal states, logging, mining, road-building, and other development are degrading the Klamath/Siskiyou region rapidly. This is an area that has a lot to lose--endemic species, old-growth forests, and critical fisheries--if present trends are not reversed soon. It is for these reasons that we have undertaken this study.

A key feature of this research is its comprehensive and synthetic nature. This makes it all the more challenging to accomplish. Most conservation plans are fairly narrow in scope, being concerned with one or a few species or one or two habitat types. For example, Clinton's Northwest Forest Plan focused on one general habitat type (old-growth coniferous forests) and was clearly driven by the spotted owl, marbled murrelet, and salmon. The Natural Community Conservation Plan in southern California focuses on one major plant community--coastal sage scrub--and is driven by the needs of the California gnatcatcher. With this research project for the Klamath/Siskiyou we are attempting to unite what have been three disparate streams of research in conservation biology: (1) special element mapping, e.g., of roadless areas, old-growth stands, critical watersheds, and rare plant occurrences; (2) representation analyses, eg., gap analysis that seeks to determine how well different kinds of habitats are protected; and (3) population viability analyses of particular focal species, e.g., those that require large areas of wildland (Fig. 1; note that additional figures in this report are not numbered but are arranged by section). We believe that the results of such a synthetic analysis will be more robust and more likely to conserve the full spectrum of biodiversity than former, more simplistic studies.

This research project began in 1991 when Reed Noss was asked by Lou Gold of the Siskiyou Project to write a proposal to develop a biodiversity conservation plan for the region. Funding provided difficult to find. The original proposal, for $57,200, we know was a serious underestimate of the resources required to undertake a comprehensive analysis of such a complex region. It was not until early 1994 that we received the first funds for this work--$30,000 from the W. Alton Jones Foundation--which allowed us to commence the study. About one year later we received $100,000 from the Foundation for Deep Ecology. Also in 1995, The Wildlands Project agreed to allow their staff ecologists and GIS experts, Jim Strittholt and Pam Frost, to devote a portion of their time to the Klamath/Siskiyou research. We are now awaiting a $16,000 grant approved from the Foundation for Deep Ecology to Carlos Carroll and the Siskiyou project for a habitat analysis for the Pacific fisher.

INSERT FIGURE 1 - FLOW CHART

Progress on our research has been slower than we had hoped, largely because our limited funding has precluded devotion of a significant amount of time to the project from any one of us. However, with the help of Jim Strittholt and Pam Frost, we have now been able to pull together the information at hand to produce

this interim report. Although this report is truly interim, in that the final reserve proposals and management options have yet to be mapped and described, we have already exceeded our original proposal in terms of the technical sophistication of the work and the staff time (and money) put into it. Work in progress includes (1) the physical habitat analysis by Ken Vance-Borland (see Section IV), which was funded by the original W. Alton Jones and Foundation for Deep Ecology grants; (2) preparation of the final aquatic conservation plan by Rich Nawa, also funded by the original two grants; (3) completion of a landscape-level habitat analysis for the Pacific fisher by Charles (Carlos) Carroll, funded by a new (1996) grant from the Foundation for Deep Ecology; and (4) the final synthesis and conservation plan by Reed Noss, with maps produced by Jim Strittholt and Pam Frost. The first three of these elements are expected to be completed by the end of 1996. Unfortunately, funds for the final synthesis and mapping are insufficient. Reed Noss has already devoted more than the original time budgeted for him (in part supported by a Pew Foundation scholarship, which ends this spring), and The Wildlands Project, because of its own financial crisis, has withdrawn support for Jim Strittholt and Pam Frost to continue work on this project. We estimate that an additional $80,000 is needed to complete the work and produce a final plan that is scientifically defensible. Today, scientific defensibility and technical sophistication are absolutely necessary (though not sufficient) for a plan to be taken seriously in the political arena. We will be preparing new proposals for funding to complete this research.

This report is divided into seven sections. Section I is this introduction and summary. The remaining sections are introduced below and follow:

Section II. Article from Wild Earth by Vance-Borland et al, (1995/96)

This article, written in the fall of 1995 and published in the Winter 1995/96 issue of Wild Earth, describes the Klamath/Siskiyou research and the overall organization of our research plan, emphasizing the physical habitat analysis being undertaken by Ken Vance-Borland.

Section III. Summary of Data Layers and Maps of Roadless Areas, Road Density, and Watershed Analysis (J. Strittholt and P. Frost)

This section includes a list of the data layers that have been compiled in digital format (i.e., for use with GIS) for the study. Many of these data remain to be fully analyzed. However, the maps included here highlight some of the areas of critical importance for conservation in the region: low-elevation habitats (which are insufficiently protected in wilderness), roadless areas, watersheds and grid cells with low road density, and watersheds critical for the conservation of aquatic biodiversity (derived from the analysis by R. Nawa reported in Section V).

Section IV. Physical Habitat Classification (K. Vance-Borland)

The biodiversity of the Klamath/Siskiyou region is clearly driven by its physical habitat diversity and geological history. For instance, fully 7.5% of the soils in the region are derived from serpentine parent materials and support dozens of endemic plants found nowhere else in the world. Included in this section is an overview of the physical habitat classification being conducted by Ken Vance-Borland, and several maps, including the organic carbon content and available water capacity of soils (measures of potential fertility), serpentine soils, and a composite climate model (which shows the diverse climatic provinces of the region). Conducting a physical habitat classification, which will be followed by a habitat gap analysis, for a region this complex is a herculean task.

Section V. Draft Aquatic Conservation Plan (R. Nawa)

Rich Nawa has produced a draft aquatic conservation plan that is based on five tiers: immediate ESA listing of species most likely to be extirpated soon, restoration-oriented management of clusters of declining species, creation of a system of Aquatic Diversity Management Areas, designation of a system of Key Watersheds, and development of schemes for bioregional landscape management. The in-depth report included in this section describes the work accomplished for the development of this plan.

Section VI. Progress Report on Habitat Analysis of Pacific Fisher

The Pacific fisher is a candidate for federal listing under the ESA and is highly sensitive to forest management. The Klamath/Siskiyou region may hold the largest remaining population of Pacific fisher. This section includes a progress report on the landscape-level analysis of fisher habitat by Carlos Carroll, accompanied by a map of road density for national forest land in northwestern California and a map showing

habitat suitability for fishers in northwestern California--the first such analysis ever undertaken for this species.

Section VII. Financial Statement

We conclude with a statement of funds spent (1995/96) and remaining for the Klamath/Siskiyou research.

SECTION III. Summary of Data Layers and Maps of Roadless Areas, Road Density, and Watershed Analysis (J. Strittholt and P. Frost)

INSERT "SUMMARY OF DATA LAYERS COMPILED FOR KLAMATH/SISKIYOU STUDY AREA"

KLAMATH PROVINCE WATERSHED: COARSE SCALE ASSESSMENT

Subwatersheds were evaluated for Klamath Province (41,147.04 km^2) according to R. Nawa (see enclosed). Based on a number of ecological criteria, each delineated subwatershed was given a class from 1 to 3 (1 = pristine, 2 = restorable in the short term, 3 = severely degraded). Using only level A - C subwatersheds, a total of 505 subwatersheds were included. Only 6.6% of the study area was determined to be pristine.

Class	Frequency	Area (km^2)	Percent
1	51	2,727.10	6.6
2	200	17,054.81	41.4
3	254	21,365.13	52.0
Totals	505	41,147.04	100.0

INSERT "KLAMATH PROVINCE WATERSHED: COARSE SCALE ASSESSMENT" MAP

KLAMATH PROVINCE WATERSHED: FINE SCALE ASSESSMENT

Subwatersheds were evaluated for Klamath Province (41,147.04 km^2) according to R. Nawa (see enclosed). Based on a number of ecological criteria, each delineated subwatershed was given a class from 1 to 3 (1 = pristine, 2 = restorable in the short term, 3 = severely degraded). Using only level A - E subwatersheds, a total of 632 subwatersheds were included. With the inclusion of smaller areas, the portion of the study area considered pristine rose slightly to 8.2%

Class	Frequency	Area (km^2)	Percent
1	74	3,392.14	8.2
2	279	16,565.60	40.3
3	279	21,189.30	51.5
Totals	632	41,147.04	100.0

INSERT "KLAMATH PROVINCE WATERSHED: FINE SCALE ASSESSMENT" MAP

Section V. Draft Aquatic Conservation Plan (R. Nawa)

A Conservation Plan to Protect and Restore the Ecological Integrity of Aquatic Ecosystems in the Klamath Mountains Province

26 February 1996 INTERIM REPORT

Prepared by

Richard K. Nawa
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26 FEB. 1996 DRAFT KLAMATH MOUNTAINS AQUATIC CONS. PLAN

Contents

TABLES
FIGURES
ACRONYMS

SUMMARY

CHAPTER 1: OVERVIEW AND OBJECTIVES
CHAPTER 2: THE PLANNING AREA
CHAPTER 3: PROTECTION OF AQUATIC BIODIVERSITY WITH THE ENDANGERED SPECIES ACT
- Methods
- Results
- Discussion/Recommendations

CHAPTER 4: PROTECTION OF AQUATIC BIODIVERSITY WITH MANAGEMENT CLUSTERS
- Methods
- Results
- Discussion/Recommendations

CHAPTER 5: PROTECTION OF AQUATIC BIODIVERSITY WITH AQUATIC DIVERSITY MANAGEMENT AREAS
- Aquatic Reserve Design
- Key Watersheds
- Relationship of Key Watersheds to Key Water Bodies
- Methods
- Results
- Discussion/Recommendations

CHAPTER 6: PRIORITY WATERSHEDS FOR PROTECTION OF PORT ORFORD CEDAR
CHAPTER 7: CURRENT AND HISTORIC SALMON DISTRIBUTION
CHAPTER 8: STREAM CLASSIFICATION
CHAPTER 9: CONCLUSION
REFERENCES

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

SUMMARY

For the past 30 years government planning in the West has proliferated in response to increasing human populations and increased per capita consumption of resources. Most government plans are primarily concerned with allocating lands and "resources" to various user groups for exploitation. This strategy guarantees a shrinking pool of commodities and amenities available for successive planning efforts and has proven to be unsustainable in the long-term (e.g., liquidation of old growth forests, overfishing of wild coho salmon, dewatering of streams). At best, implementation of government plans and regulations has merely slowed the rate of ecological degradation and loss of biodiversity. But merely reducing the rate of human caused degradation will not be adequate to stop or reverse declines in native species such as salmon. We know from past experience that a regulatory management strategy cannot sustain biodiversity in the long-term.

A geographically explicit application of Moyle and Yoshiyama's five-tiered approach to conserving biodiversity was produced for the Klamath Mountains Province (see Fisheries 19: 6-19). The major rivers in the Klamath Province are the Coquille, Elk, Sixes, Rogue (below Lost Creek dam), Chetco, smith, and Klamath (below Jenny Creek). The five tiers are: (1) immediate ESA listing of species likely to be extirpated in the next 20 years; (2) restoration-oriented management strategies for clusters of declining species that inhabit the same drainages; (3) creation of a system of habitats called Aquatic Diversity Management Areas that provide protection of aquatic biodiversity; (4) designation of a system of Key Watersheds, and (5) development of schemes for bioregional landscape management. Approximately 700 nested watersheds were systematically evaluated as: class 1 (pristine), class 2 (restorable in the short term) or class 3 (severely degraded). Pristine and restorable watersheds were identified as key watersheds. Essential habitats occurring in degraded watersheds were identified as Key Water Bodies (e.g. lakes, estuaries and main stem rivers). Marine areas and connecting corridors completed the reserve network. Methods for key watershed selection differ from the Northwest Forest Plan in that all watersheds, including those on private lands, were systematically evaluated. Due to severe degradation of private lands, a much larger system of key watersheds is recommended for public lands than that adopted by the Forest Service and Bureau of Land Management.

Restoration of long-term ecological integrity can only occur if the causes of degradation are eliminated. The strategy developed in this aquatic plan is the establishment of protected areas where ecological processes will be allowed to function over long time periods (25-100) years) without incessant and harmful human-caused disturbance (See Frissell and Bayles 1995; Deppelt et al. 1993; Frissell et al. 1993).

This aquatic conservation plan does not rely on costly and often harmful technological fixes usually employed in fisheries management. The plan calls for a cessation (not an increase) of government subsidized technologies that may slow or thwart natural recovery. For example, the massive use of artificial propagation to bolster fishing success (such as increased hatchery fish production recommended by the Columbia Basin Fish and Wildlife Authority [1991] for the Columbia River) must be phased out. Large government appropriations and incentives for construction of artificial stream structures must be reduced. Harmful government subsidies for fishing, dam construction, logging, mining, water withdrawals, power generation and agriculture must be eliminated or greatly reduced. In their place, incentives to promote stewardship, conservation, and protection must be developed (see Economy of Nature). For example, aquatic habitat on private lands could be systematically assessed for ecological value in producing wild salmon. Merchantable fishing rights could be allocated to individuals and corporations as an incentive to maintain high quality forested streams on private lands. On public lands, Forest Trusts and Trustees could replace the current appropriations process which inevitably results in irreversible ecological degradation at the whim of Congress (e.g., Section 318 and the 1996 Timber Salvage Amendment). In the short-term, the aquatic plan calls for a mining moratorium in riparian areas (i.e. an end to placer mining in streams). Long-term objectives include the removal of high dams, restoration of water for instream uses, and conservation easements to protect and restore private land riparian forests.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 1

OVERVIEW AND OBJECTIVES

Moyle and Yoshiyama (1994:2) report that aquatic biodiversity is being lost an even more rapid rate than terrestrial biodiversity. Aquatic species, particularly native salmonids, have suffered serious declines in the Klamath Mountains Provine (Klamaths). Rather than taking responsibility for the conservation of aquatic biodiversity, government has underwritten biotic impoverishment. For more than a hundred years government has subsidized the exploitation of every large watershed in the Klamaths for minerals, timber, and agriculture. The Post War era saw a radical increase in government subsidization which resulted in the systematic destruction of the salmon's habitat through dams, deforestation, and water withdrawals. Watershed management (euphemistically labeled water conservation) largely consisted of diversion and storage of water for agriculture, flood control, power production, navigation, and municipal use. Harmful effects of urbanization and rural sprawl was spurred by unchecked growth in river valleys. State and federal governments generously funded fish hatcheries to benefit the fishing industry, despite the deleterious effects of hatchery fish production on native populations.

The U.S. government's unparalleled subsidies for economic growth, resource exploitation, and production of hatchery fish has had profound effects on native fish abundance in the Pacific Northwest. Nehlsen et al. 1991 found that a large number of native salmon and steelhead stocks in the Pacific Northwest were extinct or threatened with extinction. Subsequent studies by Frissell (1992; 1993) and the Wilderness Society (1993) found that salmon in a large proportion of their historic range were either extinct or threatened with extinction. A relatively large number of stocks were found to be threatened with extinction in the Klamath Mountains Province. Coho salmon and steelhead trout were formerly abundant and widely distributed in the Klamaths. Today, half of the streams in California no longer have coho salmon. The total population of native, wild produced coho salmon in California is estimated at less than 5,000 fish, a 95 percent reduction since 1940 (Brown et al. 1994). In March 1995 the U.S. government proposed that the Klamath Mountains Province steelhead be listed as threatened for protection with the Endangered Species Act and in July the coho salmon was proposed for listing in Oregon and California. The degradation of river ecosystems and declines of native fish in the Pacific Northwest is representative of the ecological damage that industrialization has caused elsewhere in the north temperate regions of the world (Dynesius and Nilsson 1994).

Serious flaws in government policy are responsible for the decline of aquatic species in the Klamaths and elsewhere. For example, state and federal agencies have not been given the goal and the authority to effectively conserve and protect habitat required by native aquatic species. The Oregon Department of Fish and Wildlife has a goal to protect habitat for native fish but the agency lacks the authority or legal jurisdiction to protect habitat from total loss by dams or incremental degradation through logging and water withdrawals. The lack of habitat protection is especially true for anadromous salmonids which complete their life cycle over vast geographic areas.

Another policy flaw with existing habitat management for aquatic species, especially fish, is that land, water, and fish managing agencies view the needs of wild aquatic animals as a constraint rather than a goal. The U.S. Forest Service and Oregon Department of Forestry treat riparian protection buffers as a constraint on timber extraction. Fish habitat protection becomes an obstacle to the needs of their dominant constituent, the timber industry. Prescribed instream use of water for fish is often treated with contempt by water managing agencies and agricultural users.

The situation is not hopeless. Effective conservation of migratory species is possible, even in a capitalist society dominated by exploitive corporations (Warren 1994). For example, the National Refuge System with its goal of sustaining migratory birds through habitat protection and restoration has been relatively successful.[3] Migratory fish (i.e., anadromous salmon and trout), however, have not fared as well as migratory birds. Instead of protecting habitat for migratory fish, federal and state governments have established a vast system of fish hatcheries at great expense to the public. Expensive biotechnology was substituted for habitat protection and harvest controls. Fish hatcheries in the Klamath Mountains Provine annually produce millions of juvenile anadromous fish to subsidize their user group, the fishing industry. The hatchery system has failed to supplement natural production by wild fish or create new populations (Withler 1982) because hatchery fish cannot sustain themselves in natural habitats. Artificial propagation has greatly harmed many anadromous salmonid populations through genetic introgression, competition for food and space, and excessive harvest of commingled hatchery and wild fish in their natural habitats (see Meffe 1992; Goodman 1990; Brown et al. 1994; Nehlsen et al. 1991; and National Research Council 1995).

[3] Unfortunately the refuge system in the Klamath Basin has been particularly unsuccessful

in providing adequate habitat for migratory birds. Agriculture has been allowed to destroy nearly 70 percent of the area's wetlands which has robbed the main stem Klamath of the high water quality needed to support salmonid migrations of juvenile and adult fish.

If salmon and other aquatic species are to survive, systematic conservation must replace systematic resource exploitation. A refuge or preserve system where the primary emphasis is native aquatic animals is needed to reverse decades of policy directed at the destruction of their riverain habitat. Land based conservation strategies using preserves have been recommended by scientists and professional societies. Because of world wide fragmentation of rivers in the North Temperate Zone, Dynesius and Milsson (1994) recommend "immediate action to create an international preservation network of free flowing river systems and to rehabilitate exploited rivers in areas that lack unaffected watercourses." Unless under court order, government agencies in the Western United States have generally failed to even complete coordinated ecoregion scale plans much less have them implemented. For example, coordinated planning for vast areas adjacent to Yellowstone National Park was terminated because of complaints by extractive interest groups. Congress has halted ecosystem planning in the upper Columbia Basin through budget cuts. Thus, it appears that non-government groups, professional societies, and academics must carry the burden of producing credible biodiversity protection plans that cover large geographic areas with a myriad of ownerships and jurisdictions (see Foreman 1993).

Prior to the early 90's, there has been no systematic approach by ecologists, hydrologists, and biologists towards acquiring ecological data over large geographic regions (such as the Klamath Mountains province) which would be useful for protecting aquatic diversity. Some of the pioneering efforts at developing a strategic approach for protecting aquatic biodiversity were Johnson et al. (1991), Thomas et al. (1993a), Henjum et al. 1994, and Oregon Chapter American Fisheries Society (1993). The only successful implementation was the result of a court injunction. Under a court order deadline, the Northwest Forest Plan was adopted by land managing agencies. It directed government agencies to implement the Aquatic Conservation Strategy which has 4 components: (1) Riparian Reserves; (2) Key Watersheds (3) Watershed Analysis and (4) Watershed Restoration (USDA and USDI 1994:B-11). Moyle and Yoshiyama (1994) recommend a five-tiered approach to protect aquatic biodiversity in California which includes the immediate ESA listing of species threatened with extinction.

Regardless of the specifics of the strategy adopted, conservation of aquatic biodiversity and restoration of ecological integrity will require the careful integration of both physical and biological data. The difficulty and complexity of this task is daunting. Fortunately, the earth's stream network provides a natural system of nested watersheds ideally suited for hierarchical organization and management. The steep topography of the Klamath Mountains Province provides distinctive watershed boundaries suitable for mapping. The Klamath Mountains aquatic conservation plan (aquatic plan) seeks to provide an intensive application of Moyle and Yoshiyama's five-tiered approach to protect biodiversity. Existing land based aquatic conservation efforts (e.g. Oregon Chapter American Fisheries Society database and the aquatic conservation strategy of the Northwest Forest Plan) provide a starting point to create a more comprehensive plan that includes systematic evaluation of all water bodies including marine areas.

Ironically, the systematic techniques used to underwrite river exploitation can now serve as a model for identifying watersheds and water bodies for restoration and protection. Over the past 100 years government engineers and hydrologists have systematically measured streamflow in most medium and large river basins in the West. These data helped engineers, corporations, and politicians decide which rivers and creeks had the most favorable sites for dam construction and exploitation.[4] The aquatic plan includes a systematic and comprehensive assessment of all watersheds in the Klamaths to help in identifying a network of reserves of high value for conservation purposes. A system of protected and restored watersheds is vitally necessary to ensure the persistence and eventual recovery of aquatic species in the Klamaths.

[4] The Klamath, Trinity, and Rogue rivers, the 3 largest rivers in the Klamath Mountains Province have been dammed. Some of the larger river basins that remain undammed are the Illinois, Smith, Coquille and Chetco rivers.

The information and analysis in the aquatic plan should prove useful for those wishing to protect and restore aquatic ecosystems (see Appendix D). But science can only provide the blueprint for protection and recovery. Implementation and success will depend on commitment, coordination, and sacrifice by individuals in environmental groups, government agencies, and the private sector. Government agencies responsible for regulating the exploitation of watersheds must now learn the techniques of protection and restoration. The conservation plan will provide comparative analysis of large watersheds to aid government agencies,

watershed councils, and national conservation groups tackle the big challenge of protection and restoration at the scale of large river basins (dam removal, restoration of historic flow regimes, legislated protection of headwater federal forests etc.). Individuals and grass roots groups will have access to information to help them identify a particular small river or creek where local efforts of concerned citizens can halt and reverse current trends towards biotic impoverishment (conservation easements, flow acquisition, erosion control, eliminating or reducing the harm from individual federal timber sales etc.).

The principal objective of developing an aquatic conservation plan for the Klamath Province can be accomplished with 4 steps:

1. Identify present conditions and how they differ from natural condition. Determine what aspects of the present condition pose a threat to biodiversity.
2. Identify hot spots of biodiversity and significant natural areas in the region. Identify specific threats faced by each area.
3. Delineate boundaries of a reserve system, buffer zones, and connecting corridors that will protect biodiversity over a long period of time.
4. Develop criteria and guidelines for managing and restoring lands inside and outside the proposed reserve system.

To help achieve these objectives, Moyle and Yoshiyama's (1992) five-tiered approach to protect biodiversity was systematically applied to the planning area. The five tiers are: (1) immediate ESA listing of species likely to be extirpated in the next 20 years; (2) implementation of restoration-oriented management strategies for clusters of declining species that inhabit the same habitats of drainages; (3) creation of a system of drainages and habitats called Aquatic Diversity Management Areas that provide protection of aquatic biodiversity; (4) designation of a system of Key Watersheds, and (5) development of schemes for bioregional landscape management. Chapters 3 and 4 discuss federal listing of species and strategies for species clusters. Chapter 5 addresses aquatic reserve design for bioregional landscapes with a hierarchical approach to Aquatic Diversity Management Areas. Chapter 6 analyzes the extent of watersheds that are free of Port Orford cedar root disease. Port Orford cedar, a key component of many wetlands in the Klamath Mountains Province is threatened by a fatal root disease. Chapter 7 examines the distribution of anadromous salmonids and habitat loss caused by dams and other factors. In Chapter 8, geomorphic classification of streams and wetlands provides fine scale (.1-10 km) identification of important stream segments and wetlands. Low gradient stream valleys and isolated alluviated canyons in mountainous areas interact with their floodplains to create habitat complexity. These hotspots are likely to yield positive results with respect to species monitoring and habitat protection.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 2

THE PLANNING AREA

The Klamath Mountains Geologic Province (Province) was modified to follow watersheds boundaries and offshore marine areas up to a depth of 200 meters (Fig. 1). The boundaries of the Province were expanded to include the Coquille River and two Klamath River tributaries (Shasta River and Jenny Creek). No portions of the South Umpqua River or Sacramento River were included for aquatic analysis (see Noss 1992 for conservation planning in the Umpqua river system).

The Klamath Mountains Province is well known for its geological and botanical significance. More recently the evolutionary and biological significance of anadromous fish has become apparent. The National Marine Fisheries Services (Fisheries Service) identifies Evolutionary Significant Units (ESUs) for delineating anadromous species distributions that qualify for protection under the Endangered Species Act (Waples 1991). In 1994 the Fisheries Service identified the Klamath Mountains Province Steelhead Evolutionary Significant Unit which includes the Elk River south to the Klamath River (Busby et al. 1994:54). This ESU is entirely contained within the planning area. The planning area also includes a major potion of the Southern Oregon/ northern California coast Evolutionary Significant Unit for coho salmon (Weitcamp et al. 1995). Chinook salmon from the Rogue, Smith, and Klamath Rivers are distinctive in that they do not make lengthy

migrations to the Gulf of Alaska as do more northerly distributed chinook salmon stocks (Nicholas and Hankin 1988). The southern most distribution of coastal cutthroat trout ends immediately south of the planning area in Redwood Creek (Trotter 1987). Few if any viable chum salmon populations exist south of the Klamath Province.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 3

PROTECTION OF AQUATIC BIODIVERSITY WITH THE ENDANGERED SPECIES ACT

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Methods

Special status aquatic species of the Klamath Mountains Province and adjacent marine areas were compiled from published sources (Steiner 1990; USDI 1994a; Upton 1992). Aquatic species generally includes plants and animals that either reproduce or feed primarily in freshwater habitats, marine areas and wetlands. Avian predators of aquatic species (peregrine falcons, bald eagles) and woodland amphibians (Siskiyou and Del Norte salamanders) were not included as aquatic species.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Results

Threatened, endangered, and sensitive aquatic species are compiled in Table 1.

INSERT TABLE 1. "STATUS OF THREATENED, ENDANGERED, AND SENSITIVE AQUATIC ....."

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Discussion/Recommendations

For political reasons, management plans developed by government land managing agencies (such as the Northwest Forest Plan) do not even consider recommending federal listing of species as a management option. In the absence of government initiative to list species, citizens or non-government groups inherit the burden to petition species. Scientific data to demonstrate the species is threatened with extinction is all that is required (see Rohlf). In practice, costly litigation is often necessary to achieve a listing and tangible results.

Narrow endemics are often the species first in line for ESA listing. These species have limited ranges which makes them particularly vulnerable to human caused habitat degradation. Although the Klamath Mountains Province is well known for endemic plants, other groups also have high rates of endemism in the Klamaths. Endemic salamanders (Thomas et al. 1993:IV-44), endemic aquatic mollusks (Roth 1993; Fest and Johannes 1993) as cited in Thomas et al. (1993:IV-136), and endemic aquatic arthropods (Thomas et al. 1993:IV-140) have been documented. Many are federal candidates for listing or have state designations as sensitive, but none have been officially placed on state or federal candidates for listing or have state designations as sensitive, but none have been officially placed on state or federal endangered species act lists (Table 2). For example, the total distribution of the Siskiyou Mountains salamander is only 353,000 acres (Thomas et al. 1993: Appendix Table IV-C-9). A panel of experts estimated that there was a 5 percent likelihood that the Siskiyou Mountains salamander would be extinct after 100 years of management with the Northwest Forest Plan (Thomas et al.

1993:IV-128).

Ironically, the relatively well distributed and formerly abundant anadromous salmonids may become the first freshwater breeding species to be federally listed in the Province. The National Marine Fisheries Service proposed listing the Klamath Mountains Province Steelhead as threatened (60 Fed. Reg. 14253 (March 16, 1995). On July 25, 1995 the coho salmon from south of the Columbia River was proposed for federal listing as threatened (60 Fed. Reg. 38011). Chinook salmon south of Cape Blanco, Oregon were petitioned for listing during February 1995. The Fisheries Service has scheduled the completion of comprehensive status reviews for west coast chinook salmon in December 1995, chum salmon (July 1995), and sea-run cutthroat trout (April 1996) (59 Fed. Reg. 48855 September 23, 1994).

Although no freshwater aquatic species in the Klamaths has been formally listed, federal agencies (e.g. Forest Service, Bureau of Land Management etc.) must follow some ESA procedures such as conferencing and preparation of biological evaluations prior to activities that may jeopardize candidate species and those proposed for listing.

Proposed listing of coho salmon and steelhead trout do not appear to be having the desired effect of protecting federally managed habitat from human caused degradation. During 1995, the Siskiyou National Forest awarded the Sugarloaf and China Left Timber Sales in Sucker Creek (the largest tributary to the East Fork Illinois River). Despite Forest Service admissions of potentially damaging sedimentation and denial of potentially damaging rain-on-snow flood events, each of the biological evaluations written by the Forest Service concluded that the timber sales "may affect" steelhead and coho salmon. Apparently the Fisheries Service acquiesced to Forest Service "no jeopardy" determinations. Hundreds of acres of headwater old-growth forests was approved for logging despite the presence of two anadromous species in Sucker Creek that have been proposed for listing. Similar flawed determinations of "may effect" have been given for Everclear (Clear Creek watershed) and Buckhorn (Elder Creek watershed) Timber Sales. The Timber Salvage Amendment (aka the salvage rider) signed into law by President Clinton in July 1995 eliminated administrative appeals and rendered legal challenges all but futile. The Siskiyou National Forest has also approved mining plans of operation in Silver Creek, Briggs Creek and Canyon Creek that pose significant threats to survival of anadromous fish.

It appears the U.S. government does not intend to willingly halt habitat damage that affects aquatic species formally proposed for threatened status. A defacto policy is in effect that provides for no additional protection for aquatic species proposed for listing, irrespective of provisions in the Endangered Species Act. Protection measures necessary to eliminate harm from human causes is not likely to occur until government agencies refuse to permit loggers and miners from causing harmful cumulative effects (see discussion of ecological denial in Orr and Ehrenfield 1995).

Regional analysis of biological data for anadromous fish indicates that the risk of extinction is greatest at the southern end of cold water salmonids distribution (Frissell 1993, Wilderness Society 1993). The distribution of chum salmon and sea-run cutthroat trout virtually ends in the Klamath Mountains Province. Biologically these two species warrant listing, although data is sparse. No petitions have been filed for either species in the Klamaths. Completion of status reviews proposed by the National Marine Fisheries are expected to be delayed for months, possibly years.

Jenny Creek (0105000000)[5] is home for two endemic subspecies of fish: the Jenny Creek sucker and Jenny Creek rainbow trout. The USFWS has classified both as candidates for possible listing. Two salamanders endemic to the Klamath, the Del Norte Salamander and Siskiyou Salamander, are also candidates federal listing.

[5] The number in parenthesis is the watershed code for Jenny Creek.

Data is scarce for most declining or rare species that have not been petitioned (e.g., Jenny Creek sucker and Siskiyou salamander). Petitions that lack comprehensive data are routinely dismissed. The burden of proof is on the petitioner. The Northwest Forest Plan Record of Decision states that "inventoried locations and special habitat of rare species will be registered in the multi-agency GIS data base. This information will be shared with the State Natural Heritage Programs." Data generated by government monitoring may be enough to support a credible ESA petition.

Recommendations:

1. Pursue litigation and legislation to ensure that species already petitioned do become listed and protected with a strong Endangered Species Act. This applies to coho salmon, chinook salmon, steelhead trout and the western pond turtle.
2. Ensure that coho salmon and steelhead trout are receiving the protection provided by the Endangered Species Act in federal planning processes (Forest Service and BLM timber sales, mining, road building, recreation facilities, hatchery production etc.).
3. Prepare a federal petitions for west coast chum salmon and west coast sea-run cutthroat trout. A legal deadline imposed by a formal petition may be necessary to obtain timely decisions by the Fisheries Service. The proposed completion date for the chum salmon status review (7/15/95) has long since passed and similar delays with sea-run cutthroat are also expected.
4. Due to their limited range, petitions for the Siskiyou salamander, Jenny Creek sucker and Jenny Creek rainbow trout should at least be prepared. Del Norte salamander do not appear to need petitioning at this time.
5. No recommendation is made for remaining amphibians, insects, snails, and mollusks because a systematic review of existing data has not been completed. Non-government groups may need to submit ESA petitions as data becomes available.
6. Annual inquiries should be made about monitoring and inventories promised in the Northwest Forest Plan (USDA and USDI 1993:b-32; c_49) and individual forest plans.
7. Non-government and government entities should increase support to professional societies (e.g., Xerces Society (arthropods), American Fisheries Society, Benthological society) and attend annual meetings. The voluntary and timely integration of scientific findings into management is much more desirable than via federal courts.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 4

PROTECTION OF AQUATIC BIODIVERSITY WITH MANAGEMENT CLUSTERS

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Methods

Management clusters are groups of species that are rare, declining or have a relatively small distribution. Clusters are not limited to one class of organisms such as fish. For example, Thomas et al. 1993 (IV-126) reports that "narrowly endemic mollusks are often found closely associated with other endemic groups of species including arthropods and some salamanders." Species groups which coexist on a regular basis must be managed with ecosystem concepts that are compatible with each species involved (i.e., management emphasis is on the ecosystems rather than individual species). Management clusters of special status species were identified from species distribution maps and government agency management plans.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Results

Only three management clusters were identified (Table 2). More management clusters may have been identified, but distribution data was not available for all threatened and endangered species.

INSERT TABLE 2: "CLUSTERS OF THREATENED, ENDANGERED AND SENSITIVE NATIVE SPECIES THAT REQUIRE COORDINATED MANAGEMENT OF THEIR ECOSYSTEMS, KLAMATH MOUNTAINS PROVINCE OF OREGON AND CALIFORNIA."

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Discussion/Recommendations

Endangered Species Act listing may be necessary for one or more of the species in each cluster, but recovery plans should include all species in the cluster to ensure that management actions do not favor one species at the expense of another (Table 2). For example, artificial stream structures intended to improve habitat for fish have been found to be detrimental to amphibians (xxxxxx). Flow regulation on the Trinity River intended to benefit fish was also found to be detrimental to amphibians.

Two clusters were identified from BLM Resource Management Plans. Portions of the ecosystem supporting the species cluster were identified as Areas of Critical Environmental Concern (ACEC). Although the National Forest Management Act mandates protection of biodiversity, no management clusters were identified from National Forest Plans. The Forest Service has no legal mandate to identify ACEC's.

General Recommendation:

Further analysis of distributions of fish, amphibians, and freshwater mollusks and arthropods would help to identify other management clusters.

Jenny Creek

The Medford BLM District Resource Management Plan has designated 966 acres along Jenny Creek as an Area of Critical Environmental Concern (USDI 1995a:60). Besides two federal candidate fish species, the BLM reports the presence of other special status plant and animals in the Jenny Creek ACEC which are not listed in Table 2. The BLM Plan also designated the Cascade/Siskiyou ecological emphasis area (16,340 acres) which includes portions of the Jenny Creek and Scotch Creek watersheds. The ecological emphasis area will have its own management plan written jointly by the Medford, Oregon and Redding, California BLM Districts (USDI 1995a:62). A watershed analysis for Jenny Creek is available from Medford District BLM. The Friends of Greensprings, a non-government group, has been active in protecting Jenny Creek.

Recommendations:

1. Determine if fish populations and adequate habitat have been secured or data suggest a favorable response. For example, does water temperature monitoring indicate improving conditions attributable to habitat improvement? Are fish populations responding to favorable conditions?
2. Support acquisition of private lands, instream flows, conservation easements etc.
3. Submit ESA petitions for both candidate species if measurable improvement is not being made.

Mill Creek

Mill Creek's ancient redwood forests provides habitat for steelhead trout, coho salmon, sea-run cutthroat and rare chum salmon. Much of the watershed is assumed to be protected in state and federal parks.

Recommendations:

1. Determine if existing management is resulting in stable or improving habitat. Are fish populations responding to favorable conditions?
2. Determine if private lands are vulnerable to severe degradation that would cause impacts to stream habitat within state and federal parks.

New River

The Coos Bay BLM Resource Management Plan designated about 1,000 acres of the New River watershed an Area of Critical Environmental Concern and adopted a management plan for the area (USDI 1995). The management plan is excellent, but it does not address water quality and habitat issues at a watershed scale (The New River watershed encompasses several creeks and lakes totaling 82,000 acres.) The species listed in Table for the New River Management Cluster have been observed in the ACEC or are suspected of occurring there (USDI 1995: 2-26, 2-29, 2-31).

Recommendations:

1. Wetlands acquisition to enlarge the ACEC should be pursued with a watershed approach. This would permit inclusion of stream corridors and lakes that feed the main stem New River.
2. Eliminate stocking of hatchery salmonids or alien fish species in the watershed.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 5

PROTECTION OF AQUATIC BIODIVERSITY WITH AQUATIC DIVERSITY MANAGEMENT AREAS

Due to confusion and conflicting interpretations of the words "preserve" and "reserve" Moyle and Yoshiyama (1992) use in their place the term Aquatic Diversity Management Area (ADMA). An ADMA is a water body or watershed that has as its top management priority the maintenance of local biodiversity. Other uses are permitted, but they are secondary to the primary goal. The intent of ADMAs is to systematically protect biodiversity before ecosystems become so degraded that crisis management through the ESA is necessary. Aquatic Diversity management Areas are identified as key watersheds and key waterbodies. An ADMA may be the water body itself or the watershed that contains the water bodies. All water bodies within key watersheds are ADMAs (see *Relationship of Key Watersheds to Key Waterbodies* for further explanation).

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Aquatic Reserve Design

The following six criteria are excerpted from Moyle and Yoshiyama (1994:11)to provide an aquatic context for the design of reserve systems. The text for each criteria was modified from the original publication to better describe the situation in the Klamath Mountains Province.

1. An ADMA must contain the resources and habitats necessary for the persistence of the species and communities it is designed to protect.

Design for an ADMA should be based on the largest and most mobile species on the assumption that their habitat needs will also encompass those of lesser known species. The boundaries of the ADMA will be based on the needs of fish, amphibians, and macroinvertebrates, including migratory species present for only part of their life cycles, and on the needs of conspicuous riparian organisms (trees, birds, mammals.).

2. An ADMA must be large enough to contain the range and variability of environmental conditions necessary to maintain natural species diversity.

In general bigger is better because small ADMAs are extremely vulnerable to natural and human-created disasters. Streams and their associated riparian corridors are particularly difficult to include in ADMAs because of their unidirectional flows, dendritic drainages, and variable nature. Stream ADMAs thus need to include tiny, intermittent headwaters as well as changing conditions downstream that permit the existence of longitudinal faunal zones (which often shift in location from year to year). For example, during years with relatively high flows during migration periods, salmon species will spawn high in the drainage system. Conversely, if migration occurs during drought conditions, salmon must spawn in lower river areas where habitat conditions may be more degraded.

3. ADMA integrity must be protected from edge and external threats.

External threats do not recognize boundary lines, and they include such factors as pollutants, diseases, and introduced species. Agents that affect the biota in any part of a drainage may eventually be carried by the water through its entirety. A particular insidious threat is the pumping of ground water that may eventfully dry up springs and streams essential for the survival of aquatic species. Edge and external threats can be reduced by creating wide terrestrial buffer zones around each ADMA, protecting water sources and upstream

portions of the watershed containing an ADMA. Natural flow regimes and cool stream temperatures are the best defense against invasions of alien species. In some instances the ADMA is protected from edge effects by key watershed designation of its watershed. Most of the freshwater ADMAs identified for the Klamath Mountains Province that are outside of key watersheds will have to rely on piecemeal protection of water quality due to high densities of human habitation.

4. An ADMA should have interior redundancy of habitats to reduce the effects of localized species extinctions due to natural processes.

Aquatic species frequently occur as small populations in narrow habitat types where populations come and go in relation to natural events and demographic processes. Adequate local redundancy therefore will allow recolonization to occur quickly and naturally. For lakes and springs, this means the entire body of water will need protection. For streams, a network of two or more tributaries of each order should be included in the ADMA.

5. Each ADMA should be paired with at least one other ADMA that contains most of the same species but is far enough distant that both are unlikely to be affected by a regional disaster.

6. An ADMA should support populations of organisms large enough to have a low probability of extinction due to random demographic and genetic events.

Small populations of organisms can become extinct as the result of natural fluctuations. Small populations also can experience "genetic bottlenecks" that reduce genetic variability and increase the potentially harmful effects of mutations (Lande 1995) resulting in reduced fitness and ability to adapt to local environmental change. This is particularly true for streams and river systems, where fish and invertebrates populations may frequently be driven to low levels by extreme floods or droughts. Under historical (pristine) conditions, populations from different streams eventually mix again--something that is not possible in n isolated stream unless enough of a drainage or neighboring streams is included to permit natural recolonization events (Zwick 1992; Frissell 1992).

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Key Watersheds

A system of water bodies (e.g. rivers, lakes, springs) will not protect aquatic biodiversity in the long run because of inherent fragmentation and the vulnerability of open aquatic ecosystems (such as estuaries) to degradation that accumulates in a downstream direction. Noss (1992) states that "Biodiversity can be conceived of as a nested hierarchy of elements at several levels of biological organization. Familiar levels of organization are genetic, population-species, community-ecosystem and landscape. Generally, as the level of organization ascends from gene to landscape (and beyond, to biosphere), so does the spatial scale at with these elements occur." Nested watersheds are logical landscape units on which to focus freshwater aquatic species conservation efforts (Frissell et al. 1986; Reeves and Sedell 1992; Naiman et al. 1993). Providing protection at the watershed scale is a science based technique designed to provide a high level of protection for the water bodies contained within them. Unfortunately watershed analysis and management by government agencies is often fragmented because agencies usually only address lands within their administration jurisdiction (e.g. watershed analysis for the Elk River watershed ends abruptly at the Forest Service boundary [USDA 1994]). Effective protection of watersheds will require identification with ecological rather than administrative boundaries.

Theoretical and practical considerations for watershed protection have stressed the need to protect those ecosystems which are relatively intact (Frissell 1992; Frissell et al. 1993; Doppelt et al. 1993; Thomas et. al in press). Real protection of important ecological processes requires more than merely a superficial understanding of how intact stream systems interact with their biota (in other words, there is more to stream protection than expanding the width of protective buffers). In concert with this general thesis of "protecting the best that's left," Moyle and Yoshiyama (1992:15) define Key Watersheds as representative watersheds more than 20 mi^2 in area that are still dominated by native organisms and natural processes or that have high potential to be restored to such a condition. Patterns of land ownership quickly become a practical factor in identifying and managing key watersheds for aquatic biodiversity. For at least two reasons key watersheds generally have a high proportion of public lands. First, relatively intact areas are generally limited to lands in public ownership, particularly wilderness and roadless areas. Secondly, public ownership is almost a political

necessity to obtain the protection measures needed for key watersheds (e.g., Northwest Forest Plan aquatic conservation strategy [USDA and USDI 1993:B11]).

The concept of a public lands key watershed system is consistent with the one developed for the Pacific Northwest by Johnson et al. (1991), who defined it as "a watershed containing (1) habitat for potentially threatened species of stocks of anadromous salmonids or other potentially threatened fish or 92) greater than 6 square miles with high quality water and fish habitat." More holistic applications include Frissell et al. (in preparation), who integrated all aquatic species, including plants, into the identification of priority areas.

Watershed analysis (USDA and USDI 1994:B20) is the analytic companion to the identification of Key Watersheds in the Northwest Forest Plan. A scientific analysis is necessary to identify important protection and restoration needs of future management. Since each watershed is somewhat unique, the specifics of watershed protection/restoration will be different for each watershed. Watershed analysis complexity increases as the size of the watershed increases. Bigger computers are not the answer. For example, mechanistic-reductionist techniques often used by the Forest Service (USDA 1994a:Appendix H) and Bureau of Land Management (USDI 1994b:Appendix U) to assess cumulative impacts from logging and road building in first to third order streams (1-20mi^2) are not reliable indexes for the complexities involved with management of biodiversity at the scale of medium sized, fourth to sixth order river basins (100-1000 mi2) (USDA 1994b).

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Relationship of Key Watersheds to Key Water Bodies

All riverine water bodies (e.g., rivers, creeks, ponds, estuaries) are embedded in watersheds (i.e., the land area or catchment which provides flow to the water body). Key Watershed names are synonymous with the water bodies within the Key Watershed. For example, if the Smith River watershed is designated a Key Watershed, then the entire stream network of the Smith River is considered an ADMA. Water bodies outside of Key Watersheds provided the ecosystem pool for Key Water Body designation. For example, the lower reach of Hayfork Creek contains habitat for a remnant run of spring chinook salmon in the South Fork Trinity River basin. The lower reach of Hayfork Creek can be identified as a Key Water Body without having to identify the entire watershed as a Key Watershed. Similarly, estuaries, lakes, and marine areas may be identified as Key Waterbodies where it is not politically practical or technically feasible to incorporate the water body within a Key Watershed. Key Water Bodies are a safety net for aquatic habitat that merits reserve status but cannot be located within a Key Watersheds.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Methods

Techniques were found to make a geographically explicit aquatic conservation plan for the Klamath Province. The methods are described in the temporal order used/suggested to create the reserve system. For example, watersheds must be physically identified before they can be rated. Watershed rating locally precedes identification of Key Watersheds. Key Watersheds were identified prior to the selection of Key Water Bodies. Corridors are identified last to link the ocean, key water bodies, and key watersheds. Theoretical considerations of reserve design guides the selections made.

Watershed Mapping

Base maps of the study area were constructed from 1:250,0-00 scale topographic maps available from the U.S. Geological Survey. Several topographic maps were taped together and then laminated to create a stable composite map. A standard 7 hole pin bar was used to maintain accurate registration. Watershed boundaries were drawn by following ridgelines indicated by contour line patters.[6] The larger named creeks and rivers were the primary basis for determining which watersheds would be mapped, but there were exceptions. For example, the upper portions of some streams were mapped as separate watersheds even though there was no name change to the creek or river (e.g., upper South Fork Trinity River). Most watersheds smaller than 2 mi^2 area were not mapped because of limitations of map scale and time constraints.

Watershed mapping using 1:250,000 USGS maps lacked accuracy when compared to maps produced with USGS 1:100,000 scale database. If USGS databases at 1:100,000 or 1:24,000 are available, it is recommended that they be used to produce a map showing the stream network for the planning area. Ridgelines (watersheds) can be accurately delineated by interpolating between the headward tips of adjacent stream networks.

Concentrating watershed mapping on larger watersheds simplified and expedited analysis but smaller watersheds (less than 2 mi^2) could be added at any time. Each watershed was a unique polygon that was digitized into a Geographic Information System (GIS). The GIS was capable of conducting analysis and reproducing all or selected portions of the original mapping done by hand on frosted mylar overlays. The use of a GIS allows for quick integration of data that becomes available from other studies or planning efforts. For example, distribution of prime fisher habitat can be quickly compared to watershed ratings.

Watershed Hierarchy

Each watershed that drains into the Pacific Ocean was identified as a hierarchy level "A" watershed. Depending on watershed area, each of these level A watershed. Depending on watershed area, each of these level A watersheds was sequentially subdivided into 2-6 levels of overlapping or nested watersheds. Each level of the hierarchy was based on relative position in the drainage network (Fig. 2). The highest level of the hierarchy were watersheds that drain directly into the ocean (level A watersheds). The second level of the hierarchy (level B watersheds) were tributary watersheds to main stem rivers and creeks that drain directly to the ocean; the third level of the hierarchy (level C watersheds) contained tributary streams that flowed into the main stem streams of level B watersheds; and so on down the hierarchy to level F watersheds. Within each level of the hierarchy there is no overlapping of watersheds. For example, no level B watershed overlaps any other level B watershed. Lower levels of the hierarchy are nested within each level above. For example, all hierarchy level F watersheds are overlapped by 5 other watersheds (each with increasing watershed area).

Codes

Each watershed was assigned a ten digit watershed code that identified its hierarchy level, larger watersheds to which it contributes flow, and its rank order rainage size compared to sister watersheds at the same hierarchy level (Fig. 3). Watershed codes for hierarchy levels A-D were numbered from 01 to 99 based on drainage area. The tributary stream with the greatest watershed area is coded 01, the second largest tributary is coded 02, and so on. Hierarchy levels E and F were numbered from 1-9. If more than 9 tributaries require identification, letters were substituted in alphabetical order to code the smallest level E and level F watersheds.

Codes for Aquatic Diversity Management Areas are the same as the watershed code in which they are located. Trailing zeros of the watershed code are dropped and replaced with an upper case letter representing the type of water body: R = river or creek; E = estuary; L = lake or pond; M = marine area. For example, the Sixes River estuary is designated 6E and adjacent marine ADMA is designated 6M (the "6" denotes that the Sixes River watershed is the sixth largest level A watershed in the Klamaths). Marine areas not associated with a large river were designated MA, MB, MC, MD etc. If more than one ADMA occurs on a main stem river or creek, they are designated RA, RB, RC etc.

Rating Classes

Each watershed was rating for potential identification as a Key Watershed. The rating classes described by Moyle and Yoshiyama (1994:13) were used. Five classes form a continuum from rare pristine wilderness (class 1 waters) to artificial refuges consisting of ponds and tanks (class 4 and 5 waters). The first 3 classes apply to natural watersheds and water bodies. Classes 3 and 4 apply to artificial water bodies created to support species whose natural habitat has been greatly reduced or degraded. Watersheds and water bodies were assumed to be class 3 (seriously degraded) unless information was available to upgrade to class 2. Marine areas were assumed to be class 2. The watershed rating applies to the watershed as a functioning whole with particular attention to the ecological integrity of its main stem channel. Portions (individual reaches or segments) of main stem channels were assumed to have the same rating as their respective watershed unless site specific information and indicated otherwise.

Criteria typically used for rating were: amount of watershed in public ownership, pattern of public ownership, wilderness designation, late successional reserve designation, identification as a Key Watershed in Northwest Forest Plan, identification as Aquatic Diversity Area by Oregon Chapter American Fisheries Society, presence of roadless areas, road density, Wild and Scenic River designation, dams, alien or nonnative species, dominance of hatchery fish, significant water withdrawal, deforestation, mining activity, density of

homes, and presence of rare or threatened aquatic animals (Table 3).

INSERT TABLE 3. "CRITERIA FOR RATING WATERSHEDS. A "+" INDICATES THAT THE FACTOR POSITIVELY INFLUENCED THE RATING TOWARDS A CLASS 2 OR CLASS 3 DESIGNATION....."

Several criteria were used in determining the relative importance or significance of anadromous species in a particular watershed. For example, a class 2 rating based primarily on the presence of a threatened species of anadromous fish required observations within the past 10 years. Other criteria for establishing a class 2 rating was distribution within the watershed, fish density, origin of stock (native or nonnative), production type (hatchery or wild), and frequency of occurrence during past 10 years.

Selection of Key Watersheds, Key Water Bodies, and Migration Corridors

First, a network of Key Watersheds was created by selecting all watersheds rated class 1 or 2. Since it is impractical or not technically possible to ensure ecological integrity and maintenance of aquatic biodiversity entirely with a network of Key Watersheds, it was necessary to identify additional Key Water Bodies. These water bodies (not watersheds) were selected from class 3 watersheds and marine areas. Key Water Bodies were primarily chosen from: (1) water bodies identified in the Pacific Coast Ecological Inventory (USDI 1981); (2) maps of essential salmon habitat produced by the Oregon Department of Wildlife for the Oregon Division of State Lands; (3) important water bodies identified in the Klamath Basin Plan; and (4) water bodies providing critical habitat to management clusters. Finally, migration corridors between the ocean, key watersheds, and key water bodies were identified based on existing distribution of salmonids.

Selection of Key Water Bodies outside of Key Watersheds emphasized the selection of larger water bodies where upstream water quality is more of a factor than manipulation of adjacent riparian lands and uplands (see Vannote et al. 1980). There are many reasons for taking this approach which differs from the relatively small ADMAs prescribed by Moyle and Yoshiyama (1992:) for short term protection (next 50 years).

1. Selection of large water bodies as ADMAs is complimentary to Tier 4 of Moyle and Yoshiyama's strategy, a landscape approach. Attainment or maintenance of ecological function requires systematic protection throughout the hydrologic source area of the water body.

2. Larger water bodies are the most important for maintaining ecological integrity and biological diversity of some groups, such as salmonids. Species such as chinook salmon require large creeks and rivers for spawning. The minimum size for a native population of spring chinook salmon is a watershed > 1000 mi^2.

3. Many of the larger water bodies selected as Key Water Bodies are already in de-facto public ownership (e.g. marine areas, navigable waterways). Acquisition of adjacent private lands and water rights may not be necessary to adequately protect larger water bodies.

4. Key watershed designation of tributary streams complements the desired goal of ecological integrity and biological diversity in the larger water bodies.

5. A larger group of society has an interest in protecting biodiversity in large rivers, lakes and estuaries.

6. Recovery of larger water bodies takes much longer than smaller ones. The incremental degradation of larger water bodies over the short term (which is currently occurring) may prove to be irreversible in the foreseeable future.

Selection of Key Watersheds and Key Water Bodies in this aquatic plan included a systematic analysis of all watersheds in the planning area at several spatial scales. Previous efforts to select priority areas (Northwest Forest Plan, Oregon Chapter American Fisheries Society) provided criteria and rationales for why certain watersheds were chosen but failed to explain why others were not selected. The Northwest Forest Plan was not designed to evaluate watersheds and water bodies (e.g., estuaries) that were not in public ownership. the lack of a systematic analysis for all aquatic areas in previous planning efforts was corrected with the methods used in this aquatic plan.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Results

Watershed Mapping

A mechanical data base (Geographic Information System) capable of producing geographic delineation of watersheds and water bodies in the Klamath Mountains Province is available from Earth Design Consultants[7] All data in the database (except for text in memos) is displayed in Appendix A.

[7] Earth Design Consultants, 1130 NW Walnut Blvd., Corvallis, OR 97330; Phone: (541) 752-1337 FAX: (541) 752-6975 E-mail stritt@earthdesign.com or pfrost@earthdesign.com.

Watershed and Water Body Ratings

Ratings for watersheds and water bodies are listed in Appendix A and illustrated in Figures 1, 4a, 4b, 5a, and 5b. Analysis of watersheds at the river basin scale (level A watersheds) indicates that only 5 coastal watersheds received a class 2 rating (Fig. 1). The four largest watersheds in the Klamath Mountains Province (Klamath, Rogue, Trinity, and Coquille) are class 3 (degraded). Analysis of Rogue River tributaries (level b watersheds) reveal that some tributaries merit class 2 designation (Fig. 4b). Only Shasta Costa Creek was designated pristine (class 1). Finer scale analysis of the Rogue Basin at watershed levels C-E identified more pristine watersheds associated with wilderness and roadless areas (Fig. 5b).

Analysis in the Rogue Basin in representative of the Klamath Province as a whole. Coarse scale watershed mapping (Fig. 4a) resulted in a lower percentage of the study area with class 1 or class 2 rating than finer scale analysis (Table 4). The median watershed area of degraded class 3 watersheds (xxxx acres) was found to be much greater than the median size of pristine watersheds (xxxx acres) (Fig. 6). The larger watersheds, which have the greatest capacity to express aquatic biodiversity, have been severely degraded through cumulative effects of Euro-american activities over space and time.

Table 4. Percent of planning area in watershed rating classes. Results from coarse scale mapping are compared to fine scale mapping. Marine areas were excluded from analysis.

rating class	Coarse Scale		Fine Scale	
	Acres	Percent	Acres	Percent
1 (pristine)				
2 (recoverable)				
3 (degraded)				
Totals				

The Reserve System: Key Watersheds, Key Water Bodies, Marine Areas and Corridors

The reserve system for the Rogue River basin consists of class 1 and class 2 watersheds (Key Watersheds), essential river segments and estuary (Key Water Bodies), marine areas and connecting corridors (Fig. 12). Key Watersheds, Key Water Bodies, and Marine Areas are managed as Aquatic Diversity Management Areas.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

Discussion/Recommendations

Key Watersheds

since a major criteria in identifying class 1 and class 2 watersheds was the amount and distribution of public lands within the watershed, it's not surprising that federal lands provide the land base for Key Watersheds. Although the proportion of public lands identified as Key Watersheds is relatively high (xx %), the proportion of the entire land area (public + private) in Key Watersheds is about xx percent. This is consistent with Noss's recommendation that about half the land area be dedicated to conservation purposes (Noss 1992).

From a policy perspective, it would appear that the Aquatic Conservation Strategy (USDA and USDI 1993:B9-23) is adequate to protect biodiversity on public lands. In practice, this has not been the case.

Examination of Forest Service actions during 1994-1995 indicate that conflicts between exploitive activities (logging, mining, road use etc.) and aquatic habitats are not being resolved in favor of aquatic species. The Siskiyou National Forest approved plans for harmful placer mining in both Key and non-key watersheds with no indication of higher standards of protection for Key Watersheds. Miners often ignore procedural requirements for approved mining plans with indiscriminate and sometimes malicious use of backhoes and crawler tractors in stream channels. State and federal regulations for mining disturbance are flouted with impunity. The Forest Service claims that the 1872 mining law and Forest Service regulations take precedence over the Aquatic Conservation Strategy.

Besides increased interest in placer mining, logging of old growth forests has increased since the spotted owl injunction was lifted. The Siskiyou National Forest's Buckhorn Timber Sale justified road building and old growth logging in Elder Creek by claiming that planned road obliteration in the watershed would offset any new impacts from proposed new road construction. Thus, the restoration program of the Aquatic Conservation Strategy wa used as mitigation for renewed old growth logging and harmful road construction. Nowhere does the Aquatic Conservation Strategy suggest that restoration should be used to mitigate new logging impacts, but that doesn't stop the Forest Service from using restoration projects to benefit its timber program.

Blanket prohibitions of logging on federal lands is not the answer. Logging of small diameter understory trees may be helpful in Key Watersheds to reduce the risk of hot wildfires that can kill overstory trees and increase erosion (see USDI and USDA 1995). The risk of wildfire is lowest along the Oregon coast, but increases to the south and east. The greatest wild fire risk occurs in the Trinity Watershed. A prohibition of all logging would seriously reduce managers ability to reduce fuels that have increased with fire suppression policy.

Recommendations for Key Watersheds

1. Expand key watershed designation in the Northwest Forest Plan to class 1 and class 2 watersheds identified in Fig. 5a and Appendix A.
2. Withdraw all federal lands in riparian reserves from mining.
3. Prohibit all types of placer mining on federal lands.
4. Establish reduced road density targets for each Key Watershed and provide budget for attaining this objective.
5. Prohibit new road building or road reconstruction in Key Watersheds, particularly roadless areas within key watersheds.
6. Eliminate access for wheeled vehicles to watersheds that are largely uninfected with Port Orford cedar root disease.
7. Prohibit overstory removal of mature and old growth forest canopy in the transient snow zone (> 3,500 ft.).
8. Prohibit removal (commercial logging) of trees greater than 24 inches diameter.
9. Restore conifers to riparian areas where hardwoods dominate.
10. Institute fire suppression policy that will restore historic (pre-contact) fire regimes in Key Watersheds. The desired result is more acres burned with low intensity burns.

With respect to implementation, Moyle and Yoshiyama (1994:16) recommend that several watersheds be identified for intensive management for aquatic objectives to expose the inevitable conflicts associated with large scale land management. Successful resolution of these conflicts could provide models for efforts to protect key watersheds elsewhere.

Recommendation: Wooley Creek, North River Smith River, Elk River, and East Fork Illinois River should receive intensive management for aquatic objectives.

Although detailed techniques for watershed analysis are known (Furniss et al. 1994; USDI 1994; Grant 1988) and examples of the application of these techniques exist (Frissell and Liss 1986; Nawa et al. 1991; Ryan Burkett 1989), the watershed analysis produced under direction of the Northwest Forest Plan have drifted from their original focus on fisheries and aquatic species (Higgins 1995).

Recommendation: Watersheds analysis should include funding for peer review from independent reviewers. A draft watershed analysis should be circulated to reviewers for 30 days and suggestions incorporated into the final version. A third party may be necessary to resolve technical disputes between reviewers and authors of watershed analysis.

Key Water Bodies

Most Key Water Bodies are in watersheds with a high proportion of private or non-federal land. Essential freshwater habitat used by salmonids is often viewed by property owners as a liability because of restrictions placed on exploitation of adjacent wetlands and penalties for polluting surface waters. The current regulatory system provides no means for compensating land owners who have the burden of providing salmon with a place to live and reproduce. Anglers, on the other hand, may freely take a large number of wild fish without having to compensate land owners where wild fish spawn and rear. Perhaps land owners could be given an incentive to maintain high quality aquatic habitat by compensating them with quantifiable fishing rights in proportion with the amount of habitat they protect.

Recommendation: A new economy based on stream and watershed protection would be established on an experimental basis in a large river basin such as the Rogue, where protection of private land habitat is important. The intent of this habitat based economy is to provide some incentive for property owners to perceive stream habitat and the presence of salmon as an asset, not a liability. Private land owners could apply for fishing rights which they could then sell in the money economy. No doubt implementation would be fraught with unintended consequences but this is no reason not to try a progressive solution on an experimental basis. The following procedures would be implemented by the state fisheries agencies in cooperation with county government. The Rogue Basin is used to illustrate how habitat protection would be exchanged for fishing rights.

1. All land owners with significant holdings would have their lands assessed by a qualified habitat biologist for existing watershed protection and production of salmonids or other declining aquatic species. Each tax lot would be assigned a certain number of "habitat equivalents." Habitat equivalents would be periodically evaluated and printed out each year along with the county assessors dollar values for taxable property.

2. To receive merchantable fishing rights, the land owner must apply one year in advance. Lands would be checked at least once during the year to ensure that the required habitat was actually maintained in a desirable condition.

3. After one year, the Rogue basin land owner receives fishing rights in the form of tags for adult Rogue River trout, steelhead, or salmon. Tags are good for two years. There would be no direct cash subsidy to land owners by government.

4. Rogue anglers may not kill and possess a trout, salmon or steelhead unless they possess a Rogue River tag which is attached to the fish upon taking. Market forces (i.e., the willingness to pay to kill a fish) would establish the cost of tags.

5. The state fisheries agency could not issue an excessive number of tags that could jeopardize desired escapement.

6. There are no fines levied or criminal charges with this system. If habitat is degraded by human or non-human events the habitat value decreases.

7. Artificial stream structures or hatch boxes are not given habitat value. Emphasis is on natural habitat and natural processes (i.e. high water quality due to mature forested streams and watersheds).

8. Catch-and-release anglers would have to have at least one tag in their possession (no free lunch).

The Key Water Bodies in freshwater area were often associated with alluvial valleys and alluviated canyons which have high potential for interaction with adjacent floodplain riparian forests. These segment types have high densities of salmon spawning compared to other segment types and have potential for developing important off channel winter rearing areas for coho salmon.

Recommendation: Wetlands associated with lakes, estuaries and main stem rivers should be acquired by government agencies, non-government groups, individuals, or corporations and dedicated to conservation purposes.

The National Resource Council (1995) and others have found that the use of hatchery fish pose a serious problem for maintaining and restoring anadromous fish populations.

Recommendation: In the short term (over the next 10 years), artificial propagation and release of hatchery salmonids should be phased out at Cole Rivers Hatchery, Iron Gate Hatchery, Trinity River Hatchery, Bandon Hatchery, and Rowdy Creek Hatchery. All artificial propagation should be eliminated unless captive breeding/ artificial propagation is demonstrated to be needed as part of an Endangered Species Act recovery plan.

The National Resource Council (1995) and Oregon Trout (xxxxxx) have documented overfishing in the mixed stock fishery that occurs in the ocean.

Recommendation: In the long term (over the next 20 years), ocean harvest of anadromous salmonids should be phased out and replaced with terminal fisheries.

Marine Areas

Upton (1992:24) reports that establishing of marine sanctuaries under the Marine Protection Research and Sanctuary Act is a valuable conservation strategy and recommends that the Marine Fishery Reserve concept be used in the case of slow growing, long-lived species such as snappers, grouper, and Pacific rockfish.

Recommendation: All or a portion of each marine area should be designated a Marine Fishery Reserve where no fishing would be allowed.

Migration Corridors

Streams and rivers are obvious migration corridors for anadromous fish (Fig. 10). Migration patterns of salmonids and marine mammals are less well known but do not seem to have been affected by humans. Dams have significantly reduced the amount of habitat available in the Klamaths, especially for spring chinook salmon. Food and nutrient cycling created by salmon carcasses has been eliminated upstream of dams ( ). Besides the loss of carcasses, salmon eggs and juvenile fish are no longer available as a food supply. Downstream of dams, water chemistry, stream temperatures, flow regimes, and sediment transport are greatly altered. Fundamental changes in hydrology are usually found to be detrimental to aquatic species. Human manipulations of one ecological factor, such as temperature, intended to favor salmonids usually has detrimental consequences for others. Even with human controlled releases of stored water during critical summer periods, large die-offs of adult spring chinook have occurred on the Rogue River.

Besides the high dams on the Rogue, Applegate, Klamath, and Trinity rivers, which have blocked all anadramous migrations, there are numerous smaller dams used to divert water for agriculture. Savage Rapids Dam on the Rogue River has been killing fish for over 70 years (USDI 1995b). In the Illinois River valley and other agricultural valleys, irrigators often use heavy equipment to create dams with river bed sediments. During drought years when fall rains fail to materialize (which seems like every year) these push-up dams can be migration barriers. During November 1995, fall chinook salmon failed to migrate up the East Fork Illinois River because at least two agricultural diversion dams blocked upstream migration past River Mile.

Agriculture has converted almost 70 percent of the wetlands in the Klamath Marsh area to agricultural production. Prior to wetlands conversion, clean, cool water from Klamath Marsh wetlands assured high water quality for migrating juvenile salmonids in the Klamath River main stem. Fish kills of juvenile fish have occurred on the Klamath ( ).

Recommendations:

1. Remove Savage Rapids dam as recommended by the Bureau of Reclamation (USDI 1995b).

2. Breech and remove the partially completed Elk Creek dam.

3. Restore the historical (natural) storage capacity of the Klamath Marsh.

4. Eliminate or greatly reduce agricultural pollution of the upper Klamath River, Shasta River, Scott River, Bear Creek, Butte Creek, and Illinois River. In some instances this can be accomplished with 100-2000 ft. wide riverine forests where grazing is excluded.

5. Establish incentives for organic farming, particularly on Klamath Marsh wildlife refuges.

6. Seek out alternatives to municipal waste disposal into rivers. Decrease the quantity of water withdrawn by sewage treatment plants and improve the quality of water released (difficult to accomplish with a 5 percent human growth rate in Josephine and Jackson Counties, Oregon).

7. In the long-term, dams on the Applegate, Rogue, Klamath and Trinity will need to be removed. Preparation for dam removal can begun by converting the 100-year floodplain and adjacent terraces to mature riverine forests (about a 1/2 mile swath for most large rivers). Due to sediment accumulations, removal of most dams will also require some treatment of stored sediments (this could also provide aggregate for road construction). It would probably be best to remove dams well before sediment accumulation has made them useless for water storage.

8. All hatchery-produced fish should be eliminated to promote colonization of new habitats by wild produced fish of native stock.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 6

PRIORITY WATERSHEDS FOR PROTECTION OF PORT ORFORD CEDAR

Methods

The percent of stream miles infected with the fatal root disease *Phytopthera lateralis* was estimated from maps that illustrated both uninfected and infected riparian stands. Maps showing the status of cedar were obtained from the Forest Service. Data about the presence of cedar or the disease was not available for most Bureau of Land Management lands and private lands. Watersheds were designated as infected or not infected where quantitative data was incomplete about the proportion of the stream channel infected.

Results

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 7

CURRENT AND HISTORIC SALMON DISTRIBUTION

Methods

Data about present and historic salmonid distribution was obtained from the Oregon Department of Fish and Wildlife, the Wilderness Society, U.S. Fish and Wildlife Service, and the Forest Service.

Results

Existing migration corridors and distribution of anadromous salmonids is compared with historical distribution in Figure 10. Approximately xx percent of habitat in the Rogue River Basin, xx percent in the upper Klamath basin, and xx percent in the Trinity River Basin is no longer accessible to anadramous fish because of dams.

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 8

STREAM CLASSIFICATION

Methods

Water bodies were classified with Frissell's valley segment classification system (Frissell 1992). Physical features discernable on f1:24,000 topographic maps was the primary source for classifying stream segments (Nawa et al. 1991:64-75). Interpretation of topographic maps was supplemented with National Wetlands Inventory maps available from Oregon Division of State Lands and the Pacific Coast Ecological Inventory (USDI 1981). Segment classes were mapped directly onto USGS 1:24,000 topographic quads and digitized into a Geographic Information System.

Results

Distribution of estuaries, low gradient alluvial valleys, alluviated canyons, and canyons are illustrated in figure 11.

Recommendation: A one percent random sample should be field verified for accuracy of classification and documentation of presence of aquatic animals (see Nawa et al. 1991:75).

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

CHAPTER 9

CONCLUSION

A burgeoning human population with an insatiable appetite for material wealth has resulted in societal addiction to techniques of ecosystem destruction. It would be naive to think that America's capitalist society will act with the wisdom of Aldo Leopold and the compassion of Saint Francis any time soon. Nevertheless, in the coming years it is certain that all species will ultimately depend on the disciplined behavior of humans towards the earth. Surely our society has the capacity to correct the harmful policies and technologies of the past and certainly we have a moral obligation to develop new paradigms of behavior that allow all species, including humans, to flourish. Conservation biology provides an ecological path towards restoration. Do we have the will to use it?

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

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Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

APPENDIX A

KLAMATH MOUNTAINS PROVINCE WATERSHEDS, WATER BODIES AND MARINE AREAS

Appendix A is a partial printout of a mechanical database available from Earth Design Consultants called the Klamath Mountains Water Bodies database. Descriptions of fields in the water bodies database. Descriptions of fields in the water bodies database and corresponding headers in Appendix A are listed below. Fields that are not printed in Appendix A are marked with an *.

INSERT TABLE "WATER BODIES DATABASE FIELDS"

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

APPENDIX B

WATERSHED ANALYSES IN THE KLAMATH MOUNTAINS PROVINCE

Appendix B. Watershed analyses in the Klamath Mountains Province. While watershed analysis and accompanying recommendations may eventually be incorporated into management plans, the analyses listed here are primarily scientific studies intended to support planning and policy decisions in the respective watersheds. Actual management plans and projects (which may also include supporting watershed analysis and environmental impact statements) are listed in Appendix C.

INSERT TABLE

Return to top of page.
Return to 1996 Interim Report by Richard K. Nawa -- Table of Contents.

APPENDIX C

PLANS AND PROJECTS THAT PERTAIN TO ALL OR PORTIONS OF THE KLAMATH MOUNTAINS PROVINCE

Appendix C. Management plans and projects that may affect aquatic species in the Klamath Mountains Province. Plans and accompanying environmental impact statement (EIS) contain data and analysis for aquatic species in the area covered. Federal agency decisions are sometimes published in a separate document called the Record of Decision (ROD).

INSERT TABLE

INSERT FIGURE 1 (4 MAPS)

December 3, 1996

Jay Nicholas
ODFW
28655 Highway 34
Corvallis, OR 97333

Dear Jay:

At your request, I facilitated an Oregon Chapter AFS review of the Life Cycle Model section of the Coastal Salmon Restoration Initiative (CSRI). Although I sent this section to 12 reviewers, I received just three reviews. Following is a brief summary of the reviews. The detailed reviews are attached and will also be forwarded to Tom Nickelson and Pete Lawson.

In my request for reviews, I posed several questions:

1. Are the parameters used in the model adequate for assessing extinction probabilities?
2. Is the general scope and approach of the model reasonable for assessing population viability?
3. Are uncertainties and assumptions in the model adequately stated and are cautions about the conclusions adequate?
4. Is the scope of the model sufficient to address both population (stock) effects as well as species range

effects?

Reviewers felt the draft was a reasonable approach for modeling habitat as a limiting factor and for restoration and recovery planning. Reactions about the applicability of using the model for assessing population viability or assessing extinction risk were mixed. Concern was raised about the use of certain parameters in the model, lack of sensitivity analysis for the parameters, lack of a specified age structure for the population, lack of data to estimate the accuracy of certain parameters or to test the validity of the model, and lack of caution in the manuscript about results from the model or limitations of the model.

Perhaps one of the largest problems to obtaining a review of the model was that the draft manuscript was fairly incomplete because of the rushed timelines this fall. As a result, the reviews I did receive expressed much concern about the lack of background information and detail, analysis detail, and data from which to evaluate the accuracy and validity of the model. In addition, this portion of the CSRI lacks a detailed discussion about the implications of the model results on the question of sustainability and recovery of coastal coho salmon.

In conclusion, although the model appears to have some applications in assessing the sustainability of coho salmon, the model should be subject to a more rigorous peer review than was possible this autumn. Reviewers should include modelers, statisticians, and scientists who have experience in population viability analysis.

Thank you for the opportunity to review this section of the report.

Sincerely,

Kirk Schroeder
Past-President

c Tom Nickelson
Pete Lawson
Jim Martin

Return to top of page.

Mr. Kirk Schroeder
President
Oregon Chapter AFS
PO Box 722
Corvallis, OR 97339

Dear Mr. Schroeder:

I have reviewed the preliminary MS by Nickelson and Lawson and I feel that as an initial approach to modeling the problem of habitat as a limiting factor this approach does have some merit. Conceptually the model makes sense, is relatively simple, and serves as a useful organizational tool for addressing this complex problem. The MS however, is difficult to review because few results are presented and much of the important and necessary background information was not included. As an example, there are no regression statistics and estimates of partial variance provided for equation one, perhaps the most influential estimator in the model. This regression is used to estimate maximum smolt capacity and ultimately spawner numbers at "full seeding", an integral part of the model. Information on colinearity, partial variances, residuals, and other facets of this regression would be useful in judging its usefulness for predictions of smolt capacity.

Results from the model as currently parameterized must be interpreted carefully because the influence of many important factors such as spawner numbers, fish size, environmental regimes, coho biology, and other factors were not or could not be addressed. For example, the empirical data used for parameterizing the model were collected in the late 80's and early 90's, a time when spawner numbers were at record low levels. Coho size is also smaller now as compared to the 70's, so fecundity estimates used in the model may be too high. the environmental regime during this period, with the exception of the winter of 95/96, produced below average flows in the coast range. These and many other factors limit the scope of the results. Therefore, any

conclusions from this effort must be cautious and appropriately caveated, to a much greater extent than in the current MS. In previous publications on this model the fact that results were contingent on spawner number was always mentioned.

From reading the MS it appears that the authors did a fair amount of sensitivity analysis, but again few of these results are presented so it is difficult to interpret conclusions drawn elsewhere in the paper. As currently explained in the MS, harvest rates will probably not be addressed adequately in the analysis that is planned. As described on page 6, only low exploitation rates are to be investigated. The current value, primarily from hooking mortality in the chinook fishery, is based on conjecture and old data and could be much higher than the 13% used by managers. A recent (1995) ODFW analysis of mortality rates on Tillamook Bay coho found them to still be very high. What exploitation rates were used in the analysis described on page 7 for Tillamook Bay coho?

In conclusion I think the approach could be useful if proper cautions about results and limitations are stated. The MS, however, as currently written cannot really be reviewed in a normal peer review sense.

Sincerely,

W.J. Overholtz
Population Dynamic Branch
NEFSC
Woods Hole, MA 02543

Return to top of page.

September 12, 1996

Kirk Schroeder, President
American Fisheries Society
Oregon Chapter
P.O. Box 722
Corvallis, OR 97339

Dear Dr. Schroeder,

Enclosed please find my review of "Application of a habitat-based life cycle model to the question of sustainability of Oregon coastal coho salmon" by Nickelson and Lawson. I am afraid that I was unable to address some of the questions you posed in your cover letter. This may have been due to shortcomings in the manuscript or shortcomings in my own familiarity with the subject matter, I am not sure which. In any case, good luck with your review.

Sincerely,

Grant Thompson
Fishery Biologist

Review of "Application of a Habitat-Based Life Cycle Model to the Question of Sustainability of Oregon Coastal Coho Salmon"
By Thomas Nickelson and Peter Lawson

Grant Thompson

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

Alaska Fisheries Science Center
Resource Ecology and Fisheries Management Division
7600 Sand Point Way NE., Seattle, WA 98115-0070

Per request of the Oregon chapter of the American Fisheries Society, I reviewed a draft manuscript describing the habitat-based life cycle model developed for Oregon coastal coho by Nickelson and Lawson. I should note right up front that I am not a salmon biologist and have little familiarity with the models and methods described or referenced in the manuscript. Therefore, there is a good change that many of my comments (below) may simply reflect misunderstandings on my part. Also, it appears to me as though the manuscript (being only a draft) might still be in fairly rough form. Had I been reviewing a more final version, I suspect that at least some of the concerns noted below would have already been addressed. My specific comments follow, not necessarily in priority order.

1) In general, this struck me as a reasonable sort of model, of the type one might typically expect to see used for assessing population viability of Pacific salmon. The manuscript seemed rather short on results and conclusions, however. I could not find where most of the results advertised in the abstract were presented. It was unclear to me how one would evaluate the adequacy of the model based on the information included in the manuscript.

2) Like other common PVA-type models, this one looks fairly complicated to me, with lots of parameters to estimate. It appears as though even in the most data-rich situations, the available data are still insufficient to estimate all of the parameters, and so I wonder what is to be done in data-poor situations. I understand that the model has been applied to ten large basins and two small ones, and that in these cases it was necessary to use proxy values for some parameters. How many other basins are there, and what is the likelihood of obtaining the data necessary to parameterize the model for application thereto? I am not suggesting that the present model be abandoned, but perhaps it would be useful to pair it with a similar model with more modest data requirements.

3) Is it possible to estimate variances for some of the model parameters? I note than an *ad hoc* sensitivity analysis has been performed for certain parameters, namely spawner numbers, marine survival rate, and exploitation rate (bottom of page 5, top of page 6), although I could not find where the results were presented. Were the ranges for these parameters chosen subjectively, and if so, would it be possible to consider parameter uncertainty a bit more formally?

4) The function argument in Figure 2 appears to be C but in Equation (3) it is listed as C^2. I assume that C is correct, as the points in Figure 2 would not be fit very well if it were C^2.

5) I suspect that anyone familiar with coho will already know this, but I could not find any (explicit) mention of the time of year in which spawning occurs (sorry if I missed it).

6) Point (2) on page 4 indicates that the sex ratio is 1:1 if $n \geq 10$ but that a binomial distribution is used if $n < 20$. One of these is wrong, right? Also, why not just use the binomial distribution in all cases? Finally, in what sense does use of a binomial distribution introduce a depensatory effect, given that the expected number of femals is still $n/2$?

7) By my understanding, the model is stochastic because it introduces demographic stochasticity (sampling error) in the sex ratio (at small population sizes) and because it incorporates environmental stochasticity (process error) in three survival rates (egg-to-parr, over-winter, and marine). The error term in the egg-to-parr survival rate is clearly lognormal and multiplicative, while the error term in the over-winter survival rate appears to be normal and additive ("*adding* an error term," point (5) on page 5), and the error term in the marine survival rate appears to be normal and additive as well ("*plus* an error term," point (6) on page 5) although the text claims that "the resulting distribution of errors is approximately lognormal." I assume that all three survival rates are simply multiplied. If this is correct, why not just assume a single multiplicative lognormal error term for the product, rather than three separate terms (which, if they were all multiplicative and lognormal, would imply the same thing)? Also, it looks to me as though the next logical place where some sort of stochasticity might enter the model would be in the egg deposition phase. Has this been considered, or would it just add another multiplicative lognormal error term that would be (mathematically) indistinguishable from the others?

8) Why should the standard deviation of the average survival rate be equal to the square root thereof (point (6) on page 5)? Also, is it really the standard deviation of the *average* (which I assume decreases with the

square root of sample size) that should be used here, or something like the standard deviation of the *residuals* (as in the egg-to-parr and over-winter survival rate error terms)? Also, what does it mean to choose a random deviate "from the mean?"

9) I am a little concerned about the way in which the sampling fraction is treated in the model (middle of page 5). Estimating total population size for the basin as the ratio between the population size for the sampled portion and the sampling fraction seems reasonable if the sampled portion is representative of the total basin habitat. Is this the case? Is the sampling design random or stratified?

10) I do not see how the factors listed in paragraph 4 on page 6 permit an examination of the influence of basin size. What does the use of the Trask hatchery survival and exploitation rates tell one about the influence of basin size? Are Cummins Creek and South Depoe Bay Creek being contrasted with each other or with the other streams? Also, how does one "observe" a value which is only "assumed" (line 2 in paragraph 4; also next-to-last paragraph on page 7)?

11) The final two sentences on page 5 proved difficulty for me to follow. To say that the problem of how to distribute spawners across reaches was "addressed by entering spawners in each reach" begs the question. if the point of the exercise is "to examine the effect of initial population size," what does it mean to choose distributions "from generations that resulted in a level of population that was to be tested?" I am confident that the authors did something reasonable; I just do not know what it was.

12) The estimate of Coos Bay spawners appears to be about ten times higher than that predicted by the regression (Figure 6). Can this really be explained (page 7, middle paragraph) by lower harvest rates (given that the rates for the other streams appear to be only about 13%) and better ocean conditions (given that the fish from the various systems are all migrating great distances through the same ocean)?

13) How was the hindcasting (last two paragraphs on page 7) conducted? What is the difference between a rate which is "built directly into the simulation model" and an "input parameter" (next-to-last paragraph on page 7)? How does one determine the "appropriate rates?" I am guessing that the exercise went something like this: a) Treat the spawning survey estimate of abundance in the terminal year (i.e., 1993, 1994, or 1995) as the true number of spawners for that year. b) Set the marine survival rate in all years equal to twice the survival rate of smolts released from Trask Hatchery. c) Set the exploitation rate equal to the "appropriate rates for each year." d) Set all other rates and parameters according to Equations (1-6). e) Run the model backwards (hindcast) to the initial year (i.e., 1977, 1978, or 1979). f) Check to see how the model estimates of initial abundance compare with the spawning survey estimate of abundance in the initial year. Is this right? If so, why is it important to hindcast rather than forecast? Finally, is the last sentence on page 7 complete (it is missing a period, but I am not sure what else)?

14) To what year do the "estimates" in Table 1 correspond (the initial year, the terminal year, or something else)? How about the "median" values in Table 2?

15) Although the model's median estimates all fell within the 95% CI of the spawning survey, I note that two out of the three spawning survey estimates fell outside the 95% CI of the model. Should this be a concern?

16) In what sense does Figure 1 represent the "performance" of the HLFM? I get the impression that the authors view a positive correlation as confirmation of good model performance, but I do not see why this should be. For example, suppose streams A, B, and C have capacities of 0.5, 1.25, and 2.5 smolts per m^2, but that the seeding rates are such that the number of juveniles per m^2 in each is 1, 2, and 3, respectively. Assuming a 50% survival rate, the number of smolts per m^2 in each stream the following year would be 0.5, 1, and 1.5, respectively, giving a percent of predicted capacity equal to 100, 80, and 60, respectively. In this case, the relationship between juvenile density and percent of predicted capacity would be exactly linear, but the correlation would be -1. Does this mean that the model performed badly? I do not see why this conclusion should follow.

17) It seems like something other than an exponential curve might give a much better fit in Figure 4.

18) The categories along the horizontal axis in Figure 5 should represent intervals rather than points, I presume.

Return to top of page.

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27 August 1996

Mr. Kirk Schroeder, President
American Fisheries Society, Oregon Chapter
P.O. Box 722
Corvallis, OR 97339

Dear Mr. Schroeder:

Following is my review that you requested of the manuscript by Nickelson and Lawson entitled "Application of a habitat-based life cycle model to the question of sustainability of Oregon coastal coho salmon". The habitat features of the model appear useful in restoration and recovery planning, but I find the life-cycle model to be seriously deficient as a tool for assessing extinction risk.

I also want to respond emphatically to a point raised in a letter from Paula Burgess, Governor's Assistant for Natural Resources, attached to the manuscript, about the purpose and use of Oregon's Coastal Salmon Restoration Plan. Her letter states "We also hope that NMFS will determine that this plan will be sufficient to ensure conservation of coho salmon and serve as the basis of a recovery plan, thus superseding the need to list this species as threatened under the Federal Endangered Species Act."

The political position expressed in this statement is not scientifically (or legally) defensible. *Determinations of the degree of extinction risk of a species should be based solely on the past and current status of the species, and if known, the causes of past population declines and the likelihood that they will continue. The existence of a restoration plan, for which there can be no guarantee of success, should in no way preclude possible listing*.

Sincerely,

Russell
Lande
Professor

cc(this cover letter only):
Paula Burgess, Governor's Assistant for Natural Resources
Dr. Robin Waples, NMFS

Review of "Application of a habitat-based life cycle model to the question of sustainability of Oregon coastal coho salmon" by T. Nickelson & P. Lawson

Reviewed by Russell Lande, 27 August 1996

The habitat features of the model appear useful in restoration and recovery planning, but the life-cycle model is seriously deficient as a tool for assessing extinction risk, for reasons outlined below. Insufficient data are presented to estimate all of the parameters with reasonable accuracy or to provide convincing validation of the model. Even if this could be done for some particular population, evidence exists for salmon in general and coho in particular that life cycle parameters differ significantly among different stocks of the same species, so it may not be valid to use a single set of life cycle parameters as representative of different basins, or even different areas within the same basin containing distinct runs.

1. The model does not clearly specify an age structure for the population, and apparently it has none. This seriously violates two facts that are well established for coho salmon. First is the south of Canada the typical age at spawning is three years, and second is that a substantial fraction of individuals spawn at either two or four years depending on sex and geographic location. Either or both of these facts imply that there is significant age structure to the populations, with overlapping generations, which could have important effects on extinction risk and should therefore be incorporated into the model. It is generally preferable to run population viability simulations for a fixed time in years (100 years is a common standard), rather than generations, especially when generations overlap. It is unclear from the manuscript how many years 30 generations is supposed to represent.

2. Insufficient data are presented to estimate with reasonable accuracy the standard deviation of E, the parameter describing temporal environment fluctuations in egg-to-parr survival, which is instead "approximated as the square root of average survival rate" (see pp. 4-5 paragraphs numbered 4 and 6). No justification is given for this particular choice, and it is difficult to reconcile with the fact that most salmonid populations for which there are long-term data have a coefficient of variation (standard deviation divided by the mean) in early survival on the order of 1.0. This implies that the standard deviation should be on the order of the mean, not the square root of the mean.

3. Insufficient data are presented to validate the model, i.e. only six years of data in which spawning population size was estimated are used, broken into two three year sequences separated by 13 years of no data. This does not allow even a convincing validation of the mean population size predicted by the model (Table 1) because of the rather large confidence intervals. No attempt is made to validate the magnitude of population fluctuations in the model, which is a critical factor in extinction risk.

4. Substantial evidence exists for salmon in general and coho in particular that life cycle parameters differ significantly among different stocks of the same species. It may be invalid to use a single set of life cycle parameters as representative of different basins, or even different areas within the same basin containing distinct runs (see point 6 below). The 1995 status review of coho salmon by NMFS noted that "coho salmon, throughout their range, are declining in size over time, and the rates of decrease are population- or area-specific." It would be important to relate these size declines to possible causes including harvesting and habitat degradation, as well as to likely consequences on fecundity and age at spawning.

5. Demographic stochasticity should be incorporated for survival rates throughout the entire life cycle, and at all populations, not just for sex-ratio of spawners at population sizes of 10 or less, as on page 4 numbered paragraph 2, and Figure 3. Efficient algorithms exist and should be used for generating binomial random variates for even large populations. Demographic stochasticity constitutes an important extinction risk for small populations, and ignoring most of its components could substantially reduce the accuracy of the model.

6. Spatial aspects appear to enter only into estimation of model parameters and not into the structure of the simulation model (pp. 2-5). There is no indication that explicit spatial structuring of the population, with dispersal or straying, has been incorporated, so the model would seem to be applicable only to geographically limited, well mixed populations, not to complex drainages with significant population subdivision caused by homing to natal streams at spawning. The limitations of the model with respect to spatial aspects should be clarified, including methods for identifying well-mixed populations to which it applies.

7. The manuscript should state how the results of the model should be used in gathering additional data on particular populations to refine the accuracy of model parameters, to guide restoration and recovery actions, and to help monitor the effects of such actions.

American Fisheries Society
Oregon Chapter
P.O. Box 722
Corvallis, Oregon 97339

December 1, 1996

Jay Nicholas
ODFW
28655 Highway 34

Corvallis, OR 97333

Dear Jay:

At your request, I facilitated an Oregon Chapter AFS review of the Monitoring Program for the Coastal Salmon Restoration Initiative (CSRI). I received three reviews on this section. Following is a brief summary of the reviews. The detailed reviews are attached and will be forwarded to Kelly Moore.

In my request for reviews, I posed several questions:

1. Is the proposed strategy adequate to detect changes in coho salmon populations or in habitats?
2. Assuming strategy is adequate to detect changes, will such detections be timely; i.e. will it contribute meaningfully to the goal of adaptive management?
3. Are there other monitoring strategies that should be considered?
4. Is the scope of the strategy sufficient to address both population (stock) effects as well as species range effects?
5. Are assumptions of the proposed strategy adequately addressed?

Reviewers felt the draft was a good start toward an effective monitoring program. Strengths noted were used of a probability sampling design to monitor at large scales, the recognition for probability design to address the objectives, and the recognition of adaptability in the monitoring program itself. However, all reviewers noted that such a program will be effective only if it has a long-term commitment to manage and maintain the program. The reviewers also noted that development of the appropriate probability design is one of the most important factors in implementing the monitoring program. The reviewers found much to agree upon with the overall approach and offered suggestions for strengthening certain sections. Weaknesses in some sections or tasks were noted, with ideas for addressing these weaknesses.

Areas of concern for the reviewers included:

1. Unclear links between monitoring results and subsequent changes in management.
2. Use of site/reach and inchannel indicators rather than watershed indicators, and lack of integration with upslope and low order channel indicators, which is reflected in the lack of development of the "core area" watershed-scale monitoring.
3. Lack of linkages between the various levels of monitoring (e.g. index, core areas, reference sites) and the regional survey.
4. Lack of effectiveness and validation monitoring elements, particularly in assessing forest practices.
5. Reliance on certain ongoing programs such as current methods of assessing riparian habitat conditions and existing sampling programs, without evaluating their effectiveness, accuracy,l and applicability to the proposed monitoring program.
6. Use of arbitrary boundaries of fish districts to establish index area monitoring rather than GCG boundaries, and insufficient number of index areas.
7. Lack of information on relevance to evaluation of specific parameters for Index of Biotic Conditions in detecting trends.
8. Questions about rationale for the full seeding benchmark without clear ties to restoration objectives, and its appropriateness as a regional standard given the heterogeneous nature of watersheds.

Suggestions were made to consider alternative approaches to the probability design such as a design based on a "continuous population" perspective rather than a "finite population" perspective. In addition, a need was identified to address the ability of the monitoring strategy to adequately detect changes and trends, and to define the time scale on which changes would and could be detected.

In summary, the review was generally supportive of a hierarchical approach for monitoring salmon and their habitat on a regional scale. However, the monitoring strategy should set clear priorities on the spatial scales to be addressed, because of the uncertainty about long-term commitment and funding. Although recognizing that a hierarchical approach requires information on several scales, results of the review suggest that a regional-scale assessment is the highest priority for salmon populations coast-wide (and possibly species-wide). The monitoring program could thus be designed to collect the regional-scale information first, then nest within that order spatial scales as funding and commitment becomes available or apparent.

Thank you for the opportunity to review this section of the report.

Sincerely,

Kirk Schroeder
Past-President

c Kelly Moore
Jim Martin

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL RESEARCH LABORATORY
200 S.W. 35th STREET
CORVALLIS, OREGON 97333

Sept. 9, 1996

Kirk Schroeder
Oregon Chapter
American Fisheries Society
P.O. Box 722
Corvallis, OR 97339

Dear Kirk:

Thank you for the opportunity to review the monitoring section of the State of Oregon's recovery plan for coho salmon.

This is an ambitious and commendable effort at designing a monitoring program to address some key concerns about the ability of coastal ecosystems to support a variety of salmonid populations. Although the proposed monitoring program is intended to address a variety of spatial scales and integrate across them, my remarks will primarily address the regional scale. I recognize that the draft is incomplete, and my comments take this into account. In your cover letter you list five general questions you wish the review to address. My general perception is that these questions weren't identified when the monitoring framework was put together, because the proposal doesn't address several of these questions directly. However, that doesn't detract from what I think contains the elements of an effective monitoring program. Consequently, I'll first identify some strengths apparent in the monitoring proposal, identify some weaknesses, and some areas that I think need further evaluation before some design decisions area made.

Introduction:

General objectives are well stated.

I'd like to add emphasis to the need for long term commitment for an effective monitoring program. Trend detection and interpretation is only possible if sound, long term records are established. There is no getting around the fact that is the magnitude of a trend is small, it will take a long time to detect it, consequently a commitment to a consistent monitoring effort is essential.

The following is a quibble: monitoring program generally do not produce information by which to identify cause/effect relationships; they primarily produce associations/correlations. Some would argue that true cause effect requires controlled experimental manipulation and careful design to measure "treatment effects". This is difficult when dealing with ecosystems, especially at relatively broad spatial scales. the basic approach tends to be to build a "weight of the evidence" argument that includes associations, logical linkages, logical exclusion of competing explanations, and repeated patterns.

Hierarchical Approach to Assessment:

I commend the explicit identification of the target population (in the statistical sense) as consisting of the five geographic areas, at the coarsest scale of geographic resolution. It will be sufficiently challenging to implement a consistent, long term monitoring effort to address the specific objectives at this scale, covering

the set of indicators identified in the section on regional characterization that I think most initial effort should focus on getting this off the ground. I recognize the need for the same kind of information on finer spatial scales, but that requires substantial additional resources. Partly this is why most of my comments address this scale. Furthermore the comments are oriented toward the design aspect of the program rather than the indicators.

There is an explicit recognition of the need for a probability design to address the objectives; I am in strong agreement with this. The type of information apparently required for these regional scale assessments should be representative of the resource; probability based sample surveys give strong assurance that the site selection will be unbiased, and that inferences about the region can be made with specified precision. (I'm jumping a bit here between the end of the Hierarchical Approach section and task I of the Regional Characterization section). However, there are some fundamental issues that should be addressed regarding the kind of probability design. The comments in this monitoring plan suggest a "finite population" perspective (and it is this perspective that the present winter spawning surveys are based on), and suggest substantial stratification. An alternate view is that the resource is "continuous" and a probability design that takes this perspective might be advantageous, according to several statisticians we have been working with. Furthermore, although stratification can improve the precision of estimates, if the resource is misclassified into the wrong strata, precision is actually weakened substantially. It is often difficult to pick the correct strata. A simple random design (with spatial balance), or a design that minimizes stratification is actually preferred when classification into strata is suspect, or when there is a possibility of looking a the monitoring data in different ways subsequent to collection (i.e. post-stratification). Before embarking on implementation of such an important monitoring effort, the alternatives should be considered. I would argue that developing an appropriate probability design is probably one of the most important aspects of implementation of a monitoring effort of this scale.

I am in full agreement with the need to form a design workgroup to resolve these issues, to identify the tradeoff of one design vs. another for both status estimation and trend detection potential and come up with an agreeable, flexible monitoring design to address the regional scale questions.

Several of the tasks identify what we (in EMAP) tend to call indicators or indicator categories, and several of these can be measured simultaneously during site visits, e.g., biotic conditions, water quality, summer juvenile abundance, stream channel and habitat assessments. I think the site scale design, to the extent possible, should incorporate measurement of these indicators simultaneously, at sites selected via the probability design.

With regard to the array of indicators identified, it seems they should be placed in some priority order -- which are most important, which least. Maybe a strong argument can be made that all are required.

I am curious about how the increase in spawning surveys from 200 to approximately 430 was determined. What analyses went into the selection? Where did the number 60 per region (300 total) come from for stream biotic condition and water quality? It is a reasonable number for characterizing regional status -- just curious about it's origin.

I have a general comment about the Sub-basin...section.

One is that the linkages to the regional surveys aren't very clear, and the objectives don't seem so evident to me. For example the terms "index monitoring" "representative", "reference site", seem to be used with without clear purpose. Not clear what the intensive "index area" monitoring will provide. Also, not clear what the function of focus on the "core areas" is. At least there is some mention of linkage to the regional scale survey. For both these efforts, stronger linkages should be identified with the regional surveys.

My initial concern regarding the questions posed in the cover letter area as follows:

1. Is the proposed strategy adequate to detect changes...? The ability to detect change depends upon the magnitude of change to be detected, the natural (and measurement) variability of the indicators chosen, and the sampling effort, and some choices about the probability of detecting a change if such a change is actually present (power). The monitoring proposal addresses none of these directly. I think, at least for the spawner surveys, ODFW has accumulated sufficient data to evaluate some of these choices, to determine trend detection capability for alternative designs. There are no statements, either as a charge to the people designing the monitoring effort, or as part of the monitoring proposal, that indicates what level of trend over what time span would be desirable to detect, and whether such a trend could be detected with the sampling effort envisioned.

2. Will the detection be timely? Again, this is an issue not addressed in the monitoring plan. To some extent we all have to wrestle with what we mean by timely. Large trends will be detected quickly; small trends take longer. Some trends aren't apparent until a long record is developed; what appears as a trend is one direction at one temporal scale might be part of a larger trend in the opposite direction over a longer time span. The timeliness issue needs lots of discussion. Perhaps some of the ODFW spawner survey data could be used to illustrate some of these issues -- when is a trend a trend? But I firmly believe that a sound monitoring program should be put in place that allows us to collect the kind of information necessary to evaluate trend detection capability; what is proposed has the core of meeting that need.

3 . Other monitoring strategies to be considered: see comments re design above.

4. I think strength of the strategy is in its focus on the regional populations; I'm not sure how species range effects will be evaluated except through the genetic monitoring, and the strategy clearly identifies a need to expand that portion of the strategy.

5. As noted above, I think some of the design assumptions and choices need to be evaluated more thoroughly.

I am curious about how the increase in spawning surveys from 200 to approximately 430 was determined. What analyses went into the selection? Where did the number 60 per region (300 total) come from for stream biotic condition and water quality? It is a reasonable number for characterizing regional status -- just curious about it's origin.

I have a couple of cursory comments about the Sub-basin...section.

One is that the linkages to the regional surveys aren't very clear, and the objectives don't seem so evident of me. For example the terms "index monitoring" "representative", "reference site", seem to be used with without clear purpose. Not clear what the intensive "index area" monitoring will provide. Also, not clear what the function of focus on the "core areas" is. At least there is some mention of linkage to the regional scale survey. For both these efforts, stronger linkages should be identified with the regional surveys.

Again, thank you for the opportunity to review this proposal. We will continue to assist in what ways we can.

Sincerely,

Phil Larsen

October 14, 1996

To: Kirk Schroeder, President, Oregon Chapter of the American Fisheries Society

From: Kelly Burnett

RE: Review of undated draft of "Proposal for a Comprehensive Monitoring Program to Support Oregon's Coastal Salmon Restoration Initiative"

General Comments:

I think that the draft presented for review contains the nucleus of an effective monitoring program, however much work remains before the authors. I assume that the final document will be submitted widely for peer review. In my opinion, one of the primary strengths of the proposed program is its reliance on a probability sampling design for monitoring at the regional and GCG scales. My most serious concern is the absence of substantive discussion regarding links between the monitoring program and changes in policy management. Given the absolute importance of these relationships, it is critical that definitive processes be delineated. What are the active outs by which monitoring information is fed into decision making? Are there scale-specific thresholds, at the reach, watershed, or region, that when observed are cause for immediate corrective action? What changes in management actions are thought consistent with specific levels of observed indicators? What are the assurances that the prescribed action will be taken? These types of issues may be addressed elsewhere

in the Coastal Salmon Restoration Initiative, but without access to such discussion I am extremely hesitant to comment upon the ultimate effectiveness of the monitoring program in coastal salmon restoration and adaptive management.

Other comments:

- Recognition of the need to monitor beyond coho salmon is well founded and will allow the state to proactively address issues regarding other at-risk salmon and trout species.
- I agree with the necessity of having the monitoring program itself be adaptive. To support this approach, however, the program must define how this is to occur. Specific processes and schedules for evaluating the ability of monitoring to meet program goals should be included. Furthermore, indicators that will signal the need to modify the strategy should be identified in the monitoring program.
- I support the approach of capitalizing on existing monitoring efforts but am concerned about the assumption of effectiveness of these efforts. The program would benefit by including specific funding to evaluate the effectiveness of ongoing monitoring efforts.
- The explicit acknowledgement that a long-term, adequately funded monitoring program must be a mandatory component of the Salmon Restoration Initiative is to be applauded.
- Although site/reach level inchannel indicators in salmon habitat are a necessary element of the program, based on the proposed sampling design, these indicators will not be sufficient to determine the condition of or detect changes in populations of units at other scales (e.g., watersheds, basins) at the regional level. In other words, site/reach scale indicators will allow the status of reaches to be determined at the regional scale but will not support conclusions about the condition of watersheds within the region. I also think that dependance on inchannel indicators in salmon habitat hampers the monitoring program's ability to detect change in a timely manner. Once impacts are manifested within salmon habitat, adaptive management may be moot - the damage has been done. Consequently, better integration into the program of upslope and low-order channel monitoring indicators is called for. Watershed indicators such as those described in "Making Endangered Species Act Determinations of Effect for Individual or Grouped Action at the Watershed Scale" (NMFS, August 1996 and "A Monitoring Strategy for Application to Salmon Watersheds" (McCullough and Espinosa 1996) would be germane.
- More emphasis should be placed on the essential links between the monitoring program and research. Validation monitoring should be highlighted as an indispensable element of the program that allows critical assumptions to be validated. Too little attention is provided and insufficient funding proposed for validation monitoring.
- I concur that a hierarchical approach is essential for the monitoring program. The discussion of the rationale for, links between scales, and appropriate indicators should be expanded and strengthened. "A Monitoring Strategy for Application to Salmon Watersheds" (McCullough and Espinosa 1996) provides a good example of the necessary level of detail.
- Development and presentation of the details regarding statistical analysis necessary for trend detection is warranted.
- The first three assigned questions I have addressed above. Question 4 - This monitoring program was apparently not developed for addressing range wide effects, but I think with modification of the sampling design there would be little problem adapting it to this scale.

Question 5 - Assumptions regarding implementation of the strategy are adequately presented, however, technical assumptions for each of the tasks do no appear to be as consistently displayed and discussed.

Specific Comments:

Task 1 (Probability Sampling Design) As described, I think that such a design is appropriate for assessing status of coho salmon in the region. I would also consider highlighting the importance of a probability sampling design for characterization of stream habitat and riparian conditions at the GCG and regional scales.

An accurate stream data layer is necessary for stream order classification, for use in selecting sampling sites for current inchannel and riparian habitat conditions, and for characterizing the potential to contribute habitat forming elements. Unfortunately, existing regional stream layers are too coarse in resolution and investments should be directed toward obtaining stream channel coverage for the entire coastal region based on 30m or smaller DEMs.

I was uncertain to what was being referred by the "combined approach" that Phil Kaufman was interested in helping develop. Further explanation would be helpful.

Task 2 (Steam Biotic Condition and Water Quality) Is data collected for the Index of Biotic Condition based on a regional or GCG probability sampling design? The scale at which inferences may be made is not clear. The last portion of the discussion on Index of Biotic Condition appears to refer to assessing condition at the watershed scale. This seems misleading if the sampling design was developed for the regional scale.

What specific parameters are used in the Index of Biotic Condition? Has the relevance of these parameters to detecting trends in habitat, population, GCG, etc., been subject to peer-reviewed evaluation? If not, then a program to make such a determination seems appropriate and a plan to adapt the monitoring strategy to accommodate these results is advised.

Task 3 (Summer Juvenile Abundance)

The proposed full seeding benchmark of 1.5 fish/m2 is the only quantitative objective I found in the document. What is the origin of this value? Is it a restoration policy objective determined and documented elsewhere in the Coastal Salmon Restoration Initiative? Is it s scientifically determined estimate of full seeding that has not yet been accepted as an objective toward which restoration will proceed? If it is based on empirical evidence where might this be found (citations)?

I am uncomfortable with region-wide application of 1.5 fish/m2. This seems inconsistent with current views of stream systems as being spatially and temporally heterogeneous and does not reflect an understanding of the role of disturbance in habitat formation. Such a target could lead to homogenization of stream channels, encouraging short-term efforts that improve current inchannel structure rather than those aimed at restoring the processes that create and maintain habitat through time. My concerns may be addressed somewhat by further clarifying "appropriate stream habitat within a basin." How is appropriate defined?

The paragraph regarding genetic analysis seems out of place and is a bit distracting. This discussion would likely contribute more if moved to Task 6.

The discussion seems to imply that a well distributed network of summer juvenile abundance sampling is already in place and that this could be augmented through a probability sampling design. Unfortunately, I don't view this to be the case. For example, population estimates are not routinely obtained by USFS Forest and District crews in their habitat surveys, although, species presence/absence may be.

The relationship between this task and Task 2 is not clear. Are sampling units of different scales or might the scales for the scope of inference be different?

Task 4 (Stream Channel and Habitat assessments)

"Ongoing surveys of stream channel and riparian conditions are needed to:

Develop better understanding of winter habitat characteristics and dynamics." One might assume from this statement that current surveys are adequately distributed between summer and winter. I think that this impression is inaccurate, particularly with respect to USFS surveys. It seems advantageous to separate discussion of sampling for these two seasons and indicate the relative increase in effort and expenditure for each deemed necessary.

Although I agree that riparian monitoring is critical to this strategy, the accuracy and relevancy of riparian habitat conditions as assessed by current stream inventory protocols has not been systematically evaluated. The general sense by many familiar with this data is that it may be not very valuable and I would be hesitant to advocate its use without caveat. Various field and remotely sensed methods for riparian survey are being compared in a joint EPA and PNW study. Preliminary results should be available by next year (Paul Ringold, EPA and Gay Bradshaw, PNW are the principle investigators).

Explicit identification of the spatial scales across which current stream habitat survey data may be applied should be provided. Since these surveys have not been conducted within the framework of a probability sampling design, the upper bounds for spatial scale is typically the watershed/basin. Inference to GCG or region would not be appropriate.

The discussion of this task could benefit by clarifying the relationship between it and Task 2. The parameters measured in this task and those in Task 2 are predominately inchannel, site/reach level indicators. These are appropriate for describing the population of sites or reaches within a GCG or the region, but are not

sufficient for characterizing populations of larger scale units (watershed, basin, etc) which may exhibit effects (e.g., cumulative effects) that emerge at these higher scales and may not be determined by merely aggregating conditions of this reach /site-scale components.

Upslope indicators should be selected for monitoring in addition to inchannel indicators. Upslope indicators may warn of potential impacts prior to the their manifestation in the channel. Thus, reliance on monitoring inchannel indicators may diminish the ability for early response that can prevent impacts.

Task 5 (Spawner Abundance Surveys)

Task 6 (Genetic and Life History Monitoring)

Since this task was acknowledged by the authors to need further development, I will not comment other than to say that I think it is an essential component of the monitoring strategy.

Task 7 (Fish Propagation Monitoring)

I'm not sure whether this task is the most appropriate place for discussion of interaction between hatchery and wild fish and the need to systematically monitor these. Perhaps the topic would fit better with Task 2, 3 and/ or 6. Regardless of where it is located, a complete discussion and approach for monitoring hatchery/wild interaction is called for.

The role of hatcheries is genetic restoration and how this will be monitored is an important addition.

Task 8 (Harvest Monitoring)

Since this task was acknowledged by the authors to need further development, I will not comment other than say that I think that it is an essential component of the monitoring strategy.

Task 9 (Intensive "Index Area" Monitoring)

How do the seven coastal fish management districts correspond with the boundaries of GCG? What was the rationale for using the coastal fish management districts rather than GCG? Given the dynamic nature of healthy functioning stream systems, I would suggest that one index site is insufficient in each district. Similar to the approach proposed for core areas, a suite of index sites across a district will have better opportunity of reflecting the range of conditions and proportions that might be expected under a relatively "natural" disturbance regime. Thus, a more accurate index would be provided as a basis of comparison.

How is a site defined (is it a reach/watershed/basin)? Sites should also be located in low-order, non-salmon-bearing streams as these channels are essential for contributing elements (e.g., wood and sediment) that create and maintain habitat in salmon bearing channels through time.

Task 10 (Salmon "Core Areas" Habitat Monitoring)

The discussion of "Watershed Assessment" does not clearly outline a monitoring program or indicators that will be monitored as in the case with "Population Evaluation" and "Habitat Assessment." The repeated focus on inchannel conditions seems to me to be one of the weakest aspects of the monitoring program and is again reflected in the degree of development of core area watershed-scale monitoring

Task 11 (Evaluate Estuary Populations and Habitats)

I agree with the need to monitor estuarine populations and habitats. Although this section does provide a rationale for monitoring in estuaries, it does not develop a strategy and should do so.

Task 12 (Forest Practices Monitoring/Federal Watershed Assessments)

Since this task was acknowledge by the authors to need further development, I will reserve comment with the following exception. I agree that implementation monitoring should be an important component of the monitoring program. However, rather than focusing solely on implementation, this section should also address effectiveness and validation monitoring of BMPs. The discussion should better clarify the distinction

between these types of monitoring and determine how much effort and funding will be allocated to each.

This draft also contained a Task 12 (Information Collection and Sharing).

Task 13 (Watershed Assessments for Mixed Ownerships)

It seems appropriate to discuss the role of watershed assessment in monitoring, otherwise this sections seems out of place.

Task 14 (Coordinate and Facilitate Distributed Monitoring)

One would hope that monitoring of independent projects will be better integrated into the overall monitoring program and the need for isolated monitoring efforts can be diminished.

I appreciate the opportunity to review and comment on this important component of the Coastal Salmon Restoration Initiative. If I can answer any questions or provide further clarification on my remarks, please do not hesitate to contact me.

Sincerely,

Kelly Burnett
Fish Biologist

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TO: Kirk Schroeder, American Fisheries Society, President for the Executive Committee

FROM: Cara Berman, U.S. EPA, Region 10
RE: Oregon's Coastal Salmon Restoration Initiative:
Comprehensive Monitoring Program
DATE: 4 September 1996

I. General Comments:

Based on an evaluation of the draft Coastal Salmon Comprehensive Monitoring Program, key issues and areas of concern should be adequately addressed i.e., the program should adequately track key issues at relevant scales within a reasonable time frame. The success of such an effort ultimately rests on the management and maintenance of the program. Long-term agency accountability as well as resource (i.e., financial and staff) commitments must be guaranteed. Failure to secure agency-wide assurance will leave the strategy vulnerable - agency attention and resources will turn to the latest high profile initiative. Program development is at an early stage, and as such provides only an acknowledgement of the importance of coordination, standardization, management accountability, long-term funding and staffing, etc. Concrete measures to support the program will need to be developed. I will be interested in the specifics developed to address these program commitments.

Potentially the weakest element of the strategy is a clear articulation of program assumptions as well as the logic that guided the development of the monitoring framework. Specifically, the framework focuses on the establishment of a nested monitoring design whereby information collected at various scales may be analyzed and synthesized to produce an accurate high resolution image. Information collected at any one scale will support efforts at other scales. The proposal states that, "A program structure is required to place site and reach levels of resolution." However, development of a nested monitoring design includes more than just a

program structure.l A consistent and strategic approach to indicator selection as well as standardized protocols must be developed for this approach to succeed. The document should discuss how indicators at various scales will be selected and the appropriate protocols for their application. Only in this way may a truly "nested" design be developed.

Finally, indicator analysis including long-term verification of ecological assumptions as well as predictive capability (e.g., landscape characteristics) should be incorporated into the overall plan.

II. Task-Specific Comments:

Task 1, Stratified Probability Sampling Design, is a necessary and sorely needed contribution to discussions involving landscape-scale monitoring strategies. Incorporating findings by Montgomery et al. should further advance this discussion as well as provide a much more useful analysis framework. Identification and evaluation of "important" physical and biological factors as well as their spatial and temporal distributions should be tied to the identification of indicators applied at various scales. This discussion may help to establish the logic behind the selection of key indicators and appropriate scales of analysis as well as the identification of potential indicator interactions at various scales.

Task 3, Summer Juvenile Abundance and seeding levels: Identification of reach-level seeding targets based on "appropriate stream habitat" should be tied to an understanding of basin-wide channel alterations including modification of morphology, microhabitat, width:depth ratios, LWD, etc. Without this basin-wide context, estimates for full seeding are deceptive.

Additionally, a basin-wide inventory and assessment may lead to the identification of lost or sensitive channel/habitat types supportive of juvenile and adult salmonids as well as opportunities to restore these elements (see Montgomery et al., identification of bedrock channels sensitive to LWD input and capable of developing into forced alluvial channels.)

The statement "relative seeding level is an important component of evaluating the effectiveness of habitat restoration projects" requires clarification. Simple in-stream "fixes" such as additions of LWD may lead to the appearance of increased juvenile abundance. However, regional and basin-scale restoration requires time and requires a commitment to the recovery of processes rather than the "appearance" of a functioning stream-reach. The general public, politicians, and agency managers must be fully aware of the time-frame for recovery as well as the indicators of successful restoration. Without this understanding, long-term support may be jeopardized.

Finally, provide additional clarification of paragraph 3 concerning genetic sampling and life history variability.

Task 4, Stream Channel and Habitat Assessments, clarify the statement that "stream channel and riparian surveys provide basic monitoring information at multiple scales of analysis." As stated above, indicators reflective of project goals should be identified and appropriate scales of application determined. Parameters discussed in this section are mostly site-specific and few are process based. There is little support provided to the ideal that multiple scale analysis will occur. Identify sub-basin, basin, and regional scale indicators including indicators of risk and recovery. Additional, protocols to monitor indicators at various scales must be developed (see general comments).

Develop calibrated "regional" relationships that relate basin area to channel width, channel depth, and width:depth ratios.

Ensure the measures of flow are included (absent from Table 1).

Task 5, Spawner Abundance Surveys, should be tied to genetic/life history studies. Also include hatchery-native fish interactions.

Task 6, Genetic and Life History Monitoring, should include a discussion of existing metapopulations, their formation, as well as their maintenance. As was evident during the Western Region AFS Conference, the subject of metapopulations has become a central topic of discussion as well as a ubiquitous theme during restoration planning. Although this topic receives much discussion, there has been little debate regarding the accurate identification of metapopulations or their structure. It appears that any grouping of sub-populations may comprise a metapopulation and that only one model for their formation exists. This is potentially as or

more dangerous than ignoring the metapopulation concept.

Task 7, Fish Propagation Monitoring, should include hatchery stock selection criteria as well as genetic and life history information including genetic monitoring procedures.

Sub-Basins, Watersheds, and Streams: Highly supportive of coast-wide network of reference sites including estuaries, floodplains, and forest basins.

Task 10, Salmon "Core Area" Habitat Monitoring, should include information related to genetic-life history variability and metapopulation concepts as well as dispersal and migration corridors. Habitat Assessment related monitoring activities should include risk assessment/identification and tracking.

Task 11, Evaluate Estuary Populations and Habitats, expand discussion. Monitoring should include time-series tracking of habitat mosaics. See EPA-Corvallis Laboratory's Pacific Northwest Ecosystem Research Consortium project entitled, "Estuarine Landscape Structure Interaction with Ecosystem Processes (Si Simenstad, UW, 206/543-7185).

Task 12, Forest Practices Monitoring/Federal Watershed Assessments, should emphasize multiple-scale monitoring indicators and activities. Currently, much of Oregon Department of Forestry efforts are site and reach-specific. Additionally, Federal Watershed Analysis often restricts analysis boundaries thereby eliminating certain biological and physical attributes from the evaluation.

BMP effectiveness should be assessed in both previously disturbed and relatively intact systems. Ultimately, a question that needs to be answered is whether a threshold exists for BMP effectiveness.

Stream Reaches and Sites: An integrated system to "evaluate the negative impact of failures to protect stream habitats and fish populations" or to identify and track risk will be extremely valuate.

Integrated Synthesis and Distribution of Results: Ensure GIS data standardization. EPA Region 10 has recently developed an Environmental Information Management System including a standardized method to incorporate data. This information is available via internet. EPA would welcome input of additional data. Please contract Tom Haad at 206/553-6689.

Additionally, much of the GIS discussion centers on the analysis and compilation of collected data. However, further information analysis may provide predictive indicators of disturbance, ecological integrity, high value habitat, recovery targets or standards, etc. For instance, the statement, "Much of the basic information used to establish Stratified Probability sampling designs for each task will also utilized to interpret and present context for the monitoring results" should also include the manipulation of data for predictive applications as well as an assessment of applicability of indicators across scales and regions.

For further examples, please see the Interior Columbia Basin ecosystem and data management reports (Bruce Rieman, Intermountain Research Station, USFS: 208/364-4386) as well as the Coastal Landscape Analysis and Monitoring Study (CLAMS) (Kelly Burnett, USFS, Pacific Northwest Research Station 541/750-7309).

Thank you for this opportunity to review Oregon's Coastal Salmon Comprehensive Monitoring Program. Please call me at 206/553-6246 if you have any questions.

NEW - 2/20/97

Return to top of page

28 December 1996

Jay Nicholas

Oregon CSRI
Oregon Department of Fish and Wildlife
28655 Highway 34
Corvallis, OR 97333

Jay:

As you know, the Oregon Chapter of the American Fisheries Society (Oregon AFS) has formed a committee to review the Coastal Salmon Restoration Initiative (CSRI). Our committee includes fish biologists and aquatic ecologists who have a wide breadth of knowledge about salmon issues, have been involved in restoration or strategic planning efforts, and have a variety of applied experience in fisheries. All of us have served as active members and officers of the Oregon AFS.

We would like to express our support of a large-scale effort to conserve and restore coastal salmonids. We agree with Governor Kitzhaber that the goal of the CSRI should be to restore salmon populations, not simply to avoid a federal listing or to prevent the extinction of coastal coho; and we believe this can only be done by restoring salmonid ecosystems to a healthier condition. The CSRI demonstrates the Governor's commitment to the heritage our coastal salmon populations represent, and brings state agencies and other key players together to discuss opportunities for salmon conservation. The Governor should also be given credit for recognizing that actions of individual Oregonians will be necessary for recovering salmon and that local groups (such as watershed councils) may be able to initiate innovative approaches to recovery.

Our committee recognizes the difficulty of this undertaking. The scope of the problems facing coastal coho salmon and many other aquatic species in Oregon warrants a large-scale approach to their recovery. These problems have been developing for more than a century and involve a wide array of agencies, institutions, cultures, and economies. Given problems of this magnitude and complexity, we consider the state's timelines for constructing a recovery plan to be unrealistic. We believe that those involved in developing the CSRI have done their best in trying to write a recovery plan, and we appreciate their efforts.

The history of salmon management in the Pacific Northwest includes a multitude of planning efforts that have failed to stem the decline of these fish. We see a well-structured CSRI as an opportunity to avoid repeating history. With this in mind, our approach to reviewing the CSRI has been to draw upon lessons of the past and the conservation literature to identify key elements and questions that need to be addressed if the plan is to help restore salmon. Our review has focused on the overall direction of the CSRI, rather than on specific technical details. Oregon AFS has already facilitated independent scientific reviews of several technical sections of the plan.

Our review to date clearly indicates that a plan like the CSRI must be built around an explicitly stated conceptual framework and a vision of recovery. The conceptual framework consists of the set of scientific principles and assumptions that help determine how information is interpreted, what problems are identified, and what types of solutions might be appropriate for achieving the overall vision of recovery (Lichatowich et al. 1996). The conceptual framework is the most critical element of any recovery plan (Williams et al. 1996; Lichatowich et al. 1996) because it provides the context for developing measurable goals, specific ecosystems strategies, and a monitoring program.

Our committee has not yet finished our review of the CSRI. However, the enclosed table outlines the basic elements and questions we are taking into account as we evaluate the plan. Although we will expand on these elements and answer some of these questions in our written review, some are beyond the capacity of our committee to address and must be answered by the CSRI teams.

Thank you for this opportunity to comment on the CSRI. We will continue to work toward completion of our review and will submit additional comments to you as soon as the review is completed. Please feel free to

contact members of the CSRI committee if you have any questions.

Sincerely,

Kirk Schroeder, Chair, CSRI Committee, AFS President 1995-96
Bob Hughes, AFS President 1994-95
Rich Carmichael, AFS President 1993-94
Phil Howell, AFS President 1992-93
Dan Bottom, AFS President 1990-91
Gordon Reeves, AFS President 1989-90
Chuck Huntington, Chair, Natural Production Committee, 1994-96
Jeff Dose, Excom, 1992-94; Chair, Aquatic Habitat Committee, 1990-92

C/Jim Martin, Governor Kitzhaber's Office
Enclosure
ks/lkb

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ELEMENTS	COMPONENTS OR EXAMPLES	QUESTIONS
Conceptual Foundation	Set of scientific principles, theories, and assumptions for directing management activities	What is the conceptual foundation of CSRI?
	Framework for interpretation of information, identification of problems, selection of solutions	Is the foundation implicit or explicit?
	River continuum (freshwater, estuarine, ocean)	Is it based on and relevant ecological principles?
	Recognition of natural and cultural ecosystems	Does it recognize human elements (social organization, population growth, resource consumption) and need for control over human activities?
	Restoration of ecosystem capacity v. substitute technology	Is it based on a thorough analysis of the problem and synthesis of available information?
	Multi-scale biodiversity	Are the structure, composition, and function of biological communities, assemblages, species, metapopulations, stocks considered?
Conservation and Recovery Goals	Definition of desired future condition	Are goals clearly stated?
	Recognition of land conservation as a primary goal	Are they consistent with conceptual foundation or vision?
	Ecosystem representation, maintenance of viable populations and natural processes, adaptability to change	Are they comprehensive, idealistic enough to provide long-term recovery?
	Sustainability of environmental quality and resource supply	Are they based on biological criteria rather than social or economic criteria?
	Recognition of cultural, economic, and biological values	Do they recognize humans and cultures in the landscape?
	Indicator versus ecosystem recovery	Is the recovery focus on the indicator of ecosystem deterioration or on the ecosystem itself?
Problem Statement and Status	Historic and noncompliance current status of populations and habitat	Are the various scales and diversities addressed? (e.g. genetic, life histories, metapopulations)

	Current management strategies - status and problems	Are habitats at all life stages addressed? Ecological processes? Does it account for the role of spatial and temporal variability in abiotic processes in creating and maintaining desired habitat features?
	Threats and factors in declines - multiple scales and disciplines including biological, institutional, social	Are assumptions and scientific principles of past and current management strategies rigorously examined?
	Enforcement or implementation of existing laws, regulations, policies	Are decision-making processes of management institutions examined? Information flow? Are laws, regulations, policies adequate to protect and recover salmon? Is enforcement or implementation adequate?
Strategy	Remove threats and factors in decline	Does strategy outline steps needed to move from current to desired conditions?
	Incentives for compliance; strong disincentives for	Does it incorporate social, cultural, political, economic factors?
	Enforce or implement of existing laws, regulations, policies	Does it assess the need for modifying or adopting new laws and regulations, or increasing compliance?
	Create network of interconnected habitats for all life stages in landscape responsive to short-term and long-term environmental changes	Is it based on scientifically-backed principles for recovery?
	Address physical, biological and ecological processes at several scales	Does it recognize critical roles of riverine, riparian, hyporheic dimensions? Does it address spatial and temporal variability?
	Educate public and agencies about history of problem, past management efforts and failures, principles of recovery	Does it examine and address underlying assumptions and science in the recovery approach?
	Involve local interests and cultivate sense of ownership of problems and solutions	Are watershed councils sufficiently diverse, given adequate guidance, receiving unfiltered information?
	Evaluate and incorporate uncertainty and risk	Are political, social, institutional, economic uncertainties and barriers accounted for? How is risk assessed and managed?
	Assess probability of success	How likely is the plan, if implemented, to achieve recovery goals?
	Develop sound implementation plan	Are implementation measures informative to public, accountable, funded?
Monitoring	Design and conduct on several scales	Is the program designed to measure progress in moving from current to desired conditions?
	Proper sampling design to answer questions	Is it based on peer-reviewed experimental design?
	Use sound scientific information to determine indicators	Does it ultimately measure recovery of salmonids and their habitat?

	Design for compliance, effectiveness, and validation roles	Does it measure implementation and effectiveness success?
	Design data management and reporting guidelines	Does it test the assumptions of the recovery strategy?
Adaptive Management	Institutional stability and organizational structure that allows for experimentation and learning	Does plan have necessary institutional, political and social support for long-term maintenance and for instituting change?
	Recognition that recovery and management decisions are experimental	Does it recognize and address barriers to altering management direction?
	Feedback mechanism to implement necessary change	How will monitoring results be used to alter management (what are the mechanisms)?

Return to top of page

Go to Peer Review:

- OSU
- Invited
- Federal Agencies
- Industry
- Conservation/Environmental Group
- Public Comments
- Questionnaries

Go to home page

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PEER REVIEW 1996

COASTAL SALMON RESTORATION INITIATIVE

December, 1996

TABLE OF CONTENTS

- 2/20/97

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Donald W. Chapman, Ph.D; Albert E. Giogi, Ph.D; and Tracy W. Hillman, Ph.D and U of Montana/ Core Area Map, Christopher Frissell

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James Karr

Review of Oregon Coastal Salmon Restoration Initiative

Jim Lichatowich

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Mark D. Miller
John R. Stevenson

November 15, 1996

Mr. Jay Nicholas
Oregon Department of Fish and Wildlife
28655 Hwy 34
Corvallis, OR 97333

Dear Jay:

Overall comments:

After a first reading through the summary draft, I was impressed with the amount of effort and thinking that has gone into the OCSRI. However, you will have to take what I say with some cautionary aspirin, as I have been gone from Oregon for a long time. I have not been involved in the evolution of coastal problems since the early 1960s. On the other hand, maybe a little insulation from them is not all bad as one reviews your draft plan.

One of my concerns would be how well the state can sustain the effort and keep it funded. I guess that is tantamount to asking how dedicated are the State of Oregon, legislature, and people are to the Initiative. Will it stand up under replacement of the Governor, when that occurs? Can the federal funding that is obviously needed be counted on over a haul long enough to help? How serious are the non-ODFW agencies about dedicating personnel and funds in Phase 1? Interest in initiatives like this one have a way of fading, a lot like what happens when a family gets a cut puppy and has to care for it when it is a big dog.

I really like the watershed councils, and employment of a coordinator for at least the larger ones. *Ad hoc* volunteers and agency folks with other tasks will not be very effective in providing leadership and continuity in the councils over the long haul. Coordination and outreach are key functions of the coordinators. You will recall that one of the key calls in the NRC report *Upstream* was for more decentralized management that took into account the interests of various stakeholders and brought them into the planning and decision-making process. At the same time, the broad interests of society must be served by overreaching objectives and constraints. I think the Council approach can operate effectively with both requirements.

Response to questions in your letter of November 7

1. I think a harvest/escapement regime that limits harvests to 12-15% of the recruits to the exploitable phase (age3) has a good chance of holding the line until oceans conditions improve, and of withstanding various negative events meanwhile. I am concerned about an ingrained shibboleth born by many biologists; namely, that all coho need for maintenance and population health is to reach an escapement goal. I think, to the contrary, that if coho are to achieve their evolutionary potential and to be resilient in adverse freshwater and ocean environmental conditions, they require what many would call overescapements. Those large escapements need not occur every year, but they should happen often enough to assure intense competition for mates, cleansed gravels, and large marine nutrient inputs as carcasses.

I am not persuaded that "overescapements" area bad when observers point out that density dependence leads to smaller smolts or lower smolt survival or output. Progeny performance to smolt is only part of the picture. The longer term need is for a robust gene pool capable of withstanding exigencies of down cycles in environmental conditions, and of rebounding. I believe that "overescapements" occurred often, perhaps most of the time, during the time period in which coho evolved. I think the somewhat limited literature supports the contention that marine nutrients are beneficial to stream ecologies; that gravels can be cleansed by spawners; and that large, robust fish can dig deeper and compete favorably for redd sites. All of these factors are enhanced by large escapements. I hope the Initiative will recognize the merits of periodic large escapements.

The NCR report is a bit opaque on what it calls MSE, Minimum Safe Escapement. That level of escapement was meant to be a "floor" rather than a median or goal about which escapements would vary. In streams

where an MSY escapement had been developed, the MSY escapement would become MSE, and no fishing would be permitted until the MSE was assured. In streams were goals were based on historically accepted escapements (goals), but not on S/R models, the goal would become MSE. The point here is to move escapements above the goal, not allow them to fall about it. Part of the reason for that is rooted in the historical performance of managers along the Pacific coast. They have too often failed to reach the escapement goals stated as needed in PMFC reports. It is just amazing how many times escapements did not reached expressed goals, yet fishing at sea or in rivers had been permitted. Social pressures were responsible in part; slavish acceptance by managers of S/R models and MSY goals contributed.

I have pointed to Sam Wright's pronouncement may times: *The first responsibility of the fishery manager is to assure adequate escapement*. However, I define required escapement as more than an MSY optimum that permits maximum sustained harvest. My notion is that all S/R data are essentially short-term in data coverage. Most data sets cover up to 25 years or so, or only 8 coho generations. The evolutionary time scale is out the window.l Thus, we cannot know the effect of our short-run policies on long-term genetic well-being of coho. In absence of such knowing, our conservative, even obligatory, approach should be to err on the side of "overescapement." That is the side on which natural escapements "erred" as coho evolved.

Until coho managers tack the longer-term track, pressures from fishing interests will usually prevent bonus-year escapements from occurring, except by accident.

2. Subject to the cautionary statement earlier about sustainability of commitment to the Initiative, the proposed habitats measures sound sufficient to maintain (where presently habitats are in fair to good shape) and, generally speaking, restore (where habitats are in poor to fair, or degrading) natural habitat functions. I would tend to be more concerned with agriculture than with forestry. Managers and ecologists have been hammering on the forest industry, and on governmental agencies responsible for forest management, so long and hard and I think the message got through (not that the hammering should stop). But the myriads of small holdings with cattle in streams, channelized stream reaches, and degraded riparian zones, will be a tougher nut to crack. Private economic effects on small landholders are harder to sell than efforts on owners of federal and state lands (taxpayers), whose costs are externalized as BMPs are improved, and habitats benefitted, on public forest land. Large private forest holdings have public relations interests to help with Initiative measures, and are usually so large and diversified that they can afford some leeway on BMPs. The small private owner more often is aimed at the short-run dollar net.

3. Changing the mission of most hatcheries to gen conservation and emphasis on natural stock is essential. The NRC report was pretty unequivocal on that point. A very few release sites may permit terminal fisheries without affecting natural coho. As long as all hatchery output is marked and fishing confined to those sites, they may conceivably serve to take pressures off managers to provide more fishing opportunities. In a way, and paradoxically, the longer the populations along the coast remain depressed, the more should pressures from the fishing industry wane. That may not appear true in the short run, but I think it has happened in B.C. and in the Columbia River. People get used to not fishing, painful as that is in the instant. This waning may somewhat help managers wean the industry (sport and commercial) away from mixed-stock offshore fishing and more fishing toward the terminal areas. The explosive growth of market availability of pen-reared salmon pushes in the same direction, on economic and flesh-quality grounds. When last I looked, I think I found that cultured salmon amounted to nearly 50% of output worldwide, incredible in light of the harvests in recent years in Alaska.

3. Proposed changes in hatchery operations, reducing emphasis on production, leave hatcheries still suspect, in my view, with respect to genetic and ecological interactions. Information to support use of hatcheries to help restore natural populations is still on the scant side. Again, the NRC report has a lot to say about this issue. I consider hatcheries guilty until proven innocent when it comes to effects on wild/natural populations. I will agree that I may have been biased by life as a professional over the past 41 years as hatcheries were touted as the panacea, as they promoted overharvest of wild fish, as they failed to perform as promised, and as evidence mounted of negative genetic and ecological effects on wild fish. Still, we have precious little information on how to use wild/natural broodstock in gene conservation programs. We are not good about figuring out how to raise and release fish for such programs in ways that do not interfere with social structure and well-being of underseeded wild/natural fish.

As I mention later, I am not convinced that delivery of hatchery carcasses to streams can be much of a practical stimulant to stream productivity when one examines the miles of streams that need such stimulation and the logistics of carcass numbers and delivery. Those carcasses need to be delivered well up in second- and third-order streams. How would one do that on a wide scale and practically sustainable basis? I suspect that inorganic fertilizers may be needed for many streams, at least until escapements build back up, where the

input of marine nutrients is likely to be limiting..

4. Noted and, I hope, addressed to some degree in specific comments below.

5. Yes, but with the *caveats* mentioned above and later in this letter.

Specific comments

Supporting document *Oregon coho salmon biological status assessment*:
I agree with the staff on status of coastal coho. I do not see imminent risk of extinction. I see stock depression from below-average ocean survival, coupled with reduced stock resilience caused by habitat degradation and perhaps by excessive reliance on hatchery production.

p.1-2, last para: Limiting factor analysis is easy to talk about and hard to do. While important, as the paragraph notes, presence of one limiting factor should not prevent managers from feasible improvements in other risk factors; improvements that can speed coho response (or improve survival from egg potential to smolt) when a "lifted lid" permits movement toward greater carrying capacity. I see the point of starting with the most important depressant, but suggest it important to be holistic as well. However, I have found that identification of single limiting factors difficult and elusive. It may be more practical (than researching limiting factors) to work a delphi approach, using opinion of professionals. Adaptive management would follow, attacking the one or two top delphi limiting factors most aggressively while not neglecting other factors. Future treatment would depend on monitoring and evaluation.

p. 1-3, third bullet about 11 lines up from bottom: It is not the irrigation diversion that you want to fund, but mitigation of effects of the diversion. Just a working adjustment is needed.

p. VI-C-1: As noted earlier, I think the councils are absolutely essential to Initiative success. One of the reasons is tied to the comment earlier about small private landholders. Involvement of a few such stakeholders in the watershed councils not only educates them and brings new awareness of the need for land husbandry to improve, but puts them in informal outreach situations. Thus, the word will pass from one private landholder to another; in coffee shops, across the fence, and at community functions. Nowhere is that communication more important than among small woodland and farm owners.

Comprehensive monitoring program:
I examined the OCSRI Science Team writeup on monitoring. I like the strong recommendations on monitoring. Monitoring and evaluation are critical to the success of the Initiative. Not only will M&E permit adjustments as part of adaptive management, but they provide the fodder for deriving the essential continuity in funding and public interest.

Some elements of monitoring tell us how habitat and populations are performing over time, and will be based on trend analysis. Some needed elements should look at specific measures to determine if they work and contribute to improved population status, or if they cannot be shown to work. I think here about measures like beaver enhancement, carcass fertilization, inorganic fertilization application, and use of hatcheries to assist wild populations to restore themselves. How one sets up the evaluations is critical. Studies that extend over at least two or three generations, sometimes more, are required. Controls are needed, and they should involve similar but separate drainage basins. Stream classification, discussed at some length by the Science Team, can help here.

The main point is that our profession cannot afford to waste time, effort, and goodwill of decision makers by setting up invalid study designs that will not yield solid, definitive data. We have done that too often. On the other hand, we cannot promise too much. We did that with hatcheries. We need to keep politicians and the public on our side, convincing them that we know what we are doing, and that public monies are well spent.

In this connection, I enclose a paper that deals in part with designs and time frames for M&E as applied to instream structures in the Columbia basin. You may find it interesting. If not, throw it out. It will be out in *Rivers* before long.

Materials on population status:
I think the Science Team did a fine job on "*Recommendations related to population status*." I thought the range of production goals was fairly based, and that listing and delisting criteria were reasonable.

I would like to spend more time of the Draft, but cannot. Good luck.

Signed: Don Chapman

REVIEW OF CORE AREAS PROPOSAL

FOR OREGON'S

COASTAL SALMON RECOVERY INITIATIVE

30 November 1996

By

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For

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SUMMARY

The state of Oregon has recently proposed designation of selected reaches of coastal streams as "core areas" for salmon conservation and restoration. These areas would receive special (but largely unspecified) emphasis in habitat protection and restoration activities, and would presumably serve as source areas for colonization of other salmon habitats as they recover. Although there is clearly an opportunity and need to establish a system of landscape reserve areas where protection and restoration of salmon populations and the habitats and ecosystem processes sustaining them in a pre-eminent use, this proposal suffers from several shortcomings. The draft plan does not clearly define the actual role of core areas in a regional conservation strategy, and no measurable objectives, enforceable standards, or monitoring protocols for core area management are proposed. The designated areas are stream reaches, disembodied from the tributaries, catchments, and downstream critical habitats to which they are biologically and physically linked, and no analysis is provided to substantiate that implication that habitat functions of such reaches can be protected without protecting or restoring natural ecosystem processes and functions at the larger, catchment scale. Even assuming mapped core areas could be adequately protected, there has been no analysis of the adequacy of proposed core area networks for sustaining existing populations and spatial distribution of salmon, a critical oversight given the widely depleted and threatened status of salmon populations and habitats across the landscape. Similarly, there is no evaluation of the capability of the proposed network for providing sufficient emigrants to maintain or allow recovery of populations in surrounding habitats. Although it is clear that most of the proposed core areas support salmon populations that are higher than average in local abundance, no explanation or analysis is available to define what natural or historical factors cause this pattern. Given that the plan does not propose research to clearly identify the causes of higher abundance in core areas, the state cannot reasonably assure

that proposed management measures will sustain core area populations in the face of past and foreseeable human alteration of the landscape and natural disturbance events.

Analysis of selected maps indicate there is considerable error in the delineation of core areas in many basins, reflecting incomplete consideration of existing data sources, and a significant lack of information for many areas and species. Such mapping errors could result in insufficient lack of protection of known populations and undocumented loss of existing populations that have not yet been identified. To cope with the large problem of data gaps, I recommend the mapping process be revised to explicitly identify five kinds of areas for each species: 1) areas well-known to be critical for relatively strong ("source" or "core") populations; 2) areas predicted to support relatively strong populations based on landscape features, habitat data, or other information; 3) areas known to be inherently unsuitable or inaccessible to the species; and 5) areas for which sufficient information does not exist to assign them confidently to any other category.

Such a classification would provide a logical spatial framework for allocating biological monitoring and survey efforts: type 1 areas should be comprehensively monitored to ensure maintenance of a minimum network of viable populations, type 2 and 5 areas should be prioritized for exploratory inventories to assess status of their populations, and type 3 areas should be selectively monitored to assess the stability or recovery of presently marginal or inviable populations (or the spatial expansion of core populations). Moreover, the distribution of available habitat among these categories can provide a quantitative index of certainty regarding biological status. For example, a species for which information is lacking across most of its range must be assumed to be at higher risk of decline because stable or increasing trends cannot reasonably be assured.

Conservation of Pacific salmon, and especially management of priority or reserve areas, will occur in concert with a plethora of ongoing human activities. To the degree that critical areas for salmon can be integrated with existing or proposed landscape reserves for other aquatic and terrestrial species or resources (e.g., municipal or agricultural water supply), the likelihood of successful long-term protection of these areas would clearly be improved, both from the standpoint of social and ecological sustainability.

INTRODUCTION

The state of Oregon has proposed a system of designated reaches of coastal streams as "core areas" for salmon conservation and restoration (ODFW 1996). These areas would receive special (but largely unspecified) emphasis in habitat protection and restoration activities, and would presumably serve as source areas for colonization of other salmon habitats as they recover.

This review focuses on the spatial design and particularly management activities proposed or implied by ODFW (1996) for core areas. The criteria used in this evaluation include the technical sufficiency of the proposed plan to ensure recovery of the coho salmon in coastal Oregon, in keeping with the state's intent to preclude listing of the species under the federal Endangered Species Act (ESA) by implementing recovery measures that are as effective or more effective than might be implemented by NMSF under an ESA listing.

DEFINITION AND PROTECTION OF CORE AREAS

The designated areas all appear to be defined as stream reaches, although the reason for is not discussed in the text. Stream reaches are thus disembodied from the tributaries, catchments, and downstream critical habitats to which they are biologically and physically linked. The implication of this approach to defining core areas, although this is not explicitly address in the report, is that habitat functions of such reaches can be assessed and protected without fully considering operative ecosystem processes and functions at the larger, catchment or landscape scale. Literature discussions of reserve design for aquatic species (e.g., Moyle and Sato 1991, and sources cited in Frissell 1993 and Frissell and Bayles 1996) emphasize the overriding role of ecosystem linkages between uplands, tributaries, and downstream habitats, and the need to account for these linkages by protecting entire catchments where possible. The most successful examples of preserves for native salmonid fishes are extensive catchments fully included within national parks and other protected natural areas (Williams 1991).

It is unclear from the draft plan how designated core areas are to be protected without the landscape areas that directly influence them being delineated. It is also unclear how restoration actions for upstream or upland areas not immediately adjacent to the designated stream reaches (e.g., culvert removal or replacement) are to

be prioritized. In effect, the emphasis on mapping just stream reaches fosters the recurrent, tragic bias that has hindered previous restoration efforts--an inordinate focus on site-specific, instream structural manipulations and a neglect of off-site, upstream and up-slope processes that ultimately constrain habitat quality in salmon spawning and rearing areas. This approach is the result of immense political and social pressure to spatially isolate the solutions to salmon problems from issues of broader landscape management, and is reinforced by the common perception that scientific knowledge or causal mechanisms of impact to salmon populations diminishes with distance from the exact location of the fish themselves. In fact, our scientific knowledge of the ecology of salmon and the landscape they inhabit is sufficient to be certain that numerous impacting processes operate most clearly at catchment and stream network scales, not at the scale of individual stream reaches. Although we typically lack sufficient knowledge of the causal mechanisms to mitigate them effectively, we have plenty of evidence that such mechanisms do operate and significantly and adversely affect salmon habitat and populations (Frissell and Bayles 1996). Therefore we will not be able to fully avoid such large-scale impacts in a landscape dominated by past and ongoing human activities, but we do have the opportunity to identify and establish relatively risk-free zones, or landscape refugia, that might allow local populations and habitat mosaics to escape many of the most problematic cumulative and unanticipated effects of human uses. That is the fundamental logic of most aquatic reserve proposals, and that is why it has been commonly acknowledged that such a goal cannot be met without catchment-wide protection of such areas (Moyle and Sato 1991, Frissell and Bayles 1996, and other references cited in them).

The draft plan does not clearly define the actual role of core areas in a regional conservations strategy, and no measurable objectives, enforceable standards, or monitoring protocols for core area management are provided. Although it is clear that most of the proposed core areas support salmon populations that are higher than average in local abundance, no explanation or analysis is available to define what natural or historical factors cause this pattern. Given that the plan does not propose research to clearly identify the causes of high abundance in core areas, the state cannot reasonably assure that proposed management measures will sustain core area populations in the face of past and foreseeable human alterations of the landscape and natural disturbance events.

It is clear that staff time and resources were limited in the preparation of the present proposal, and that a considerable amount of work was accomplished given the time and staffing available. However, the state must recognize its proposal will be judged against the possible benefits of full federal protection under the ESA. In this comparison, it is clear the state has far to go. It seems likely the state must commit more fiscal and staff resources for successful development (and implementations) of a fully-evolved core areas protection/ restoration proposal. The state should consider recruiting professionals from outside its agency structure if it finds difficulty meeting these objectives. Finally, the state needs to get more serious about establishing and implementing biologically determined, population-by populations standards for salmon restoration, including maintaining the effectiveness of core areas as anchor points for regional recover. The proposed plan smacks of unacknowledged and unevaluated compromises based on the same political and bureaucratic encumbrances and systematic filtering of information that have contributed to the salmon's decline to date.

POPULATION VIABILITY AND CORE AREA DESIGN

Even assuming mapped core areas could be adequately protected, there has been no analysis of the adequacy of proposed core area networks for sustaining existing populations and spatial distribution of salmon, a critical oversight given the widely depleted and threatened status of salmon populations and habitats across the landscape. Similarly, there is no evaluation of the capability of the proposed network for providing sufficient emigrants to maintain or allow recovery of populations in surrounding habitats. Although these might seem new and challenging tasks for the state of Oregon, they are done daily by federal agencies under the auspices of endangered species management. However, it is clear in the case of salmon core areas that planning could be greatly improved with some well-focused research. There is a clear need for research to identify the local ecosystem processes and historical factors that have contributed to the persistence of high-quality habitats and fish populations in core areas. It we do not understand what makes these areas tick--why a core area is a core area--it is unreasonable to assume we can maintain their resent functions and values in the face of pervasive and multifarious human activities and natural disturbance events across the landscape.

EVALUATION OF SELECTED CORE AREA MAPS

I examined all of the core area maps to some extent, but for the purposes of is review, I will provide comments on three selected basins where I have detailed knowledge of the streams and fish. These examples will illustrate shortcomings that appear to be much more extensive in the core area mapping process. Analysis of these maps indicates there is probably considerable error in the delineation of core areas and species, as well as incomplete consideration of existing data sources. Unless deliberate efforts are made to some known

populations, and perhaps more importantly, to undocumented loss of existing population that have not yet been identified.

I examined the maps for the North Umpqua, Euchre Creek and Sixes River drainages in detail, and report on my findings here. After this brief review, I suggest a revised mapping protocol that could help minimize the consequences of data gaps and mapping errors like those noted.

Euchre Creek (Sixes River Hydrologic Unit)

The mapped core areas for fall chinook in Euchre Creek are logical if one casually interprets the available ODFW spawner survey data, but they entirely overlooked the single reach of Euchre Creek that does not interannually consistent and moderately-high-density chinook spawning. This assessment is based on several years of intensive research on Euchre Creek, including habitat monitoring and basin-wide adult and juvenile counts for all salmonids, as reported to ODFW in a series of reports (Frissell et al. 1987, 1988, 1989, 1990). We pointed out in our reports that ODFW surveys always missed the most important area for chinook spawning, which is actually found in a two-mile reach starting about two miles upstream (northeast) of the mapped core area (EUCHF1) at Crooked Bridge Creek (see specifically Fissell et al. 1989).

Although we confirmed ODFW observations of sporadic concentrations of chinook salmon spawners in the Crooked Bridge Creek reach (EUCHF1) in some years, we also substantiated with direct measurements at spawning sites that survival to emergence was likely negligible due to extreme bedload movement in this reach. Moreover, these fish return to a location that exactly corresponded to the site of previous mass releases of fry artificially reared from Elk River hatchery stock. We concluded these spawners were likely of hatchery origin and almost certainly experienced complete reproductive failure (Frissell et al. 1989). Fish in the upstream, canyon reaches of Euchre Creek (above the ODFW survey zone) were more abundant, more consistent in abundance and spawning distribution among years, more likely of wild origin, spawned in habitats that were somewhat more stable during egg incubation, and appeared to exhibit relatively high survival to the fry stage.

The Cedar Creek core area for chinook salmon in Euchre Creek Basin (EUCHF2) is also somewhat suspect in that this stream has received frequent and highly concentrated releases of hatchbox-reared fry, mostly of Elk River origin, and scattered returns from these releases have probably influenced spawner counts. Most spawning is dispersed and inconsistent from year to year, and appears to be associated with known sites of hatchbox or hatchery releases. However, we found that very consistent adult returns did occur to one series in middle Cedar Creek and we documented relatively stable egg incubation environments and consistently high juvenile densities in this reach across several years. This is hardly a population of high abundance (ca. 4-8 returning adults spawning in a 100-m reach), but it could conceivably comprise a significant fraction of whatever indigenous chinook heritage remains in Euchre Creek basin

The Euchre Creek chinook example illustrates the problem of relying on peak return data from ODFW spawner surveys to identify core areas, especially in rivers with depleted runs where peak returns may reflect transient spikes resulting from local releases of hatchery or hatchbox-origin fish, rather than sustained production from wild populations. (We estimated the size of the Euchre Creek chinook run at about 100 fish, with a mean spawner density of just 1-2 adults per km). When natural populations are small and fragmented, locally important concentrations of fish can be missed because of limited ground covered in officially-sanctioned spawner surveys, can be masked by sporadic returns of hatchery or transplanted stock, or can go undetected because of averaging of counts over long reaches mostly devoid of spawners. ODFW survey methodology is not well-suited for detecting small, remnant populations in basins were runs have been widely depleted. It is clear that the present core area maps could be improved with more effort to tap into research studies and other locally available information sources that can better identify such population distributions.

ODFW and the resources it manages have long suffered from the lack of an information management system to ensure that locally important research data and fish and habitat survey data generated by other agencies is preserved, catalogued, and consistently available to ODFW field managers and research biologists. This systematic deficiency partly accounts for the erstwhile and now infamous failure of ODFW managers to recognize serious biases in the coho monitoring program, even though biologists from BLM and other agencies had long warned ODFW of the problem. Even so, given the most streams lack the kind of detailed research history that Euchre Creek has, such information can only result in limited improvement of the present core are maps. More important is to acknowledge the likely pervasive nature of such systematic error

and formulate a mapping procedure, monitoring system, and conservation strategy that minimizes its consequences.

Sixes River

Based on several years of juvenile surveys (funded by ODFW, reported in Frissell et al. 1987, 1988, 1989, 1990), colleagues and I at Oregon State University documented spatial patterns in relative abundances in Sixes River basin during 1989-91. Apparently these data were not used by ODFW in the present delineation of core areas. The results summarized in Frissell (1992), showed that overall species richness and density and age class diversity of most salmon species declined steeply with maximum summer temperature. In terms of absolute abundance, larger, colder streams support the most juveniles, small cold streams and large, moderately warm streams were intermediate, and the warmest mainstem reaches supported few individuals and very few species. The coldest tributaries in summer were especially important for yearling and older steelhead and cutthroat trout. Other measured habitat variables explained little of the variation in density among reaches. These results suggest that summer water temperature could serve as a convenient habitat indicator for core areas for trout and salmon species throughout southwest Oregon.

I suggest that core area mappers refer directly to data presented in Frissell (1992) for revising Sixes River core areas, but in general here are a few suggestions. First, important tributaries for coho salmon include the Middle Fork Sixes and the mainstem Sixes, North Fork Sixes, and accessible tributaries above the Middle Fork. North Fork Sixes, Crafton Creek, and mainstem Sixes above the North Fork all support relatively high densities of juvenile chinook and steelhead as well as coho salmon. When we sampled Crystal Creek, it supported an especially abundant population of juvenile steelhead in addition to chinook, but only a few coho salmon. Edson Creek and Dry Creek both supported abundant populations of coho and chinook and are appropriately classified as such in the present map; however, both these streams are also support substantial concentrations of steelhead and cutthroat trout, and should be so designated. Dry Creek spawner counts by ODFW also record a remarkably consistent incidence by low proportion of chum salmon, suggesting this stream amy support one of the southern most relict chum runs on the coast (similarly consistent chum returns occur in Elk River and at least one stream in northern California). Substantial concentrations of juvenile of steelhead and chinook salmon occur during summer in the mainstem Sixes from about Dry Creek downstream, and these reaches also include holding pools for anadromous cutthroat trout. As first observed by Reimers(1971), a dominant fraction of the Sixes chinook population still completes much of its pre-marine life history in the estuary. Although these habitats are not used to any significant degree for spawning, the concentration of juveniles in them during the critical summer period suggests that both the lower mainstem and the estuary could be considered core areas for chinook and cutthroat, and the lower mainstem could be so designated for steelhead.

In general, these observations illustrate that substantially different core area designations may result when appropriate information on juvenile distribution is available. Second, it appears possible to generalize with some predictive capability about the potential value of streams as core areas for steelhead and cutthroat trout (species for which very limited data area available) based on juvenile surveys, or on demonstrated associations between abundance and summer temperature, riparian conditions, or other simple physical indicators. For steelhead and cutthroat trout in the streams we studied south of the Coquille River, the distribution of yearling juveniles was always substantially more restricted in space than was the distribution of adult spawners, redds, and fry; this suggests yearling juveniles may serve as a better indicator of critical habitat areas for these species. Third a few streams (e.g., Dry Creek, Edson Creek) are exceptional in their capacity to consistently support both a high *diversity* and abundance of salmon and anadromous trout species, and such biodiverse streams should be accorded the highest priority for full protection.

North Umpqua River

The designation of core areas for summer steelhead in the North Umpqua illustrates how the chosen approach suffers from the lack of consideration of basic principles of reserve design (as described in Moyle and Sato 1991). Canton and Steamboat Creeks (NUMSTS1) certainly do support most of the spawning and much of the rearing of this subspecies in the North Umpqua. However, smaller tributaries like Copeland Creek and Boulder Creek also support summer steelhead spawning and rearing. Designating the Canton-Steamboat as the sole core area for this run results in concentration of high-priority habitat in a single, small portion of the basin. It is not difficult to envision a rain-on-snow flood, major landslide, or other catastrophic event that could severely damage or block virtually the whole of the Canton-Streamboat area (especially give how extensively impacted are these watersheds by logging activities over the past two decades). In this event,

seemingly less important tributaries such as Copeland Creek and Boulder Creek could suddenly become the functional source areas for summer steelhead. An added consideration is that the research of Dambacher (1991) indicates most of the summer steelhead originating from the Steamboat Creek watershed spend a major portion of their freshwater life history rearing elsewhere, presumably in the main North Umpqua. Moreover, adult summer steelhead hold through much of the mainstem. These observations suggest that a least portions of the mainstem North Umpqua ought to be delineated as a core area for this species (further research or surveys of juvenile rearing should be undertaken to better define this area).

Similarly, while the main channel of the North Umpqua may indeed support much of the spawning and rearing of winter steelhead (NUMSTW1), several tributaries are no doubt also important for this run, and the failure to protect any tributary refugia as core areas could result in catastrophic loss of the whole population if the mainstem were impacted by a catastrophic event (e.g, a severe flood, or toxic chemical spill). Core area protection for tributaries known to support winter steelhead could greatly improve the security of this subspecies as well.

The North Umpqua steelhead examples, illustrate the value of incorporating the concept of tributary refugia and other forms of spatial redundance in reserve design (to reduce the risk of simultaneous failure), and the value of having habitat reserves that are well-distributed across the range of the target taxon (to reduce temporal correlation in focusing protection efforts on a single contiguous core area poses a high risk of failure, given the level of uncertainty inherent in our ability to secure any single core area from future disruption. Spatial dispersion of core areas (in relation to the drainage network and likely pathways of propagation of catastrophic disturbances) is important to ensure their long-range function , as is assessing the likely legacy of previous human alteration of the catchment and its contribution to the risk of future habitat deterioration. From the latter point of view, Canton Creek and Steamboat Creek seem exceptionally vulnerable to future catastrophic deterioration as a result of existing roads and clearcuts on steep and unstable lands. On the other hand, large reserves and those constraining many tributary branches are more likely to function well than small reserves, so the large Canton-Steamboat complex is relatively strong in this regard. Summing these considerations, I would endorse the designation of the Canton-Steamboat core areas, but call for its augmentation with other tributary core areas for summer steelhead (e.g, Boulder and Copeland Creeks, consistent with the Oregon AFS ADA maps).

The designated core area of North Umpqua spring chinook (NUMCHS1) illustrates another problem--biased or inadequate data for many wild populations. The designated core area appears to miss the heart of concentrated spawning and probably the most important rearing area of this subspecies in the basin. Based on my observations of spring chinook spawning activity during the fall in the North Umpqua above Rock Creek over about eight years (since 1986), I always observed the highest spawner density, most concentrated use of available habitat, and most interannually consistent populations of spawners in the upper river, from near the mouth of Boulder Creek downstream to near Streamboat Creek. Densities are most variable in the downstream third of this segment of the river, and below Steamboat Creek spring chinook spawning is lower in density and much more variable between years. Substantial spawning occurs in places below Steamboat Creek during high-escapement years, but relatively little occurs during low-escapement years. Based on water temperatures and occasional observation of juvenile chinook, a verbal report I have had from locally experienced biologists, I suspect that juvenile rearing is likewise highly concentrated in the North Umpqua above Streamboat Creek! Perhaps this delineation was overly influenced by angler catch data from the zone below Rock Creek where harvest is allowed and anglers effort for this species in concentrated (obviously his problem is also confounded by hatchery-origin adults, concentrated in the river below Rock Creek).

Finally, with regard to the concept of redundancy, it should be recognized that in small subpopulation of spring chinook spawns each year in Streamboat Creek; protection of a core area for these fish could help guard against complete loss of the mainstem-spawning population, which could occur i the event of a catastrophic dame failure, toxic chemical spill along the heavily-travel Umpqua Highway corridor or similar event. Barbara Fontaine, of the North Umpqua Ranger District (USFS), initiated counts of chinook spawners in Streamboat Creek many years ago and should be able to provide a useful time series of date.

RECOMMENDATIONS FOR A REVISED MAPPING PROCEDURE AND LINKED MONITORING PLAN

To cope with the large problem of data gaps, I recommend the mapping process be revised to explicitly identify five kinds of areas for each species: 1) areas well-known to be critical for relatively strong ("source" or "core") populations; 2) areas predicted to support relatively strong populations based on landscape features, habitat data, or other information; 3) areas known to support weak populations, transient populations, or none at all; 4) areas known to be inherently unsuitable or inaccessible to the species; and 5)

areas for which sufficient information does not exist to reasonably assign them to another category. Such a classification would provide a logical spatial framework for allocating biological monitoring and survey effort: Type 1 areas should be comprehensively monitored to ensure maintenance of a minimum network of viable populations, Type 2 and 5 areas should be prioritized for exploratory inventories to assess status of their populations, and Type 3 areas should be selectively monitored to assess the stability or recovery of presently marginal or inviable populations (or the spatial expansion of core populations). Moreover, the distribution of available habitat among these categories can provide a quantitative index of certainty regarding biological status. For example, a species for which information is lacking across most of its range must be assumed to be at higher risk of decline because stable or increasing trends cannot reasonably be assured.

To the degree that critical areas for salmon can be integrated while existing or proposed landscape reserves for other aquatic and terrestrial species or resources (e.g., municipal or agricultural water supply), the likelihood of socially sustainable protection of these areas would clearly be improved. This statement merely suggests the value in associating high-priority salmon populations and habitats with landscape features and catchment areas that are also of importance for other conservation objectives. the more clear are the multiple functions and values of these ecosystems, the more likely there will be long-term public and private support for ensuring these functions are protected.

CONCLUSIONS

The above listed shortcomings could be largely addressed, and the recommendations implemented, given reasonable fiscal and staff support and a willingness to forge new instructional arrangements for resource management by the state of Oregon. Although some of these suggestions may be new in certain details, all are based on commonly applied principles and practice in the field of conservation biology. Not only are these recommendations achievable, if something like them is not embraced it seems highly unlikely that true salmon recovery will occur in our lifetime in Oregon. No matter how many individual sacrifices are made by agency regulators, extractive industries, land developers, and coastal communities, and no matter how many thousands of hours and dollars are being invested in watershed councils, this effort will fail if salmon restoration strategies are not deliberately crafted and constantly evaluated based on a clear assessment of the best available (and best attainable) information, full acknowledgement and accounting for the possible consequences of information gaps, and a steadfast commitment to quickly and accurately fill the most critical of those gaps. This means both a substantially increased state commitment to monitoring and research of wild salmon populations and habitats, and a smarter and more ecologically informed, and scientifically defensible approach to marshaling monitoring, research, and management dollars.

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NEW - 2/20/97

Return to top of page

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December 1, 1996

Mr. Jay Nicholas
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Dear Mr. Nicholas:

Although I agreed to provide a review of Oregon's Coastal Salmon Restoration Initiative Plan by December 1, my teaching and other responsibilities during the past 6 weeks have prevented me from completing the careful review that I am sure you would like to receive. Given these constraints and the reality that this was an add-on activity that did not allow me to drop other responsibilities, I can make only few comments at this time.

First, the comprehensive overview and program integration that was attempted by the developers is very impressive. Overall, I liked the plan. It provides a comprehensive and accurate appraisal of the depth and breadth of the salmonid crisis, with a primary focus on coho. One of the most important messages of the report is recognition that neither the status quo of salmonid management nor yet another generation of minor tuning will reverse the decline. The system needs major overhaul and there is little time left to implement effective and comprehensive approaches to repair the damage to salmonids and the landscapes that they depend on.

That strength of the report is offset by several potential weaknesses. The extent to which they become a problem depends on the next steps in the planning process and the details of plan implementation. The plan is

a pioneering effort that expresses a vision and outlines a general plan to accomplish that vision. The plan wisely notes that there are no quick fixes and that one-size-fits-all management efforts are doomed to fail. But the connection between plan and implementation is still not firmly established. I hope this review process will make those connections clearer.

My primary criticism of past efforts and potentially this one is that the focus is still largely on coho salmon. Nearly 150 years of efforts to protect salmon in the Pacific Northwest have failed because of the narrow focus on salmon. This plan wisely concludes that a new viewpoint is required but many of the methods and approaches perpetuate that narrow perspective. Rather than see the salmon landscape as the goal, salmon are the goal. Worse, the primary goal is to increase the harvest of salmon, not improve the protection of salmon so that wild salmon can increase their populations. I suggest that a better approach would be to focus on the increase in wild salmon. After that increase is achieved, a shift in focus to harvest methods and levels can be initiated. This a subtle but nonetheless important difference. At one point the plan acknowledges that instant gratification is not possible. I suggest it would be prudent to develop that concept by setting the goal of protecting viable salmon populations rather than protecting the harvest of salmon.

A second problem is illustrated by the effort to "monitor." Fifteen major monitoring elements are proposed but little effort is made to show how the individual elements will be used and how the elements of the set will be integrated. To a significant extent, they are a grab bag of past monitoring elements supplemented by a few new approaches. Regrettably, they are not tied together nor are they connected explicitly to the broad goal of protecting salmon populations for the future. Little or no effort is made to show how each element or the set of elements will be used to make the difficult decisions that will be required for species and stocks that are at critically low levels.

The same comment is appropriate with respect to the listing of programs that exist or are envisioned by the various state agencies with management activity and/or authority that influences salmon populations. Some of them are important and others are tangential to the goal of restoring salmon. But they, like the monitoring elements, are not tied together in ways that allow the public to examine if and how the programs will be more than the sum of their individual parts.

Further, there is no critical evaluation of the extent to which each program will actually contribute to the protection of and increase in wild salmon populations. About 20 years ago, I participated in a similar project in the Maumee River, the major tributary of Lake Erie, as part of an effort to reduce nonpoint pollution. A list of best management practices was developed but after testing many were shown to degrade rather than increase water quality, or to narrowly increase agricultural production without substantive water quality benefits. Most important we found that selection and use of individual best management practices often failed to accomplish water quality goals because what was needed was integration of BMPs into best management systems. Too often BMPs that were presumed to yield water quality benefits when used singly actually caused degradation when used together.

Third, the report wisely notes and documents the importance of ocean conditions as an important influence on salmonid populations. But the tone of those comments does not carry the equally important message that salmonids survived many cycles of oceanic variation in the past without the kind of population crash that is present today. The major influence of ocean conditions on the fish during this climatic cycle is exacerbated by the devastating effects of more than a century of mistreatment of salmon landscapes and overhavest of salmon. In short, the low salmon populations, I suggest, are more profoundly influences by the oceanic cycles than they have been in the past. Thus, the plan should be clearer in conveying the complicated interactions of oceanic events and human actions that have produced the current declines and slowed recovery even when sound actions are taken.

Finally, I note that there should be less focus on the productive capacity for salmon of coastal landscapes and more emphasis on efforts to provide the complex environment and landscape conditions that sustain all the organisms associated with regional streams, lakes, wetlands, and estuarine environments that sustain salmon. That is, the measures of success and the monitoring efforts should focus less on productive capacity for salmon--on counts of a few fish species--and emphasize more the condition of the complex biota associated with those landscape and water bodies. Without that complex biota, we cannot expect to sustain salmon except by expensive artificial means. The cost of those artificial methods--including hatcheries--will only get higher as time passes.

As I said in a recent column published in *Wings*, the magazine of the Xerces Society: "The ecological integrity of water bodies rests on the well being of all their biological components, not just the size of commercially important populations. Failing to protect phytoplankton, zooplankton, insects, plants, bacteria, or fungi

ignores the key contributions of these groups to healthy biotic communities. The ability of a water body to support healthy living systems directly determines its ability to support human goals. No species, including those important to humans, can persist outside the biological context that sustains it." In my view, the lesson of the last hundred years of salmon management is that we saw the population of a single species (or a few species) as the goal and narrowly conceived efforts to accomplish that goal have failed. I urge you to make the vision of this plan broader.

Again, I say that the promise embodied in this plan is pioneering, a major step forward. Governor Kitzhaber deserves major credit for stimulating the development of this plan. Participants responsible for developing the plan have established a clearer and more accurate vision than has been articulated in the past. The devil is in the details of plan implementation, details that cannot be observed until the plan is made more integrative as I have noted above and it is initiated and sustained over several decades.

Sincerely,

James R. Karr
Professor of Fisheries and Zoology
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NEW - 2/20/97

Return to top of page

Review of
Oregon's Coastal Salmon Restoration Initiative

(August 1996 Draft)

by
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Review of Oregon's Coastal Salmon Restoration Initiative

Jim Lichatowich

Major Findings

Strengths

1. The Oregon Coastal Salmon Restoration Initiative (OCSRI) brings leaders of all the relevant state agencies and community level watershed councils together to work on coho restoration.
2. The governor makes a major commitment to restoration of coho salmon.
3. The state policy will play a stronger role in enforcement of regulations and laws relating to salmon habitat.
4. The OCSRI contains a commitment to an extensive monitoring program.

5. The OCSRI creates the Adaptive Management Working Group to insure that information obtained through monitoring is incorporated into restoration activities.
6. The OCSRI recognizes that coho salmon recovery will be a long-term process.
7. The OCSRI identifies the remaining productive habitats in the coastal watersheds.

Weaknesses[8]

[8] Page numbers indicate where a specific weakness is discussed in this review.

1. Lack of historical analysis of the roots of the crisis and the failures of past restoration efforts. *(page 3)*

2. Lack of an adequate statement of the problem. *(page 4)*

3. Lack of a conceptual foundation. *(page 6)*

4. Goals do not recognize the complex natural-cultural basis of coastal ecosystems. *(page 5)*

5. The importance of biodiversity in salmon populations is not explicitly recognized in the goals. *(page 10)*

6. Lack of clear linkages between goals, measures and monitoring elements. *(page 10 and 14)*

7. Measures lack completion dates or accountable positions assigned to them. *(page 15)*

8. Provisions for habitat improvement are not adequate. *(page 7)*

9. Definition of healthy populations and the use of core habitat maps appear to represent shifting baselines to accommodate shrinking resource base. *(pages 12 and 17)*

10. Throughout the OCSRI, the role of ocean productivity cycles is incorrectly described. *(page 12)*

11. The importance of marginal populations and habitats is ignored. *(pages 9 and 17)*

12. Institutional arrangements that contributed to the crisis are not explicitly identified. *(pages 8, 11 and 16)*

13. There are no specific measures designed to correct institutional arrangements. *(page 16)*

14. Current forest practices rules may be inadequate to protect and restore salmon habitat. *(page 7)*

Recommendations

Note: Those recommendations in bold type are considered necessary to insure successful implementation of OCSRI.

1. **At a minimum, the plan should contain a section which identifies the shortcomings of past plans and describes how the OCSRI takes those shortcomings into account and corrects them.** *(page 3)*

2. **An explicit problem statement must be included in the OCSRI. The problem statement should include an answer to the following question - If the laws are generally adequate to protect salmon, then why did they so obviously fail to do so?** *(page 4)*

3. **State agency goals and priorities should be evaluated for consistency with the goals of the OCSRI.** *(page 5)*

4. **The Salmon Strategy Team should adopt an explicit conceptual foundation for the OCSRI. The conceptual foundation should incorporate the relevant principles of ecosystem science and salmonid ecology.** *(page 6)*

5. **The new forest practices rules should be subjected to independent scientific review including an analysis of the differences between the state rules and option 9 of FEMAT.** *(page 7)*

6. The new habitat protection and restoration measures should be clearly identified and separated from ongoing activities. *(page 7)*

7. **Agency measures should include a completion date and identify the position within an agency assigned to complete the activity.** *(pages 7 and 15)*

8. **The institutional barriers creating obstacles to the success of OCSRI and the measures needed to correct them must be explicitly identified in the plan.** *(pages 8 and 15)*

9. The historical roots of the salmon crisis should be described. *(pages 8 and 9)*

10. **The linkages between goals, measures and monitoring elements should be explicitly described.** *(page 10)*

11. **The need for conservation and restoration of salmon biodiversity should be identified in the goals.** *(page 10)*

12. **The value of small populations in marginal habitats should be given greater recognition.** *(page 10)*

13. **Care should be taken to avoid shifting baselines to accommodate rather than restore a declining resource base.** *(page 10)*

14. The Adaptive Management Working Group should be independent of any agency and should receive independent funding. *(page 10)*

15. **On page IV-2 add a fifth category of risk called "institutional risk."** *(page 12)*

16. **Recognize that harvest of mixed hatchery and wild stocks has had a significant impact on naturally reproducing populations of coho.** (*page 12*)

17. **Recognize that fluctuations in ocean productivity have become a problem because of the added effects of habitat degradation, over harvest and poor hatchery practices.** *(page 12)*

18. **Healthy status of coho populations should be defined in terms of existing habitat <u>plus</u> the level of habitat recovery expected in the OCSRI.** *(page 13)*

19. **Supplementation and captive broods technology should be considered only when employed with adequate controls and evaluation.** *(page 13)*

20. The ecological value of salmon carcasses (nutrients) should be considered when setting harvest and escapement targets. *(page 14)*

21. **The formation, organization, and education of watershed councils should be given a high priority.** *(page 15)*

22. A specified amount of funds normally transferred from ODFW to the State Police for enforcement of harvest regulations should be dedicated to enforcement of habitat laws. *(page 16)*

23. **Core area maps should be expanded to include metapopulation structure of coho salmon populations in coastal watersheds.** *(page 18)*

Review of Oregon's Coastal Salmon Restoration Initiative

Jim Lichatowich

Oregon's Coastal Salmon Restoration Initiative (OCSRI) states that it is an "unprecedented effort to turn the tide on the salmon's decline." That assertion is correct. I have studied many of the major salmon restoration initiatives that have been prepared since the first attempt a craft a comprehensive restoration strategy in 1925 (IPSIF 1925). I agree that the OCSRI contains processes and organizational elements that are unique and Oregon should be complimented for new approaches to salmon restoration. The approach could be a useful model in restoration planning if OCSRI's major deficiencies are corrected. Oregon should view the current draft of the OCSRI as a good start, but major revisions are required.

The OCSRI asks reviews for two kinds of information (Page VII-B-1):

- Constructive suggestions for specific improvements.
- A judgment as to the likelihood that the plan will be sufficient to achieve conservation and restoration of anadromous salmon and trout in coastal river basins.

Responses to the first request are contained in the detailed comments. As for the second, in my judgment it is impossible to predict the outcome of the plan. The OCSRI does not provide enough information and has major shortcomings, which if not corrected will reduce its effectiveness. Major shortcomings are:

- The lack of a conceptual foundation;
- The lack of an adequate problem statement;
- The lack of clear linkages between goals, measures and monitoring elements;
- The measures do not have completion dates or accountable positions assigned to them;
- The goals do not recognize the complex natural-cultural basis of coastal ecosystems; and
- The provisions for habitat improvement are not adequate.

Background

The salmon crisis is profoundly historical. It is a product of a long sequence of assumptions and decisions made by humans. It's important to accept that fact and learn from the historical roots of the crisis rather than avoid or ignore them. In the 130 years that salmon management and utilization have been dominated by Euroamericans, dozens of plans and programs to restore salmon have been prepared. Those plans failed. That is why there is a salmon crisis today and that is why the OCSRI came into existence. We can learn more from those past plans than the obvious fact that they did not halt the salmon's decline.

Most salmon restoration plans ignored or gave little attention to their scientific foundations, and instead focused on institutional process or on the things to do to restore habitat or increase salmon abundance. The OCSRI shares that deficiency. All of us would rather roll up our sleeves and dig into the things that have a

direct connection to the salmon and avoid wrestling with the less tangible scientific concepts, theories and assumptions. But a restoration plan without a solid conceptual foundation is like a rudderless ship on a stormy sea. The plan without an explicit foundation will be pushed and pulled by strong political currents, day to day crises and the strong inertia of the status quo. Eventually it will be pulled off course and end up on the shelf gathering dust with all the other restoration plans.

Most salmon restoration plans given superficial treatment to the identification of the problems causing depletion. The well known factors causing declines: logging, irrigation, dams, urban development, pollution, etc. are usually presented as the problem. Few would argue that logging, irrigation, mining, streamside grazing, pollution, etc., have caused depletion, but merely listing those factors avoids the more important question. Why did those factors cause depletion when there is a long history of laws, regulations, and policies enacted to ensure that we logged, irrigated, and developed in ways that were compatible with the continued productivity of the salmon? The list of factors is used to avoid the possibility of embarrassing institutions or individuals for a breakdown of stewardship that the body of laws, regulations and policies intended to foster. The problem must be honestly described before there is any hope of fashioning real solutions.

Without an explicit conceptual foundation and problem statement the OCSRI's strengths can become its weakness. A major positive innovation in the OCSRI is the breath of the agencies and institutions that have been brought together to resolve the salmon crisis in Oregon's coastal rivers. Bringing together the Salmon Strategy Team, whose members are leaders of all the relevant state agencies, and the community level watershed councils, is a major accomplishment. However, each of those agencies and councils comes to the OCSRI with a different point of view, a different set of priorities and a different approach to problem solving. The diverse mix of ideas is good, but it needs to be organized and guided by a solid conceptual foundation and a meaningful statement of the problem. Without the organizing power of a conceptual foundation, diversity can shift from a positive force to confusion and conflict over different and competing purposes.

The following general and specific comments are intended to help the Salmon Strategy Team build on the strengths of the OCSRI and correct its major deficiencies.

General Comments

Explicit Recognition of the Failures of Past Plans

On paper, Pacific salmon are the most restored species group in the world. Numerous plans and programs were written over the past 70 years. Those plans were honest attempts to restore or enhance Pacific salmon, however, the current region-wide crisis is confirmation of their failure. The overall approach of the OCSRI is unprecedented in that it explicitly includes all state agencies whose activities can impact salmon and it incorporates local communities. Another important and somewhat unprecedented element of the plan is a proposal for an extensive monitoring program. However, the OCSRI also shares some of the shortcomings of past plans: the lack of a conceptual foundation is one similarity with past plans. In some areas the OCSRI isn't as innovative as past plans. For example in 1938, the Oregon State Planning Board (OSPB 1938) reviewed the decline of salmon in the Columbia River and made a series of bold recommendations including a study of the value of setting aside some tributaries as salmon sanctuaries and a recommendation to consolidate the fragmented state and federal responsibilities into an independent salmon commission. Since there is a long history of attempts to avoid the crisis we are faced with today, it is important that the OCSRI explicitly recognize that history and demonstrate that it has benefitted from the mistakes of the past.

Recommendation
-- At a minimum, the plan should contain a section which identifies the shortcomings of past plans and describes how the OCSRI takes those shortcomings into account and corrects them.

Need for a Problem Statement

A critical part of any restoration plan is its problem statement. In the context of restoration plans, the problem is defined as those factors preventing realization of the stated goals. Unless the problem is clearly and completely defined it is impossible to determine if the proposed solutions are adequate or even appropriate. The closest the OCSRI comes to a problem statement is on page IV-1 where the plan identifies factors responsible for the decline of Oregon's coastal coho salmon. The list includes fishing, urbanization, agriculture, logging, etc. Every item on the list can cause salmon populations to decline, but the list and the narrative that follows do not constitute an adequate definition of the problem.

Oregon came into existence with a concern for perpetuating the salmon. The 1848 territorial constitution contained a provision to protect salmon for the construction of obstacles to their migration. Since then numerous laws, regulations and policies have been enacted to protect salmon. The intent of those laws was to enable Oregonians to do the things listed on page IV-1 in ways that are compatible with the continued productivity of Pacific salmon. Goal 3 of the OCSRI implies that the existing set of laws is generally adequate to achieve that intent. If the laws are generally adequate to protect salmon, then why did they so obviously fail to do so? The answer to that question should be at the heart of the problem statement for the OCSRI.

Recommendation
-- An explicit problem statement must be included in the OCSRI. The problem statement should include an answer to the following question 3/4 If the laws are generally adequate to protect salmon, then why did they so obviously fail to do so?

Goals should Reflect the Natural-Cultural Status of Coastal Watersheds

Oregon's coastal watersheds are natural-cultural systems. That means they are composed of natural elements such as salmon, forests, and wildlife, but they are also composed of social, cultural and economic elements. The natural and cultural elements that depend on coastal watersheds must be considered together in the OCSRI. The goals on pages II-1 to 3 emphasize the natural elements, more specifically the salmon. There is a need for a more comprehensive set of goals that reflects the mix of natural and cultural concerns, problems and desires for the coastal watersheds. OCSRI must clearly demonstrate that all the state's major goals for coastal watersheds are consistent with salmon restoration. For example, the salmon oriented goals will not be effectively pursued if they conflict with the state's economic goals for timber harvest in the coastal watersheds. The new riparian protection regulations appear to emphasize timber harvest over salmon habitat protection or long-term recovery and could conflict with the intent of OCSRI.

In the past, ensuring consistency among the state's goals would have been impossible. However, since the Salmon Strategy Team is composed of all the relevant state agencies, it should not be too difficult to explicitly demonstrate that the goals of the state for coastal salmon are consistent with the goals of the other activities that are part of the natural-cultural makeup of Oregon's coastal ecosystems.

Recommendation
-- State agency goals and priorities should be evaluated for consistency with the goals of the OCSRI.

Need for a Conceptual Foundation

A conceptual foundation is a set of scientific principles, theories, and assumptions that give direction to

management and restoration activities. The conceptual foundation determines how information is interpreted, what problems are identified and the selection of appropriate solutions (Lichatowich et al. 1996). Because they determine how information is interpreted, conceptual foundations are the most powerful element in management and restoration plans and they can determine the success or failure of those plans (Williams et al. 1996).

All salmon management and restoration programs have conceptual foundations, however, like the OCSRI, they are rarely explicitly described so they can be reviewed, evaluated and debated. Williams et al. (1996) is an exception. The OCSRI brings together several state and federal agencies and private interests for the common purpose of salmon conservation. Those institutions and groups have different legislative mandates, economic interests and points of view. It is critical to organize that diversity within the framework of an explicitly defined conceptual foundation. If the foundation is not defined, there is a real danger of inconsistent or counter productive interpretation and implementation of actions. For example, within the OCSRI, the implied underlying principles and assumptions driving harvest recommendations appear to conflict with the principles and assumptions necessary for sustained recovery of natural production. Internal conflicts can be identified and corrected if the fundamental principles and assumptions are available for everyone to review and evaluate.

A conceptual foundation would be an invaluable tool in the education and outreach elements of the OCSRI.

Chapter two in Williams et al. (1996) should be reviewed for more details on the importance of conceptual foundation and an example of a conceptual foundation for a large-scale salmon restoration program. The conceptual foundation should be based on the relevant principles of ecosystem science and salmonid ecology. It's likely that a conceptual foundation would cause the OCSRI to place more emphasis on linkages across the entire landscape of the coastal ecosystem and the importance of salmonid biodiversity than currently exists.

Recommendation
-- The Salmon Strategy Team should adopt an explicit conceptual foundation for the OCSRI. The conceptual foundation should incorporate the relevant principles of ecosystem science and salmonid ecology.

Habitat Protection and Improvement Provisions in the OCSRI should be Strengthened
Timber harvest is a major source of habitat alterations in Oregon's coastal rivers. Attachment II-B, page 37 states the recent changes in forest management policy will reduce the risk to coho salmon in the next 3-12 years compared to the past 1-2 decades. With regard to the new Forest Practices Act rules, Attachment II-B also states "... the new rules represent improvement over the past regulatory requirements for stream habitat protection." The new rules will probably improve habitat conditions for coho salmon, but that is not the primary concern which needs to be addressed in the OCSRI. A more important questions is this: Are the new rules adequate to achieve the recovery goals of the OCSRI? The OCSRI should include an independent scientific assessment of the new forest practice rules and that assessment should include a comparison with Option 9 of FEMAT and a scientific evaluation of the differences.

The list of agency measures devoted to habitat is impressive, however, a review of Book 1, Attachment I reveals that many of those measures are actually existing activities, they are voluntary or they do not have funding. The list of measures is a mixture including the status quo activities, voluntary measures and unfunded measures. It's hard to sort out from the large list of measures what new habitat protection activities are funded and will be implemented. The OCSRI or attachments should include tables which clearly identify which measures are the status quo, which are new measures and which measures are funded. Oregon could help to more firmly establish its commitment to habitat protection and restoration if it identified low priority state activities that will be terminated in order to fund higher priority activities devoted to restoration of coho salmon habitat.

In many cases it is impossible to determine if the habitat measures will be implemented in 10 days, 10 months or 10 years. The position responsible for completing a measure within an agency is not identified in the OCSRI or Book I of Attachment I. The habitat measures will not be completed unless someone is given explicit responsibility to carry them out by a specified completion date.

Recommendations
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- *The new forest practices rules should be subjected to independent scientific review including an analysis of the differences between the state rules and Option 9 of FEMAT.*
- *The new habitat protection and restoration measures should be clearly identified and separated from ongoing activities.*
- *Agency measures should include a completion date and identify the position within an agency assigned to complete the activity.*

Specific Comments on the OCSRI

Introduction The second bullet on page x of the introduction states that this plan will serve as a model for intergovernmental and community based collaboration and partnerships. Declaring success before a restoration plan is implemented is a problem that has plagued salmon restoration in the past, especially when artificial propagation was the primary means of recovery. Whether or not the plan serves as a model should be based on its real success not its potential.

The fourth bullet on page x, states the intent of the plan is to make the system work better, not just establish a new set of laws. To accomplish that the plan will have to focus more attention on institutional changes needed to ensure that the existing laws, regulations and policies are implemented in the future. The need goes beyond the enforcement of laws as described in Chapter VI-F. For example, enforcing harvest regulations will not correct the institutional mindset that permits chronic overharvest and under escapement.

On page XV the plan describes obstacles to success of the OCSRI. Among those factors, is the category institutional barriers. Institutional barriers are a major cause of the current crisis and an important impediment to its resolution. The OCSRI addresses Institutional barriers again in Chapter VI-E (Change), but its treatment is inadequate. Unless the institutional barriers are identified and specific measures to reduce or eliminate them implemented, this plan will, like many of its predecessors, fail to achieve its goals.

Aspects of Oregon's hatchery program illustrate the power of institutional barriers. In 1929, Hugh G. Mitchell, the Director of the Department of Fish and Culture for the Oregon Fish Commission realized that interbasin transfers of salmon were detrimental.

> "The older system of transferring by truck fish raised at a station on one stream to another stream for liberation is now considered undesirable on account of the resulting disturbance to the homing instinct. With this in mind the policy has been adopted, insofar as the available funds will permit, to establish and operate small stations on such stream of the state as are suitable for salmon runs." (OFC 1939)

Fifty-six years later, Flagg et al. (1995) after reviewing the causes for the extinction of lower Columbia River coho salmon, recommended that interhatchery transfers of salmon be restricted. The OCSRI states that there will be a substantial reduction of off-site releases of salmon. From 1939 to the recent past large numbers of hatchery fish were transferred from their home streams to foreign streams. In 1939, transfers had been the norm of 50 years. It took another 56 years to reduce the institutional barriers and substantially reduce this detrimental practice.

On page XVI, the plan recognizes that the crisis was a century in the making. That is an extremely important point. The salmon crisis is profoundly historical. Understanding the roots of the current crisis, evaluating the appropriateness of the proposed solutions and providing public education on the issues would be facilitated by including a section devoted to the history of the problem. Salmon managers are reluctant to examine the historical roots of the current crisis out of fear that such an analysis will lead to finger pointing and blaming. While that is a possibility, the benefits of clearly identifying the historical roots of the problem so appropriate

solutions can be fashioned outweighs the risk of embarrassing an institution, a program or an individual.

Recommendations
--

- *The institutional barriers creating obstacles to the success of OCSRI and the measures needed to correct them must be explicitly identified in the plan.*
- *The historical roots of the salmon crisis should be described.*

Goals and Strategies (Chapter II)
The goals should be the central organizing element of the plan. The relationship between the goals and agency measures need to be clearly described (Chapter VI-A). In addition, monitoring elements need to clearly demonstrate that they will track progress towards the goals. The linkages between goals, measures and monitoring should be explicit; the reader should not have to make that connection. The goals are presented in Chapter II, but there is little reference made to them in the rest of the plan.

One of the goals ought to address the need to restore physical habitat diversity in the coastal watersheds and biodiversity in the individual salmon populations. The restoration of biodiversity should also be the target of agency measures. Biodiversity is part of the monitoring program (Attachment II Task 6 of the monitoring proposal), but it needs to be brought forward and incorporated into the goals and agency measures.

Goal 1 - Include the watershed councils as part of the infrastructure.

Goal 6 - The strategies seem to strongly support the status quo. Page 5 of the core area report in Attachment II presents the caveat that stream reaches not identified as core areas should not be considered unimportant. But the OCSRI and Attachment II strongly emphasize core areas over noncore stream reaches for special protection and priority for funding habitat projects. The OCSRI should also identify stream reaches that were historically core areas but are not degraded and establish a goal to upgrade them. Many noncore areas contain small populations in marginal habitat. Thompson (1965) argued for the importance of small populations in marginal habitats and Scudder (1989) argued that small populations in marginal habitat were important to the maintenance of genetic diversity of salmon populations. It appears that the OCSRI is willing to relegate those marginal populations to lower priority. The use of core areas could be a powerful tool especially if it is coupled with metapopulation theory which would expand the geographical base and incorporate small populations in marginal habitat.

Management institutions have historically shifted the spatial, temporal and numerical dimension of the resource baselines to accommodate a shrinking base. Shifts in resource baselines effectively reduces the magnitude of the declines. By shifting the baseline, Nickelson et al. (1992) was able to list the Tillamook Bay chum salmon as healthy even though average abundance had dipped from 93,000 fish in the 1940s and 1950s to 17,000 fish in recent years. If we persist in shifting the baselines, the unavoidable consequence is extinction (Lichatowich 1996). The identification of core areas has value, but if it is used to establish a new baseline - core areas will be protected and others will be relegated to a lower priority - then their value will be outweighed by the negative consequences.

Goal 8 - The Adaptive Management Working Group should be independent of any specific agency with independent funding.

Recommendations
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- *The linkages between goals, measures and monitoring elements should be explicitly described.*
- *The need for conservation and restoration of salmon biodiversity should be identified in the goals.*
- *The value of small populations in marginal habitats should be given greater recognition.*
- *Care should be taken to avoid shifting baselines to accommodate rather than restore a declining resource base.*

- *The Adaptive Management Working Group should be independent of any agency and should receive independent funding.*

Factors Responsible for the Decline (Chapter IV)
On page VI-E-1 the plan states, "while the physical contributing factors receive much focus in the salmon restoration effort, the institutional arrangements that allowed gradual erosion of the salmon resource share responsibility for this plight." Given the implications of goal 3 that the existing body of law is adequate to protect and restore salmon, then the institutional arrangements mentioned above must be identified as a major factor contributing to the decline of salmon. Add to the list of factors causing the decline of coho salmon the failure to implement statutes, policies and programs designed to protect or restore the productivity of salmon. Page IV-2 add a fifth category of risk called "Institutional Risk."

Throughout the OCSRI the impact of hatcheries on natural production due to harvest of mixed hatchery and wild stocks is not mentioned. Mixed stock fisheries are important contributors to the decline in natural stocks and they played a role in the extinction of the lower Columbia River coho (Flagg et al. 1995). Mixed stock fisheries are one of the institutional arrangements that have been detrimental to the productivity of coho salmon in Oregon's coastal rivers.

Throughout the OCSRI, the role of ocean productivity cycles is incorrectly described. Ocean productivity is treated as a major determinate of salmon productivity independent of human activities such as overharvest or habitat degradation. The changes in large scale climatic factors that determine the survival and productivity of salmon in the ocean are natural phenomena that salmon have experienced for thousands of years. Changing ocean conditions have become a problem in recent years because of their interaction with detrimental human activities such as overharvest, habitat degradation and hatchery practices. The performance of salmon in the estuary or ocean is not independent of what happens in freshwater. Habitat degradation and management programs such as artificial propagation and harvest have reduced biodiversity and may have directly reduced the salmon's capacity to withstand the natural fluctuation in the marine environments. The OCSRI does not address this aspect of salmon restoration, i.e., the need to maintain or restore biodiversity to enhance the salmon's performance during natural fluctuations in climate. (See Chapter 10 in Williams et al. 1996).

Recommendations
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- *On page IV-2 add a fifth category of risk called "institutional risk."*

- *Recognize that harvest of mixed hatchery and wild stocks has had a significant impact on naturally reproducing populations of coho.*

- *Recognize that fluctuations in ocean productivity have become a problem, because of the added effects of habitat degradation, over harvest and poor hatchery practices.*

Production Goals and Listing Criteria (Chapter V)
The first bullet on page V-1, states that the level of production that might be achieved given the current understanding of habitat availability could be used to describe healthy levels of production. This is an example of a shrinking baseline. Defining healthy levels of production on the status quo availability of habitat will lead to continued depletion in the long term. The status quo produced the current crisis. Reaffirming the status quo will not recover coastal coho salmon. Healthy levels of production must be defined by the current condition of the habitat plus the improvements in habitat that can be expected if the OCSRI is successful.

In the second paragraph under Production Goals, the last sentence should be revised to read: Freshwater habitat degradation is a dominate factor in determining productivity and sustainability of coho salmon populations and the effects of habitat degradation are severely aggravated during natural cyclic changes in ocean conditions. There is a tendency throughout the OCSRI to shift the emphasis to the changing ocean conditions - a natural phenomena over which we have no control - and away from habitat degradation and overharvest - human activities over which we do have control.

The third paragraph under Production Goals recognizes the interaction between habitat quality and ocean survival, but it ignores the impact of excessive harvest. If harvest responded to the changes to ocean survival

in a timely way, the problem of under utilization of habitat might be avoided.

In the second paragraph under Production Levels of Healthy Populations, coho salmon populations are considered healthy when full production of current habitat is achieved. That approach implies the current condition of the habitat is acceptable. Full production of the current habitat could be considered an interim step towards achieving healthy status, but it should not be confused with habitat and populations that have been restored to the extent they can be over the long term. In the Introduction, the OCSRI correctly points out that the recovery of salmon will be a long-term process and people shouldn't expect quick fixes. That is good advise and it should apply to OCSRI's definition of a healthy population. Achieving healthy status is a long-term proposition for most of Oregon's coho salmon populations. The long-term struggle should not be undermined by setting criteria for healthy status that can be achieved quickly, but have little long-term value.

Population sizes for endangered status appear low (page V-9). In the first paragraph under Listing Criteria (page V-7), all the conditions described, i.e., solitary spawners and failure to fertilize eggs because of a lack of males, are not criteria for listing but conditions more serious than endangered. Hopefully the ESU would be listed before those conditions were experienced.

In the first paragraph under criteria for Hatchery-Wild Interactions (page V-11), the problems resulting from fisheries on mixed stocks of hatchery and wild fish are not recognized.

On page VI-A-I-20 measure ODFWIIB2 recognizes that the use of hatcheries to rebuild wild populations needs verification. However, on page V-12, two hatchery techniques that have yet to be shown effective in restoring natural production without excessive biological costs will be considered on an emergency basis. Improperly used, artificial propagation can pose a threat to natural production. Supplementation and captive brood technology should not be considered or employed without strict controls and evaluation. Concern for the negative effects of artificial propagation is not evident on page V-12.

Recommendations
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- *Healthy status of coho populations should be defined in terms of existing habitat plus the level of habitat recovery expected in the OCSRI.*
- *Supplementation and captive broods technology should be considered only when employed with adequate controls and evaluation.*

Management Measures from State Agencies (Chapter VI-A)
I can understand the organization of the measures within a framework of management issues, but it is just as important to show the relevance of the measures to the eight goals of the OCSRI. The plan should explicitly demonstrate the linkage between goals and measures.

The failure to identify completion dates for most measures and assign responsibility to a division or a position within the responsible agency greatly reduces the credibility of the list. The history of salmon restoration is replete with lists of projects designed to restore or protect salmon. Every item on those past lists was put there with the best intentions, but in many cases were never implemented, evaluated nor was there any accountability.

Measure ODFWIVB5 proposes to use hatchery carcasses to naturally supply nutrients to selected coastal streams. This same concept should be applied to the calculation of the number of salmon needed to escape the fisheries.

Recommendations -- (*see recommendation on page 8*) *The ecological value of salmon carcasses (nutrients) should be considered when setting harvest and escapement targets.*

Watershed Councils and Governor's Watershed Enhancement Board (Chapter VI-C)
The watershed councils and the Governor's Watershed Enhancement Board are two important, positive features of the OCSRI. Achieving true ecosystem or watershed management will require the use of local knowledge which can be greatly facilitated through active watershed councils. The formation, organization, and education of watershed councils should be given a high priority.

The watershed councils should have stronger linkages to the OCSRI. For example, the eight goals of the OCSRI should be the framework for the goals and activities of the watershed councils. An explicit conceptual foundation would also help organize the activities of the watershed councils.

The councils should be given a major role in monitoring and assuring accountability for the implementation of the state agency measures. The OCSRI states that watershed councils will promote basin-wide monitoring of watershed conditions (page VI-C-6), however, the relationship between this monitoring and the monitoring program described in Chapter VI-G and Attachment II is not clear.

Recommendation -- *The formation, organization, and education of watershed councils should be given a high priority.*

Leadership and Institutional Change (Chapter VI-E)
It should be evident from comments included in the preceding sections that I consider institutional arrangements an important factor in the persistent decline of salmon and the failure of past restoration efforts. This chapter is one of the more important since it addresses this critical subject, but in terms of content it is one of the most disappointing. I have full confidence in the commitment of Governor Kitzhaber to the conservation and restoration of salmon. However as this plan clearly points out (page XVI)), the resolution of the salmon crisis will take a long time. The program will probably extend beyond the terms of several governors. While Governor Kitzhaber's leadership will be required to achieve the necessary momentum to change the direction of state agencies, the plan should give more substantive recognition to the specific institutional changes that are needed and how they will be achieved.

This chapter should include a list of the institutional arrangements that have prevented protection and conservation of Pacific salmon. Once the institutional problems are identified the Salmon Strategy Team should prepare a list of measures specifically designed to correct them. Failure to take on this important task will be a major impediment to the successful implementation of the OCSRI.

Recommendation -- *See recommendation on page 9*

Enforcement and Compliance with Existing Environmental Laws (Chapter VI-F)
I was pleased to see that the Oregon State Policy will play a stronger role in the enforcement of habitat regulations and laws. The actions necessary to facilitate that shift should be given high priority. In addition, a specific amount of funds normally transferred from ODFW to the State Policy for enforcement of harvest regulations should be dedicated to enforcement of habitat laws.

Recommendation *-- A specified amount of funds normally transferred from ODFW to the State Police for enforcement of harvest regulations should be dedicated to enforcement of habitat laws.*

Monitoring and Interim Indicators (Chapter VI-G)
Monitoring is needed to answer two critical questions: Have the institutions implemented the specific measures as indicated in the OCSRI (Chapter VI-A) and has the implementation of the OCSRI produced the desired results in coastal watersheds? The second question is addressed in Chapter VI-G, but the first question is not addressed at all.

Item 7 in the list presented on page VI-G-2 indicates fish propagation monitoring is ongoing. Does that include monitoring the impacts of hatchery operations on wild fish?

I agree that adaptive management will be an important part of the monitoring program. The Adaptive Management Working Group (strategy 8.d, page II-3) will be a primary user of the monitoring information. The composition and leadership of the working group will play a key role in the success of the OCSRI. In the past, promotions to key posts in institutions have too often been awarded to those who were not very adaptive. Too often they were individuals capable of supporting the status quo even to the point of maintaining a positive spin on the status quo as salmon populations were moving towards disaster. The Adaptive Management Working Group will have to have the independence, the technical skill and courage to challenge the status quo when the scientific information supports such a change. To borrow one of Jim Martin's pejorative terms and use it in a positive way: The Adaptive Management Working Group must be made up of a healthy proportion of "eye pokers."

The list of benchmarks is well done as far as it goes. In addition to the benchmarks listed, additional benchmarks that monitor phenotype diversity (life history diversity) of the coho salmon populations should be developed (e.g., Healey and Prince 1995). The detailed description of task 6 discussed in Attachment II (page 13), recognizes the importance of life history diversity. The lack of reference to biodiversity (genetic or phenotypic) in the OCSRI's goals and agency measures causes me to question the value of priority given to this important topic.

Core Area Maps (VI-H)
See comments on Goal 6.

Designation of core areas is an important element of OCSRI and Attachment II. The value of core areas would be enhanced by incorporation of metapopulation theory and the addition of more historical perspective.

OCSRI and Attachment II state that under pristine conditions salmon were not evenly distributed as a result of local differences of habitat. That assertion is true, however, the text following that statement implies that the current core areas are the same as those that existed under pristine conditions. That is not true. Existing core areas might be quite different than those that existed under pristine conditions. Current core areas are the product of natural ecological processes and habitat degradation and fragmentation over the past century or more. Making the current core area equivalent to pristine cores, fails to clearly establish the magnitude of habitat loss (and the magnitude of the restoration problem) and it can lead to a baseline shift which will make the loss of historical core areas permanent.

The concept of core areas should be expanded to include the emerging concept of metapopulations (e.g., Hanski and Gilpin 1991, Schlosser and Angermeier 1995, McCullough 1996 and Chapter 2 in Williams et al. 1996). There are several models of metapopulation structure, but the core-satellite model appears to be appropriate for salmon populations (Williams et al. 1996). Incorporation metapopulation theory could make use of existing work on core areas but it would make the entire approach more robust because it would

incorporate the small populations in marginal habitats. (See Scudder (1989) for a discussion of the importance of small populations in marginal habitats).

Recommendations
-- See recommendations on page 11. Core area maps should be expanded to include metapopulation structure of coho salmon populations in coastal watersheds.

Major Changes in Management Related to Risk Factors (Chapter VII-A)
The table on page VII-A-7 implies that the effects of hatchery operations and harvest regulation is easily estimated with little uncertainty, where as there is a great deal of uncertainty associated with habitat restoration. I agree some aspects of hatchery and harvest operations can be quickly evaluated, but some of the more important effects of hatchery and harvest programs will take years to evaluate and the outcome of those evaluations will contain uncertainty.

If harvest rates were changed to increase escapement to provide more carcasses for ecological purposes (food for several species of wildlife and for stream fertilization) the impacts may take years or decades to estimate. It is not easy to determine the impact of changes in hatchery release practices on competition with wild salmon. It would take several decades to determine what level of harvest causes measurable genetic changes in wild and hatchery salmon populations and even then there would be some uncertainty in the answer. One of the reasons there is the perception that harvest and hatchery programs can be monitored with a high degree of certainty is that we have never asked the hard questions regarding the impact of hatchery and harvest operations.

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NEW - 2/20/97

Return to top of page

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Mr. Jay Nicholas
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2 December 1996

Dear Jay:

Thank you for giving me the opportunity to review the 26 August 1996 draft of Oregon's Coastal Salmon Restoration Initiative Plan. In the draft plan, freshwater habitat quality and marine survival are considered to be the two most important factors that determine coho production in the Oregon coastal ESUs. Because most of my professional experience is in ocean salmon research, I do not consider myself well-qualified to comment on the effectiveness of the numerous freshwater habitat restoration measures that are proposed. Therefore, my review is limited to the plan's overall adequacy with respect to ocean-related measures.

The draft plan is very weak with respect to marine survival issues. The scientific conclusions are unduly confident ("science *agrees* on one issue that . . . the ocean is extremely variable with respect to its suitability for coho salmon" and "natural cyclic highs and lows in ocean productivity . . . are a *crucial* factor underlying the potential for coho recovery," Introduction, p. XVI). The solution is passive ("make improvements to the freshwater and estuarine habitats that support salmon so that these populations can persist until more favorable ocean conditions return," Introduction, p. XVI). The future is equivocal ("*no one knows* whether a cycle of relatively good ocean conditions will resume soon, the current adverse conditions will continue for a period, or whether conditions in the near future will get worse than in the recent decade," Introduction, p. XVI; "a return to more favorable survival conditions *is expected*," Chapter VII.A, p. 10). The few measures in the plan that are directly related to marine survival are not well integrated and are sometimes contradictory: ODFWIII.A.1 (restrict harvest in PFMC fisheries), ODFWIII.A.4 (develop a strategy for expansion of PFMC harvest), ODFWIII.B.1 (implement selective fisheries on hatchery stocks), ODFWIII.B.2 (develop terminal ocean fisheries on hatchery fish), ODFWIII.C.1 (use ocean environmental factors in an abundance predictor), ODFWIII.C.2 (use ocean environmental factors in an abundance predictor), ODFWIII.C.2 (evaluate hook and release mortality rates and selective gear), and ODFWIII.C.3 (monitor smolt-to-adult marine survival).

The plan's lack of focus on marine survival issues seems to be based primarily on the theory that the recent *natural* cyclic low in ocean productivity will eventually change to a cyclic high. However, Trenberth and Hoar's (1996) scientifically conservative conclusion that the recent 1990-1995 ENSO event is not natural ("may be partially caused by the observed increases in greenhouse gases," Geophysical Research Letters 23(1):57-60), might just as well lead us to conclude that "adverse ocean conditions" will likely continue or get even worse. On this basis along, the plan i not sufficient to assure recovery of OCN coho salmon. In the face of scientific uncertainty, stronger conservation and management measures are needed immediately to protect OCN coho salmon.

Some specific suggestions that might improve the plan's effectiveness with respect to marine survival issues are as follows:

1. impose a moratorium on all ocean coho fisheries (recreational and commercial) until marine survival improves;
2. convert existing hatchery facilities to use only for captive broodstock programs; if marine survival of OCN coho salmon improves, implement experimental releases of progeny of captive broodstock;
3. monitor smolt-to-adult marine survival (ODFWIII.C.3), but include all coastal watersheds, not just index areas;
4. coded-wire tag (CWT) or thermally mark otoliths of all fin-clipped hatchery fish that are released (including those raised in broodstock programs) and thermally mark otoliths of representative groups of OCN coho salmon so that individual stocks and release groups can be identified for ocean research, monitoring, management, and stock assessment;
5. estimate catch rates of OCN coho salmon in all directed ocean salmon fisheries and bycatch rates in all marine fisheries for other species of fish in all state, national (within 200-mile zone), foreign, and international waters, and take appropriate management and enforcement actions, if necessary;
6. conduct carefully designed ocean fishing experiments using volunteer fishermen (commercial and recreational) to estimate potential bycatch rates and fishing mortality of OCN coho salmon in any proposed mixed-stock, selective, or terminal ocean fisheries;
7. extend proposed measures related to ecological effects, predation, and competition to include coastal migration corridors and marine rearing habitats; and
8. coordinate development and implementation of Oregon's restoration plan with other state, national, and international ocean salmon research, conservation, and management plans (e.g., GLOBEC, PICES, and NPAFC).

Sincerely, yours,

Katherine W. Myers

Fishery Biologist
High Seas Project, Leader

NEW - 2/20/97

Return to top of page

Date: December 19, 1996
To: Jay Nicholas, Oregon Department of Fish and Wildlife
From: Jim Anderson, University of Washington School of Fisheries
Subject: Review of the Oregon Salmon Restoration Initiative

I have reviewed the major elements of Oregon Coastal Salmon Restoration Initiative. I was impressed with the breadth and detail of the Plan. Its attention to the complex ecological issues and efforts to address them through the existing governmental structures appears pragmatic, and in general, a good structure in which to begin the process of restoring coho salmon.

OVERVIEW

No doubt the OCSRI has its detractors on both sides, those who want more aggressive actions and those who see salmon restoration as feeding at the public trough. I don't think that any ideal balance exists because society has conflicting needs and agendas and, particularly in the case of salmon, much of the process is out of the control of those charged with solving the problem. A good way to view the problem is in terms of a ratchet-like decline that has been articulated by several ecologist. In this point of view the salmon decline is the result of a century of development combined with decadal and year-to-year variations in environmental/ climate factors. Together the processes generate an oscillatory stock decline where succeeding population peaks are smaller than previous ones resulting in a "ratchet-like" decline. In the figure the population decline is the result of cumulative human activity and the climatic oscillation. Under this hypothesis the recent low stock levels are a result of the oscillatory climate (resulting in the recent poor ocean conditions) finally driving the stocks to near extinction after a century of societal development in their habitat. Any actions in the OCSRI will have limited benefit in comparison to the large swings in stock abundance that the climate produces. Most of the OCSRI actions address reversing the trend of the long term cumulative human impact. The habitat will never return its former pristine state.

I believe much of the disagreement in the plan stems from the public's misconception of how human and environmental factors interact. Many people blame the recent steep stock declines on human actions alone and believe that corrective actions should return the stocks at the same rate that they declined. The designers of the OCSRI are aware of the ratchet process but I don't believe they have sufficiently articulated the issues in their documents.

TEAM COMPETENCE

The developers of the OCSRI understand the mechanisms and limitations of coho recovery. In fact they have contributed a large part to the current understanding of coho life history. In reviewing the plan my appreciation for the difficulty and complexity of the issue increased significantly.

PLAN ORGANIZATION

The plan lacks a clear organization, summary, table of contents, index, or page numbering. My general impression is that pieces were developed independently and without sufficient coordination. The current organization of elements, goals, team approach, etc. was difficult to follow. It seemed it was written for state agency directors and not for the public or fisheries scientists. I found the relevant restoration actions hidden in the less useful information on governmental process. The actions themselves were often vaguely defined or not synthesized sufficiently. There is no listing of actions over short and long planning schedules.

The general description of the plan should provide the essential elements and I believe it should be cross referenced from points of view of the salmon's lifecycle and the management agencies. Both points of view should describe historical and present conditions and future actions. For example all habitat actions would be listed under a category for habitat actions. The listings are now scattered throughout the different agencies tasks. The chapters for team approach councils, state etc. could be condensed into an implementation chapter separate from the material on ecological issues.

The elements section which considers the plan specific contained too little detail to assess its value. I suggest a section including the proposed actions for harvest, hatcheries, habitat. Clearly identify in a table projected escapements, main core habitats, actions in the cores, actions on hatcheries.

Again, I suggest two major divisions: Biology and Government. Rearrange the current headings. They don't seem of equal importance and certainly are not of equal length. I didn't under the difference between elements, goals factors for example. I have talked to others who reviewed the plan and they had similar feelings on the organization.

SCIENCE ISSUES

Included below are brief comments on some of the major actions related to the salmon life cycle.

Harvest:

Harvest is one of the effective fast actions. The strategy described involved different assumptions of marine survival. It was unclear how marine survival was to be measured especially prior to setting escapement goals. This section could be improved and simplified by only discussing escapement under assumptions of poor ocean survival and then addressing how to assess if ocean survival increases in future years.

Under worst case conditions a proposed 15% fishery impact is allowed. In the analysis of the risk of extinction at 10% fishery impact was used. Why not use the 10% estimate to bring the two approaches into line.

I am unclear how marine survival will be assessed to adjust the total allowable fishery impacts (page 7 in the second to the last document in Attachment II). Was marine survival estimated from hatchery fish survivals.

An improved mixed stock harvest model that includes ocean conditions and within season management options needs to be applied to future coho harvest management. I am part of an effort to develop such a model, funded by NMFS, and I suggest the ODFW participate in the development and use of this model.

Hatchery:

The analysis on hatcheries stated the genetic contamination and fitness depression of hatcheries on wild stocks was temporary. The analysis might be taken to infer that genetic issues are not super critical. My general opinion is that information on genetics influences is complex and little information has clarified the issues or

suggested that stock declines are a result of hatchery stocks weakening wild stocks. An improved genetics model and analysis will help clarify the importance of genetic issues, especially if the stocks decline to near extinction levels or abundant hatchery stocks interbreed with wild stocks.

Are the hatchery reductions proposed for the core areas? It might be prudent to remove all hatcheries in the core areas. The idea of transferring coho production to the Columbia might cause additional problems there.

It wasn't clear that any of the lifecycle models contained interactions between hatchery and wild stocks. Such an work should be put on a priority list.

Habitat:

According to the ratchet decline hypothesis, any long term gains in coho will require improving and reclaiming some habitat. This process will likely require decades and will be in constant conflict with development. The plan must focus on identifying the value of habitat actions especially as pressure for development increases.

The inventory of existing habitat and documentation of the actions on habitat should be clearly made in the OCSRI. The description of habitat actions was too spread out in the documents to get a good assessment of what actions were being taken. Are the core areas slated for more habitat actions than the non-core areas? If so, what are the actions in each designation? I noted a number of voluntary conservation measures involving the Department of Forestry. Are these going to be effective? What are the expected impacts? How will the results be conveyed to the public?

The plan for evaluation of habitat actions seems weak. The state of the science of habitat restoration is limited and it is difficult to assess the contribution of habitat restoration measures on salmon production, especially in terms of stock-recruitment curves. The plan's monitoring will focus on freshwater survival but the connection between this monitoring and habitat restoration measures needs closer linking. It seemed the OCSRI focus is for a low effort-wide area monitoring plan. This might eventually provide some index of improving survival resulting from either the climate or nonspecific restoration actions but such a monitoring regime is unlikely to identify how specific habitat modifications effect specific stages in freshwater survival. My suggestion is to concentrate fish survival monitoring in habitat areas where the actions can be quantitatively measured, i.e. the core areas.

The plan should seek to develop and use improved habitat models. The existing habitat model variables were stream width, gradient reach type, number of beaver dams and percent of pool in a reach. These are not explicitly connected with management actions and it is unclear how habitat restoration efforts would be integrated into a model to assess the efficacy of any action. I believe a more mechanistic model defining the impact of habitat use and structure on spawning and survival needs to be developed.

The core habitat concept is central to the plan. I found in the documents (after a considerable search) that 15% of the coho habitat is designated as core. There needs to be more discussion of the actions in and outside of the core. Is the monitoring going to emphasize the core areas, are habitat measures focusing on the core areas or are there equal efforts in the non core areas? What are the historical population levels inside and outside the core? What are plans to restore fish in non core areas once ocean conditions improve?

Integrated synthesis and distribution of results (Task 15):

This task is essential to make the program effective in an adaptive management framework. The proposed approach centers on a GIS database system. This database must be integrated with process models. Currently there is a disconnect. Actions taken in harvest, habitat or hatcheries need to be directly connected in a process

model so estimation of the potential impacts to coho can be made for any level of detail. For instance, managers need to assess the possible range of impact of changing the chemical spraying buffer from 60 to 300 feet. I realize that such modeling capability is currently beyond the state of fishery science but there needs to be a concentrated effort to move towards quantitatively connecting actions to fish survival. If this capability is not developed the plan could evolve into a political free-for-all with little understanding of the value of the monies spent. If this happens the effort on individual actions may be too small to be effective. I believe the plan can stay focused if it concentrates efforts int he core habitats and uses quantitative mechanistic and statistical models and keeps the public informed.

My surmise is that in the long run the costly restoration efforts should focus in the core habitats at the expense of the non core areas. Actions in non core areas should be cost effective (such as regulatory measures). Monitoring should generally be confined to core areas. In any case, I suggest evaluating the merits of applying actions to core and non core areas.

Currently the synthesis and distribution of results will use GIS. This is inadequate. GIS is simply a mapping tool, a fancy and bulky spreadsheet program. Saying the plan will use a GIS system to distribute data is essentially saying the data will be distributed in pictures. The pictures themselves need to be inputs to process models that integrate a variety of habitat processes mechanistically into the fish lifecycle. The funding identified for data synthesis and distribution is $160K biennium. My belief is that more needs to allocated here since this task is the connection to the public, which ultimately must support any long term restoration. A real effort is needed to convince the public that the restoration monies are being well spent.

Unfortunately the development of a decisions support system capable of guiding the plan is beyond the resources of the plan. Such efforts will require regional cooperation. I suggest a thrust of Task 15 should be to coordinate development efforts with other regional efforts. A decisions support tool will act across political and watershed boundaries so its development must also cross these boundaries.

OUTLOOK

It might be useful to anticipate public and political responses as the plan evolves under different scenarios. I believe the course of the plan and the fish largely will depend on the changing ocean conditions. Societal support for the OCSRI will likely diminish if stocks increase significantly. In any case, I believe it will be important to clearly delineate the contributions of restoration efforts and uncontrollable climate shifts on fish improvements.

If ocean conditions improve significantly, wild stocks will increase irrespective of any actions taken. It is possible that overproduction of wild fish could lead to hatchery and wild stock inbreeding and weakening of wild stocks. If this is the case, more efforts may be needed to understand and mitigate the effects of the hatcheries. The plan might consider how to address changes in hatchery production with improving stocks.

If ocean conditions improve slightly, this may be the best case scenario. Wild stocks will increase under harvest and hatchery production restrictions. Societal pressures for habitat improvements will likely continue.

If ocean conditions remain or worsen, wild stocks will decline irrespective of any actions taken. In this case, it might be prudent to focus on the core habitats and let the weaker stocks go extinct.

Return to top of page

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December 13, 1996

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Dear Jay:

The following are some brief, general comments on Oregon's draft plan for conservation and restoration of salmonids. I regret that I could not devote more time for the review.

From my quick review, I believe that the draft plan represents a sincere effort to protect threatened stocks, but overall it will not be sufficient to insure recovery. At best, the actions described will maintain or slow the decline of natural populations. Oregon coastal coho will probably only begin to fully recover when ocean conditions finally change. At that time, more of the elements found in the plan will have a greater effect. I also have reservations about certain actions described in the draft. Many activities will help protect weak populations somewhat but probably can go much farther. The draft plan also fails to adequately describe the risks and uncertainties of some of the proposed measures.

General Comments

The plan describes several possible funding sources and mechanisms for the program. State budget requests, federal funding assistance and various incentive programs are described. Unfortunately, I found little evidence of solid funding commitments to the draft plan. With only promises and wish lists detailed I am concerned that the plan will not receive the adequate funds.

In addition, I believe that to implement an adequate recovery program much more money will be needed than is described in the draft plan. In the Columbia Basin, BPA has spent will over $2 billion dollars since 1980 yet anadromous stocks continue to decline. It has now committed to spend $435 million/year for fish and wildlife measures but few people believe that it will stem the decline of Columbia Basin stocks. Therefore I believe that much more money must be available to implement the plan. It would be helpful to clearly outline in a table how much money will be devoted to the program over the next 10 to 15 years.

The draft plan also does not provide enough agency accountability. Very few proposed management measures state when they will be started and completed. For example, ODFW states that it will establish new escapement goals (ODFWIA1, p. VI-A-I-18) but it does not say when this will be completed. Unless there is a clear understanding of when an activity will be implemented and completed very little is done.

Habitat

The large dependence on watershed councils concerns me. The draft heavily depends on watershed council to

implement various elements of the program. I believe that watershed councils are important in organizing, coordinating and obtaining local buy-off for recovery efforts. However, the plan fails to recognize the long period required to develop effective, functioning watershed councils. Most new councils take several years simply to get organized let alone agree on and implement actions. Therefore it may be many years before any steps can be taken to protect coho. It is also unrealistic to believe that existing the watershed councils and their current actions plans will conform to the goals of OCSRI. Watershed plans were not developed with the OCSRI in mind. It will take time to modify existing plans and get local approval.

Fisheries Management

The proposed management actions takes some steps toward protecting natural spawning populations but given the critical state of coastal coho stocks, the actions do not go far enough. Previous and proposed management strategies for the most part have been developed using the experience of more abundant salmon returns. For the near term, ODFW should continue to eliminate all ocean commercial harvest of coho and limit the catch of other salmonid populations that temporally overlap with coastal coho. Wild coho populations cannot withstand harvest pressure from mixed stock fisheries. Harvest managers should emphasize more terminal fisheries by waiting until returning adults have segregated into bays closer to natal streams.

ODFW should develop an in-season, real-time monitoring system that tracks adult escapement of naturally spawning stocks. This may be accomplished by counting actual escapement over weirs, using sonar equipment, conducting aerial flyovers or using other methods. An appropriate number of representative indicator streams may be used. Fisheries should not be conducted until it can be projected that there will be sufficient natural escapement. ODFW should develop adult return timing profiles for naturally spawning stocks and monitor adult sex ratios to assist in managing fisheries.

Hatcheries

ODFW must more closely monitor estuary conditions to increase ocean survival rates of fish released from hatcheries. For example, starting in spring, ODFW could conduct daily estuary plankton tows and monitor phytoplankton and zooplankton levels. The relative abundance of plankton will give ODFW an idea of conditions and the general productivity of the estuary. Hatchery operators could use this real-time information to time their releases to coincide with high zooplankton levels. In doing so, fish released from the hatcheries will have the greatest opportunity to find adequate food supplies and increase the probability for higher survivals.

ODFW should also closely monitor avian predators found in estuaries. If predation is high, ODFW should consider transporting hatchery releases (in netpens, barges or trucks) beyond the areas where most predation occurs. These actions could increase straying rates somewhat but the impact would be limited if hatchery releases are a supplementation program from the same Oregon ESU.

I hope that these comments have been helpful. If you have questions or need more information please feel free to call.

Sincerely,

Bruce Suzumoto
Senior Biologist

Return to top of page

Dr. David R. Montgomery
Dept. of Geological Sciences
University of Washington
Seattle, WA 98195-1310

12/29/96

Jay Nicholas
Salmonid Restoration Specialist
28655 Hwy 34
Corvallis, OR 97333

RE: Oregon Coastal Salmon Restoration Initiative

Dear Jay,

Here is the review that I promised you of the Oregon Coastal Salmon Restoration Initiative. I have divided my comments into several sections of comments on: the general scope and strengths of the plan, serious shortcomings of the plan, and the review process. These comments attempt to illustrate the reasoning behind the following responses to the two questions that you asked me to answer in this review.

1. *Provisions of the ESA*. Will implementation of the plan likely be sufficient to ensure that coastal coho in the two Oregon ESU's will sustain naturally reproducing populations?

2. *Restoration of coastal anadromous salmonid populations* to levels above what might be necessary to guard against extinction. This plan is designed to restore coastal salmonid populations to levels well above those necessary to guard against extinction.

Even though the overall plan would improve upon the current situation, I doubt that this plan would prove sufficient to *ensure* naturally reproducing populations, as required by the ESA. There simply are too many important components of the plan that remain wishful thinking at this point (i.e., sustained funding for monitoring, better enforcement of existing laws). Moreover, many of the key components of the plan (e.g., much of ODF's input) simply count on the adequacy of continuing or slightly modifying existing practices, yet I consider current measures inadequate to protect stream channels: from logging on potentially unstable ground; from conversion of bedrock to alluvial channels due to inadequate retention of the largest trees in streamside forests; and from road drainage problems such as the delivery of road runoff to hillslope hollows. Unfortunately, the draft OCSRI plan also does not really address the cumulative effects of distributed watershed processes on aquatic habitat. The watershed analyses proposed under the plan likely will prove useful, but the purely voluntary nature and lack of technical oversight leaves me wondering how effective the approach will prove -- how will the analyses actually affect land use decisions? I could not find an answer in the plan. Many aspects of the plan are rooted in common sense and long overdue; perhaps implementation of the plan and enforcement of existing laws would have delayed potential coho listings under the ESA. In the end, however, I remain skeptical that the proposed plan will prove sufficient to satisfy the goals implied by your questions.

General Scope and Strengths of the Plan

I am quite impressed with the effort to coordinate all the agencies involved in this process to act as a unit. The goal of linking all state agencies with some influence over water quality, stream habitat, and fish production and management is an excellent start to fulfilling the objectives laid out in your letter of October 4. It is particularly encouraging to read committments to better enforce existing laws. The format of the draft plan certainly provides a rational framework for developing a managment strategy for salmon recovery. It is unfortunate, however, that the draft plan has some serious shortcomings that I believe profoundly compromise the potential to achieve its stated goals. I suspect that experts in other fields will find additional causes for concern. Nonetheless, many of the recomendations of the report are common sense measures that should be implemented whether or not the coastal coho are listed under the ESA.

Serious Shortcomings of the Plan

My skepticism that the draft plan will achieve its goals is rooted in several serious shortcomings:

- the emphasis on voluntary measures and faith in better enforcement of existing regulations
- vague plans for ensuring and sustaining funding for key elements of the plan
- faith in the adequacy of existing forest practices for protecting streams.

Below I outline in more detail the nature of my concerns. I agree with many additional concerns expressed in the NMFS Technical Review dated July 2 , 1996 - few of which were addressed in the section that detailed responses to comments. In particular, I agree with the majority of the NMFS recommendations on pages 10 to 14 of their commentary, and I find the lack of a substantive reponse from ODF to be troubling at best.

1) Voluntary Measures and Enhanced Enforcement

A key aspect of using watershed analysis to achieve environmental performance objectives (e.g., salmon restoration) is that the information gathered in the analysis is used to change the way that management activity occurs. In this way watershed analyses could foster development of a context for adaptive management of natural resources. However, it is actually quite a challenge to develop a decision-making system that in the end uses the technical information out of such analyses to tailor land use to the landscape. A recent analysis of forest management prescriptions developed under watershed analyses in the Washington State Timber/Fish/ Wildlife program (Collins and Pess, in press) found that the land managers charged with developing prescriptions did not effectively use the technical information gathered during the analysis, but rather simply fell back to relying on standard forest practice rules -- rules that in effect led to the development of the TFW watershed analysis program due to failure to adquately protect aquatic resources. I do not find a mechanism in the Oregon proposal that would lead me to expect anything but the same result; there is no technical oversight proposed for the Oregon watershed analyses and the decisions will be made by the local land owners and other "stakeholders". If there is no mechanism in place to change forest practices of a reluctant landowner (e.g., wider buffers than the default width in areas with especially critical habitat) then how and why would landowners be induced to to change current practices? If little will change, then how will the plan reverse the dramatic and ongoing decline of the coastal salmon that led to the development of this plan? In order for such a plan to work, it appears to be necessary to use both the carrot and the stick; incentives should encourage voluntary actions, but real punitive sanctions and restrictions are also necessary to ensure compliance.

2) Vague Elements of the Plan

Many critical aspects of the plan require a long-term committment of funding and greater training of key personnel than is accounted for in the plan. The vague committment to seek funding for many of the key elements of the plan undermines confidence in the ability of the plan to function in the best case scenerio that would be required to achieve the goals of the plan. Examples include funding for watershed analyses and monitoring efforts and for establishing and running the watershed councils. Part of my concern over how to evaluate the plan in its present form stems from the potential for significant modifications of the final plan due to maneuvering by agencies charged with ensuring regultory compliance. An example follows in the next section of commentary. Another key component that is missing is any information from either the private sector or federal agencies involved in land management in the Oregon Coast Range - how will their actions be incorporated into the overall implementation of the plan? Another key question is how will the watershed councils become self-supporting in the future, the only way I can foresee is from support from large landowners or other "stakeholders" with a lot of stakes. If the authority of and funding for these councils depends upon keeping large land owners happy, then what are the odds that potentially unpopular decisions that might be needed to protect natural resources would actually find support through such councils? The nature of the funding base for these councils is far more important than the space it receives in the draft report.

Probably my most severe criticism under the heading of vagueness is that the overall list of actions proposed by the various agencies involved in report preparation reads like a shopping list of things that the agencies thought would be readily and easily implementable. Although significant effort was made to rethink how some of the jurisdictional overlap problems will be solved, it appears that little attention was paid to defining and prioritizing the most important and potentially effective actions that could be taken and then evaluating whether they are feasible. Although the watershed councils are likely to provide some local input, how will regulatory decisions be superimposed upon local actions in areas where these councils are convened? Moreover, without scientific oversight of the watershed analyses and councils how can one be assured that the "premise of the OCRSI" will be fulfilled as stated: "limiting factors will be identified in a basin context and that solutions to addressing those limiting factors will be implemented through a Watershed Countil context

involving all management entities and stakeholders" (p. VII-B-1). This statement from the plan highlights the key problems associated with the 'blind faith in process' approach advocated in the plan. It is unlikely that conflicts between fundamentally divergent viewpoints can be resolved through a consensus process. It is also unlikely that the information needed to establish the local understanding necessary to identify limiting factors will be available without technical oversight. In short, the plan does not identify who will conduct the analyses and how the results will influence landuse decions and potentially alter forest practices.

3) Adequacy of Existing Forest Practices

I have many concerns regarding the adequacy of existing forest practices to protect stream channels of the Oregon Coast Range. Based on almost a decade studying small stream channels and slope instability for in the Oregon Coast Range I simply cannot agree with the statements offered by Oregon Department of Forestry that present forest regulations adequately protect streams. Moreover, I am particularly disturbed by the October 7 letter from Oregon State Forester James Brown, since I believe many of his positions lack credibility. Here I outline my concerns about three specific areas: the adequacy of riparian buffers, protection of potentially unstable slopes, and the cumulative effects of forest practices.

Mr. Brown's comments also highlight a significant issue that in my opinion is only poorly recognized in the draft plan: the burden of scientific proof. Mr. Brown in effect demands that regulations which in any way restrict logging access be established based on 'scientific proof'. He seems to miss the key issue of where the burden of proof lies when he argues for uncontested proof of negative impacts before modifying any forest practices -- no matter how good the logic behind such modifications or how notoriously hard it is to measure the phenomena of interest. In order to ensure compliance with the ESA the burden of proof shifts from demonstrating how a proposed action harms the resource to demonstrating how a proposed action would not harm it. This is a key distinction that totally undermines his position. In order to ensure recovery of the coastal salmon, the current forest practices should be held to this standard -- scruitiny that I believe they cannot pass when evaluated in light of current knowledge by a jury of leading scientists who have no political or economic interests on the line.

Riparian Buffers

The draft report essentially endorsed the buffer system used at present, rejecting the scientific basis of the wider buffers such as those recommened in the FEMAT (1993) report. This issue demonstrates my concerns about the burden of proof. The draft report also endorsed harvest within riparian buffers as a strategy for potentially accelerating riparian forest recovery. While harvest in riparian zones can make sense in some circumstances, it is unclear as to whether or not the plan endorses maintaining existing statutes that allow harvesting of the largest trees from riparian forests if sufficient numbers of stems larger than some critical size are left. Recent research (Montgomery et al., 1996) indicates that the largest trees are essential for maintaining gravel stream beds in channels flowing over sandstone and siltstone such as that found throughout the Oregon Coast Range. Another issue in setting buffer widths is that even the need for a buffer width of at least a site-potential tree height does not take into account the natural tendency for rivers to migrate laterally across their floodplain and through valley bottoms. The most defensible strategy for protecting stream channels is to leave healthy, intact riparian forests throughout the channel migration zone, as defined by the active floodplain. The ecologically conservative approach to buffer design would be to preclude any harvest within the channel migration zone or a site potential tree height, whichever is wider, unless compelling studies demonstrated that a proposed activity would not harm aquatic resources, or species poised for ESA listing. Current practices in no way resemble this scenario.

The need for riparian buffers has been well-documented in the stream ecology literature and I won't comment further on it. I will, however, comment on the adequacy of existing practices, as my experience in the Coos Bay area indicates they clearly are inadequate for protecting fish-bearing waters. The color photographs appended to this review were taken from an airplane along Sullivan Creek near the edge of the Elliot State Forest. The units along this stream were cut within the past 3 years and yet there is virtually no buffer on these streams, even though I am told that Sullivan Creek is classified as a fish-bearing stream. Current practices did not adequately protect these streams. At best, these photos show that oversight and enforcement of existing regulations is lax and does not protect aquatic resources. I do not have much faith that an agency responsible for these forest practices will consistently decide field disputes in favor of fish, yet that is what would be required were coastal salmon recovery to depend upon existing forest practices.

Potentially Unstable Slopes

Increased sediment loading from upslope landsliding due to forest clearing is a primary influence on downstream channels in forested mountain landscapes. Landslides can scour stream beds to bedrock and the associated increased sediment supply to downstream channels can result in deeper scour of stream beds. Moreover, depletion of very large woody debris from stream channels throughout the Oregon Coast Range removed local obstructions that trapped sediment and likely retarded debris flow propagation. Recent research on the beneficial contributions of gravel to streams as a result of shallow landslides may misrepresent the ecological importance of this process prior to industrial forestry. Our monitoring of landslide rates on private land near the Elliot State Forest indicates a dramatic acceleration of sliding after timber clearing from steep slopes -- rates were more than an order of magnitude faster under industrial forestry than during the post-glacial period (Montgomery, 1991). While I understand that an on-going ODF study found some landslides in "old-growth" forest (although I also understand that there is grounds for concern over how "old-growth" was defined in that study), some landslides are to be expected in old-growth forests. Indeed, geomorphologists think that shallow landslides carved the steep valleys of the Oregon Coast Range. The key issue is not whether slides occur in old-growth forests (that is a side issue more likely to obfuscate than clarify causality), but rather whether relative rates of sliding under different forest stand conditions in locations with equal topographic and soil property influence on the probability for shallow landslide initiation. Our preliminary work on this problem using data from watershed analyses from 15 drainage basins across the Pacific Northwest suggests that timber harvesting has dramatically accelerated rates of landsliding over long-term Holocene average rates in this region. Many previous studies have documented acceleration of sliding following timber harvesting and road construction, and a number of such studies are compiled in Sidle et al.'s 1985 book Hillslope Stability and Land Use published by the American Geophysical Union. Although road construction practices have improved, such changes cannot have influenced the accelerated rates of "in-unit" failures documented in both previous studies and in our work near Coos Bay.

Current practices for identifying potentially unstable slopes appear to consist of having a technican or soil scientist (usually not trained in geomorphological analysis of landforms) fill out a check list to address whether a site has obvious signs of *existing* slope instability. I have never been able to understand this approach as a credible means of identifying *potentially* unstable ground because the identification of existing instability should be straightforward and it is the potential to cause future instability that lies at the root of the problem of whether or not to cut timber on steep slopes. At present, clear cuts continue to be conducted on steep, convergent topography that the simplest slope stability calculations reveal as requiring effective cohesion from root strength to keep the soil on the slope. The two key generalizable factors controlling the generation of shallow landslides from topographic hollows in the Oregon Coast Range (and elsewhere) appear to be ground slope and the degree of topographic convergence. The locations of potentially unstable ground can be identified through use of simple models and GIS (e.g., Montgomery and Dietrich, 1994), but the knowledge that topographic hollows are foci for debris flow initiation does not appear to have altered forest practices, even though such knowledge was developed in the region 20 years ago (Dietrich and Dunne, 1978)! Although current forest practices may involve some simple procedures to prevent forest clearing from obvious existing instability, it appears to me that current practices do little to preclude logging on potentially unstable slopes. Given that disturbance by landsliding is a primary influence on stream channels and aquatic organisms in many coastal Oregon channels, and particularly in the tributary channels that provide coho habitat, I view this as a major impediment to achieving the stated goals of coho salmon recovery.

Cumulative Effects

I can find little in the proposed plan to convince me that it will adequately address issues associated with the downstream integration of effects arising from actions distributed widely over a drainage basin. The watershed analyses conducted under the State of Washington's Timber/Fish/Wildlife agreement do not adequately address this issue, as the extent and sequencing of timber harvesting lies beyond the scope of the anlayses. But this issue is not restricted to forest environments -- some of the more pronounced impacts are those that arise from agricultural land use and practices and urbanization. Incremental habitat degradation and loss attributatable to non-forestry-related impacts likely accounts for a major portion of the overall 50 to 90% decrease in habitat productivity reported in the default plan. Dealing with this issue requires more than a few incentive programs. The key issues of the extent and intensity of the full spectrum of land uses needs to be addressed in a forum that has the authority to implement change -- the watershed councils as portrayed in this report lack any such authority. I recommend that further serious thought needs to be given to this issue.

Relevant Literature

The following papers provide some of the scientific background behind some of the points made and opinions expressed above. I have restricted myself to referring to my own papers simply to avoid the possibility of misinterpreting the work of others and because a full literature review lies outside the scope of the requested

review of the draft OCRSI plan. The annotated comments detail the relevant points made by each publication. None of these points are well addressed either in the plan or in existing management protocols.

Montgomery, D. R., 1991, Channel Initiation and Landscape Evolution, Ph.D. Dissertation, Department of Geological Sciences, University of California, Berkeley, 421p.

In my thesis work I compared rates of shallow landsliding in a 0.5 km2 study area near Coos Bay for the period for the 4 years after timber clearing and long-term holocene average rates determined from a combination of detailed field mapping of all colluvium-filled bedrock hollows and shallow landslide recurrence intervals determined by Steve Reneau (1988) from radiocarbon dating of charcoal excavated from the base of colluvial deposits. This comparison documented that forest clearing on these steep slopes had dramatically accelerated rates of sliding -- the occurrence of many additional slides both in February 1992 and November 1996 have made the anthropogenic acceleration all the more dramatic for the entire 10 year period that we have now studied at this site.

Montgomery, D. R., 1994, Road Surface Drainage, Channel Initiation, and Slope Instability, Water Resources Research.

This paper demonstrated that road surface runoff dramatically increased drainage density and led to slope instability and gullying in coastal Oregon, the Olympic Peninsula, and the southern Sierra Nevada. The paper documented that the common practice of focusing drainage from ridgetop roads into topographic hollows leads to accelerated landsliding.

Montgomery, D. R., and Dietrich, W. E., 1994, A Physically-Based Model for the Topographic Control on Shallow Landsliding, Water Resources Research.

This paper developed and tested a simple, GIS-driven model for predicting areas of potentially unstable ground based on drainage area, slope, and soil properties. The results indicate that the majority of shallow landslides occur in areas identified as having the highest hazard. This paper documents that it is feasible to objectively identify potentially unstable ground in a more realistic manner than the check list approach commonly employed in Oregon and California.

Montgomery, D. R., et al., 1995, Pool Frequency in Forest Channels, Water Resources Research.

This paper demonstrated a relationship between woody debris loading and pool frequency in forested mountain channels. Channels in old-growth forests were found to have higher wood loading and more pools than channels in second growth forests. Forced pool-riffle channels were found to occupy a similar gradient range as plane-bed channels, implying that reduction in log input to streams can convert a pool-rich channel into a relatively featureless plane-bed channel. This paper is only one among many that demonstrates the habitat value associated with retaining high wood loading in forest streams.

Tang, S. M., and Montgomery, D. R., 1995, Riparian Buffers and Potentially Unstable Ground, Environmental Management.

This paper documented that riparian buffers provide little protection for potentially unstable ground unless the buffers extend throughout most of a watershed to include even small tributary channels. The results demonstrate the need for considering explicit forest practice measures and rules for identifying areas of potentially unstable ground in addition to riparian buffers.

Montgomery, D. R., et al., 1996, Distribution of Bedrock and Alluvial Channels in Forested Mountain Drainage Basins, Nature.

This paper documented that large stable log jams can convert bedrock stream channels to alluvial stream channels and that this process depends upon the old-growth size trees that grew in streamside forests. A reduction in the size of the largest logs entering channels would lead to reduced jam frequency (and hence a greater proportion of bedrock channels) as the key member logs decay. The sandstone bedrock of the study area is similar to that in the Oregon Coast Range and hence the findings are relevant to the proposed plan.

Montgomery, D. R., et al., 1996, Streambed Modifications by Spawning Salmonids: Implications for Stream Bed Scour and Embryo Survival, Canadian Journal of Fisheries and Aquatic Sciences.

This paper documented that chum salmon eggs tended to be buried just below the depth of stream bed scour during a bankfull flow event and suggested that redd excavation depths represent an adaptation to long-term depths of bed scour in Pacific Northwest streams. Bed scour depths are sensitive to bed surface grain size and to sediment supply, with higher sediment inputs tending to increase scour depths. Hence, watershed-wide increases in sediment delivery to stream channels should act to increase scour depths and likely will increase embryo mortality.

Review Process

First let me offer my apologies for delivering this review much later than anticipated when you first called. Let me explain why. After reading the Draft plan, finding little technical information in it, and inquiring as to where I might find additional technical aspects of the plan, I was sent a large box filled with binders of material through which I was to brouse in order to review the plan. This material arrived in late November and I had to put off the task of wading through all those binders until the end of the quarter when I actually had the time to plow through the material. It might comfort those who were anticipating more prompt completion of the review process to know that the review of such documents is *in addition to* the normally excessive duties associated with my job. In the end, the review of this document simply took much longer than the review of a roughly 20-30 page document that I had understood I was undertaking; I have many additional comments on specific parts or aspects of the plan that I do not have time to communicate here.

But now my major concern over the review process. The document is long, complicated, and spans many disciplines; I presume that a number of experts from different disciplines each reviewed it independently. Why is there no meeting of these reviewers to discuss their comments, ideas, and perspectives? I see this as a serious shortcoming in the review process -- such a synthesis should be done by experts with no stake in the outcome of the process. Typically, after peer review a revised document is returned to the reviewers (or at least an impartial editor) to ensure compliance with any needed revisions. What will be the process for deciding what appears in the final OCSRI plan? The answer to this question bears greatly on the issue of how the peer review process can be interpreted and advertized to have improved and/or endorsed the final plan.

As for myself, I view the plan from the perspective of an optimistic skeptic -- the plan is definately a significant improvement over the present situation, but it does not embrace sufficient change to ensure restoration of healthy stocks of coastal salmon in Oregon. I hope that these comments prove useful in your efforts to restore this long abused national treasure.

Sincerely,

Return to top of page

Go to Peer Review:

- OSU
- American Fish Society
- Federal Agencies
- Industry
- Conservation/Environmental Group
- Public Comments
- Questionnaries

Go to home page

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PEER REVIEW 1996

COASTAL SALMON RESTORATION INITIATIVE

December, 1996

TABLE OF CONTENTS

- 2/20/97

FEDERAL AGENCIES

US Dept of Commerce, National Oceanic & Atmospheric Admin, National Marine Fisheries Service
William Stelle, Jr.

US Environmental Protection Agency Region 10

Chuck Clarke, Regional Administrator

US Department of Interior, Fish & Wildlife Service

Acting Russell D. Petersen, Oregon State Office Supervisor 211

Bureau of Land Management

Elaine Zielinski, State Director

Return to home page

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John A. Kitzhaber
Governor of Oregon
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Salem, Oregon 97310-0370

Dear Governor Kitzhaber:

Thank you for giving the National Marine Fisheries Service (NMFS) the opportunity to review the August draft Oregon Coastal Salmon Restoration Initiative Plan (Plan). I commend you again for mobilizing this ambitious effort, and applaud watershed councils for the energy, enthusiasm and creativity they are bringing to it. The quantity and scope of the information in the draft Plan show how committed you and your management team and staff are to reversing the serious decline of coho salmon. Jay Nicholas and Jim Martin deserve special thanks for their tireless efforts to coordinate with NMFSs during the Plan's development.

The NMFS has completed a preliminary review of the extensive materials in the draft Plan, focusing on its value for coho conservation. We have not reviewed the Plan at this time for its value to steelhead or other salmonids, even though other species may benefit from implementation of this Plan. Nor have we provided comment on materials submitted after late August (with one exception noted below), even where we are aware of additional information and substantive changes intended for Oregon's final Plan.

You have our commitment to consider very seriously the elements of the Coastal Salmon Restoration Initiative when making final listing decisions on coho and other anadromous species in Oregon. This letter highlights the most important points of strength and weakness that we have been able to identify in the draft as it currently stands. We believe that it represents a considerable set of commitments. We also believe it needs more work in certain areas, and are working hand in hand with you to strengthen these areas.

One of the most obvious tasks for NMFS is to assure that Federal agencies bolster this effort with as much funding, program innovation, and other support as possible. I know that delivery of Federal measures has been delayed, to your understandable frustration, and we continue to work with other Federal agencies to strengthen federal contributions to coastal salmon restoration.

Strengths

A number of strong features of the draft Plan deserve mention. In the harvest arena, our evaluation has considered additional features of the Oregon Department of Fish and Wildlife's (ODFW) coho management regime contained in its August 19, 1996, draft report, "Proposed Spawner Escapement Goal and Fishery Management Regime for Oregon Coastal Natural Coho Salmon," which we understand to be intended as part of the Plan. That document should be incorporated and should greatly improve the Plan's conservation value for coho. We believe that ODFW's approach in the August 19 draft report could be used as a model for managing salmon stocks coastwide, so long as the escapement calculation issue laid out in the attachment is addressed. The harvest management provisions in the Plan contain several positive elements, but these are fairly general and need substantive strengthening. Important features of the combined draft Plan and August 19 draft report would include disaggregation of stocks into smaller management units, escapement goals for each management unit, a conservative harvest management schedule based on stock status and environmental conditions, and a necessary monitoring plan and evaluation process.

In the habitat arena, NMFS is encouraged by several initiatives. The Oregon Department of Agriculture has proposed many actions, including the use of Rapid Screening Assessment and the Natural Resources Conservation Service's Field Office Technical Guides for Confined Animal feeding Operations. The Department of Environmental Quality (DEQ) is enhancing Clean Water Act 401 certifications with increased field verifications and monitoring, and the Department of Land Conservation and Development is implementing the Coastal Non-point Pollution Control Program, which could provide substantial water quality improvements in the long term. Notably, the Oregon Department of Transportation has already begun aggressively pursuing their projects in a way that is good for anadromous fish. For the Oregon Department of Forestry (ODF), strong points include the potential of Northwest State Forest Lands Management Plan to result in longer rotations and increased watershed health through "structure-based management," and increased protection of core areas during hardwood conversions.

The NMFS recognizes the many voluntary efforts to improve habitat being undertaken through watershed councils. Also, industrial forest owners have proposed a voluntary program to identify and address risks to salmon from roads, through a road erosion and risk reduction project to be coordinated by ODF.

Another strong feature of the Plan is the ambitious, multi-scaled monitoring program proposed by the Science Team. We strongly concur with the importance of funding and supporting a coastwide monitoring director. That position (as well as funding and staff to carry out individual monitoring elements) will be vital to the State's capacity to integrate, evaluate, and act upon the information gathered through ESU, GCG, basin, and

watershed-scale monitoring of stock health and habitat characteristics. It will also be vital to tracking and using information gathered by each agency on implementation and effectiveness of individual habitat improvement measures, hatchery programs, and harvest strategies.

The ODFW proposes significant actions in its hatchery programs that will contribute to the recovery of naturally-spawning coho salmon. Substantial reductions in hatchery coho releases should minimize potentially adverse interactions with naturally-produced fish. Planned improvements in hatchery broodstocks and the intended marking of all hatchery coho releases will also significantly reduce the potential for deleterious interactions between hatchery and natural fish.

Areas Needing Strengthening

At this point, despite the extensive materials laid out in the draft Plan, it still falls short of what we believe will be necessary to maximize its impact on NMFS' decision making and planning. As noted above, the hatchery and harvest elements are relatively strong, reflecting changes that will require ongoing, major adjustments in both commercial and recreational fisheries. By comparison, the habitat elements of the proposal appear to work only around the edges of existing programs in a number of respects. While the resource management and regulation agencies have proposed some positive steps, we believe that several aspects will require more fundamental changes in management and permitting activities that affect important habitat parameters. Given the serious (50-90%) decline in productive potential of Oregon's coho habitat, it is clear that Oregon needs substantial additional effort in the habitat arena.

The Plan views watershed councils as the backbone of its habitat strategy, and the ultimate "integrator" of all implementation in a watershed. With you, we believe local watershed efforts to be central to long-term success in restoring healthy watersheds, water quality, and salmon. Yet, the Plan also recognizes that watershed councils are not yet structured and funded to serve that function up and down the Oregon coast in the near term. Therefore, the weight NMFS can give to the Plan will be influenced by the degree to which the Plan clearly identifies mechanisms for coordinating implementation and timing of agency measures, setting priorities, monitoring progress, and assuring adaptive management adjustments based on monitoring results.

The lack of identified priorities and plan-wide coordination is a weakness both at the regional scale and for many individual agencies. (By contrast, the Oregon Department of Forestry and Oregon Department of Parks have identified priorities for funding and action). The strong monitoring proposal noted above needs to be complemented by clear, regional-scale objectives and explicit standards and criteria for the measures proposed by individual agencies. The measures proposed by the agencies need to be linked to meeting the objectives of the Plan. An added benefit to having those objectives and linkages in place is that they, combined with ongoing attention to monitoring results, will serve as an effective, ongoing compass for the state's long-term attention to coastal salmonid health.

The Plan also should distinguish more clearly which activities are to be undertaken immediately and which will be part of a "phase 2" effort. Even for immediate habitat measures, the draft Plan often fails to specify a time frame for completion, making it difficult to accurately assess their part in near-term coho restoration.

We enthusiastically support Oregon's intent to rely heavily on detailed watershed analysis identifying factors of decline at the watershed and reach scales. A mature watershed protection/salmonid restoration program would do so. However, Oregon should also plan to use existing data and the best professional judgment of biological experts to identify major factors contributing to decline of coho in each basin until and unless these more sophisticated analyses are complete. A rapid and adaptable screening process for determining effects at a watershed scale can be adapted from "Making ESA Section 7 Determinations of Effects for Individual or Grouped Actions at the Watershed Scale" (NMFS, 1996).

Three key elements are missing from the habitat arena. The state needs to establish a cumulative effects/ watershed assessment methodology and a process to put it into practice coast wide. The Plan needs a

conservation/protection strategy for all core areas. Finally, the absence of a science-based peer reviewed evaluation of the habitat measures is a serious gap. We strongly urge that it be undertaken.

Agency Measures

Staff at NMFS are anxious to meet with Mr. Martin and agency directors (agency-by agency or in small groups) to discuss our comments in detail, with participation from both technical and policy-level representatives and with the benefit of the comments from the peer review process now getting underway. Int hat way, we can keep the focus on what can be done to fill gaps or strengthen measures, while at the same time resolving any differences in perception about the agency proposals. For your convenience, a distillation of our most important comments on the currently proposed package of agency measures is attached to this letter.

Those comments are intended to flag the substantive shortcomings in protection of streams and instream habitat functions; in water use, water management, and the pace of water quality improvements; in riparian protections from development and resource use impacts; and in limiting impacts in areas of high slope/soil instability. We also have some additional concerns and suggestions in the hatchery and harvest areas.

I know from other venues of your substantial undertakings and commitments to making rapid progress in water quality through SB 1010 Water Quality Management Plans and planning to meet "TMDL" (total maximum daily load) needs in water quality limited areas, and want to emphasize that the final Plan should reflect those commitments. We believe more attention should be given to rapid implementation of DEQ's new water quality standards. Even more telling will be the extent to which DEQ and others can rapidly develop plans to meet Clean Water Act requirements in coastal areas, without expending excessive resources on a separate, quantitatively-driven "TMDL" exercise. The NMFS stands ready to work with DEQ and the Environmental Protection Agency (EPA) to find ways to streamline and speed that process, emphasizing its natural links to overall watershed planning and implementation and focusing on protection or recovery of beneficial uses.

In short, we believe that good salmon habitat and clean water are fundamentally similar objectives, and we strongly encourage more design work in this draft Plan to ensure that the water quality machinery at the state and local level protects salmon habitat and obviates the need for additional ESA-related requirements. We also firmly believe that through properly designed watershed restoration plans, we can achieve both water quality and salmon habitat objectives simultaneously and do it in a more effective and streamlined manner than is the case with the current cumbersome TMDL processes. The draft plan moves cautiously in that direction, and we encourage collaborative work among DEQ, EPA, NMFS and other appropriate agencies to strengthen that path.

The NMFS recognizes the significant role that volunteer activity will play in salmon restoration, but equally recognizes that more can and should be done to enforce existing laws, especially those focused on salmon habitat. Stepped-up enforcement will play a major role in protecting and restoring habitat. The resource management agencies should seek ways to achieve enhanced enforcement, including more aggressive coordination with the Oregon State Police.

Clouding the measures proposed by almost every agency is uncertainty about the level of funding and statutory authority that will be available for implementation and necessary staffing of some of the long-range proposals. I know that you cannot give absolute assurances when the legislative session still lies ahead. But I also know that you appreciate how crucial certainty of implementation is to NMFS. I hope that the final plan will provide more detail on budget and substantive proposals to the legislature, together with some attempt to assess the likelihood of success of those proposals and of securing funds from other sources.

Science

The NMFS is encouraged by the progress made by the Science Team to address complex technical issues surrounding coho salmon recovery. Still, much additional work is needed to resolve concerns regarding Science Team conclusions, especially since some critical pieces of the Team's analyses and results were not available to the Science Team members prior to publication of the draft Plan. In particular, NMFS believes the Science Team should revisit the role of listing and delisting criteria as not of central significance to the core issue of the efficacy of the plan itself. A focus on clearly laying out the characteristics of healthy salmon populations might well be more useful and helpful to participants in the overall CSRI effort. The NMFS will continue to support the Science Team efforts and looks forward to meeting with the Team to resolve outstanding issues surrounding their recommendations.

Also, as noted above, the Science Team should ensure that a science-based evaluation of the habitat measures is conducted and peer reviewed. The design and implementation of effective and reliable habitat measures will no doubt be among the most challenging elements of the plan, and ensuring that they are well grounded scientifically through a solid, credible peer review is essential. I understand that your staff is submitting the draft Plan for scientific peer preview. Let me underscore my strong support for a broad peer review of the entire plan. Please keep NMFS apprised of the scope and progress of peer review, as well as of public comments received on the draft Plan.

The NMFS greatly appreciates the manner in which you and your staff have kept NMFS involved in discussions related to the Plan at appropriate points. Direct meetings among our technical staffs have greatly improved our understanding of complex state issues, and we believe have also aided state staff in understanding the bases for NMFS' concerns. I trust those meetings and relationships will continue. They are defining a new era in State/Federal cooperation in endangered species conservation, and will chart a new road for the future.

The value of your efforts to draw this salmon restoration initiative together is by no means an all or nothing proposition. Whether or not any particular species is listed under the ESA, ultimate stability of salmonid populations will depend significantly ont he steps that are taken at tribal, state, local, and private initiative. Each commitment to enhanced protection or to restoration is important in itself, yet even more valuable when integrated into an overall restoration strategy.

Finally, let me give credit to the job Mr. Martin, the state agency directors, and their staffs have done in presenting the draft Plan and responding to questions in the public meetings along the coast. These meetings are doing a great job in educating concerned citizens about the status of coho and in generating enthusiasm for coastal salmon recovery. You recognize, as do I, that the long-term solution to declining west coast salmon populations rests with the public.

Sincerely,

William Stelle, Jr.
Regional Administrator

Enclosure

Enclosure

This enclosure highlights NMFS' most important observations on the currently proposed package of agency measures. NMFS believes that further informal discussions on these matters between NMFS staff and the relevant staffs of the state agencies and departments is necessary and desirable to promote a better shared understanding of the measures and their potential effects.

Oregon Department of Fish and Wildlife

The Plan should include more information on the relationship between the interim spawner escapement goals and the various spawner indices and goals developed by the Oregon Science Team, and include adjustments if necessary to respond to that information.

The Plan does not address in sufficient detail the management of exotic fish species, their potential affects on native salmonid species, or the specific actions to be taken by the State.

Oregon Department of Agriculture (ODA)

We encourage ODA to implement SB 1010 Agricultural Water Quality Management Area plans (AWQMA) under an identified schedule that will have them in place throughout the coast within three to four years. These plans should establish appropriate requirements for grazing, riparian setbacks, pesticide management, and run off/erosion management. We also suggest the State consider whether a coast-wide AWQMA plan could be put into place very rapidly (perhaps within the next year) to deal with issues that are similar up and down the coast. Individual basin AWQMA plans then could build on those generic elements. ODA should coordinate this effort closely with DEQ and its draft non-point source TMDL processes and strive to integrate the effort into watershed council planning and implementation activity.

Oregon Department of Forestry (ODF)

The ODF submission contains the existing Forest Practices Rules (FPRs). The NMFS has met with ODF on several occasions to identify and discuss our concerns with the FPRs, and has solicited ODF's informal response to our comments which has yet to be forthcoming. This exchange of comments and the sharing of the information and data that underscore them is essential, and we continue to strongly encourage it. While we understand ODF's commitment to implementing the 1994 FPRs, we remain concerned about mass wasting and protection of unstable areas, road-related problems, large wood recruitment and small stream protection, forest chemical application, hardwood conversion, protection of core areas, and cumulative effects management.

Department of Land Conservation and Development (DLCD)

DLCD has provided the revised Goal 5 measures and the Coastal Non-point Pollution Control program (CNPCP) as their cornerstone for recovery. The NMFS is concerned that the new Goal 5 measures allow road building in the riparian area and offer exemptions from prohibited vegetation removal in the riparian area for water related and water dependent activities. The CNPCP program will not be totally implemented until the year 2007 and does not serve as a timely salmon recovery vehicle. We encourage Oregon to rapidly identify critical coastal areas within the CNPCP program, and to consider salmon "core" areas in that process.

The NMFS strongly supports proposals presented in the original May 1996 Agency submission that do not appear in the draft Plan: 1) ensure that State funded projects apply criteria that protect salmon, 2) establish a coastal watershed resource gaol, and 3) re-open the periodic review process to ensure a more timely modification of existing local land use plans in the coastal area.

Division of State Lands (DSL)

DSL's current proposals do not appear to represent any major program adjustments aimed at salmonid protection. DSL should restrict gravel extraction from streams that contain sensitive, threatened or endangered anadromous fish.

Department of Environmental Quality (DEQ)

While DEQ water quality standards represent a significant move toward providing for the biological requirements of salmonids, we are concerned with the potential for inadequate implementation and weakening of the standards. For example, current DEQ rules allow for relaxation of water temperature criteria upon certain findings; this could result in continuation of temperature conditions adverse to salmonids.

Because of DEQ's limited resources, development of TMDL assessments is exceptionally drawn out. Under its current procedures DEQ is only able to conduct approximately six TMDL assessments over the next two years. Given the hundreds of stream reaches on Oregon's 303(d) list of water quality limited streams that need these assessments, an effort to streamline and integrate the TMDL process (discussed in the body of the letter) is a high priority from NMFS' standpoint.

Oregon Water Resources Department (OWRD)

The Plan should set up a process and schedule for identifying where actual flows are insufficient for anadromous fish. (This would require involvement of ODFW and other appropriate agencies.) Then OWRD water right and instream flow processing, management, and enforcement should be aligned to improve those conditions and prevent creation of additional problem areas. OWRD should also do everything possible to ensure that existing rules, regulations and permit conditions are enforced.

NEW - 2/20/97

Return to top of page

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: ECO-088

Honorable John A. Kitzhaber
Governor of Oregon
Salmon Plan Review
State Capitol Building
Salem, Oregon 97310

Dear Governor Kitzhaber:

We greatly appreciate Oregon's leadership in calling for this collaborative effort to stabilize and restore coastal salmon populations through your Coastal Salmon Recovery Initiative (CSRI). While the CSRI is clearly ambitious, it is exactly the kind of effort that is necessary and we applaud your work and commitment. The Environmental Protection Agency (EPA) will do everything within our abilities to support and to be a constructive contributor to the Initiative. It is in this spirit of collaboration that we offer these initial comments on the CSRI Draft Plan.

I would like to briefly summarize some of the major themes of our comments. First, is our strong commitment to integrating salmon and water quality recovery efforts within the CSRI framework. Although this will require better integration of state, local, and federal efforts, we look forward to providing you with assistance to help accomplish this.

Second, is the recognition that restoration projects, while important, cannot be the cornerstone of a long term recovery strategy. Fixing damaged habitats is expensive and often ineffective. Sound management practices and a stewardship ethic which actually protects watershed functions must be a top priority. Clearly, we all recognize that our past, and perhaps, even our current attempts at such protections have not done the job. To the extent that existing management practices are well founded, we must to do a better job with implementation and, as needed with enforcement. To the extent that existing management practices are inadequate, we need to establish new approaches and this is an extremely valuable role for the CSRI and the dialogue that it creates.

Third, EPA shares your vision of the critical role that Watershed Management Councils will play in the recovery of coastal salmon populations and the long-term protection of the quality and function of our rivers and watersheds. However, as you recognize, these councils must be supported in a way that ensures success. Such support includes staff, funds, and credible technical information. Such information as basin-scale technical assessments and higher resolution watershed analysis in concert with monitoring feedback loops, will provide the basis for the use of adaptive management strategies. We look forward to assisting with the development and provision of some of these tools.

Finally, we do have serious concerns with the level of staffing and resources that are likely to hit the ground. The effectiveness of this initiative will largely be determined by both our current commitments and our persistence over the course of decades. As we all recognize, more of the financial responsibility for maintaining the infrastructure of both our communities and our natural resources is being transferred from the federal government to the states. Consistent with this trend in governance, Oregon must take bold steps to ensure the success of this initiative to protect and restore its watersheds and the ecological communities dependent on them. As you have noted it is those who follow us who will judge the success of these efforts and our commitment to the stewardship of our cultural and natural resources. Again, you have EPA's commitment to assist in making the CSRI a successful endeavor.

Sincerely,

Chuck Clarke
Regional Administrator

Enclosure

EPA Comments on
Oregon's Coastal Salmon Recovery Initiative
Draft Plan
11/1/96

We have reviewed the materials provided, concentrating primarily on the general plan of the Initiative. There is much to be commended in the Draft Plan in terms of Oregon's taking stock of its role in the management and stewardship of land and water resources that will determine the fate of coastal salmon.

General Comments

1. EPA's paramount interest is to see that the authorities vested in the State under the CWA are used to their

fullest to prevent further loss of aquatic habitat integrity and to hasten the pace of recovery of streams where conditions have deteriorated. In the coastal areas, we understand the importance of doing this within the framework of Oregon's CSRI and recognize that this means ensuring better integration of salmon and water quality recovery efforts. This should become easier as we improve the integration of approaches and actions across land ownership patterns within each basin (e.g. many Core Areas are located on federal or mixed ownership lands; water quality concerns are intermingled across land ownership patterns; in relative terms there is an abundance of federal technical staff located in the coastal zone - particularly in the southern basins). We should work to encourage more substantive interaction between the Federal Northwest Forest Plan's (NWFP) committee structure and watershed management forums. State presence in these NWFP forums would help foster and improve this interaction.

2. EPA would be very interested in reviewing the federal measures submitted to the State's CSRI and exploring how federal staff could be more supportive of Watershed Management Councils. In addition, there are a number of areas within the CSRI where EPA would be interested and willing to work closely with the state and individual agencies to develop more detailed strategies for CSRI measures and their implementation.

3. The bottom line in economic terms is that we have to more fully account for the real costs of actions that affect the function, productivity, and value of our resource base. Hopefully, this will eventually become a bottom line of the Coastal Salmon Recovery Initiative, and to our watershed protection philosophy in general. In fact, we suggest that full cost accounting (of currently externalized costs) must become one of the tenets of both sustainable watershed management and development of our stewardship ethic.

Proposed Agency Measures

The Plan describes each state agency, what role they play in actions that affect instream habitat, and most importantly, what "management measures" they commit to employing to improve the outcome of their activities. These measures are laudable, but one could argue that these are the same things that generally have been identified and delegated before. As interim measures, they are, nonetheless, potentially significant if aggressively implemented. However, it must be recognized that to date these same general measures have not effectively protected salmon and aquatic ecosystems.

Although commendable and substantive, we do not believe that the plan goes far enough in terms of addressing the problem of the general loss of watershed function and the long term protection and recovery of those functions. We appreciate the delicate political balance that Oregon is trying to make in tempering these measures so as not to create a backlash from the regulated community. But, without specifically preventing further widespread incremental loss of watershed function we are likely to fail in ultimately realizing our vision for recovery of our salmon, or for that matter, preventing further loss of current native stocks.

The CSRI strategy still requires a more predictable framework to unify individual measures. It does not appear that the state has developed a cohesive, overarching strategy, but rather has relied upon the sum of individual and disparate agencies and measures to establish the proposed initiative. How do these agency measures fit together? As described on page VI-E-2, "[success of the] CSRI Plan hinges on continued leadership of state agencies with potentially conflicting missions and competing constituencies." The teaming concept is vital but largely undeveloped in the plan. We encourage that linkages among measures be developed so that the agencies and councils become more interdependent, fostering teaming over unilateralism.

As pointed out by the Science Team, even though the measures "...promote a sense of optimism," our ability to offset the effects of increasing future resource demands continues to confound us. As we begin the development of long term agreements for addressing recovery needs, we will have to develop specific mechanisms to provide greater assurance of longer term implementation and accountability. Such mechanisms should be designed so that they meet multiple statutory and administrative needs concurrently. An example of a program which requires administrative coordination and accountability is the state's Coastal Nonpoint Pollution Control Program (CNPCP).

The Plan does define nominal "measures of success" that are to serve as the basis to judge the degree to which agencies fulfill their commitments. We like the concept of the annual report card. The strength of these approaches probably lies with how the indicators, benchmarks, and monitoring strategies are specifically designed to objectively evaluate both our technical approaches and our implementation record. Clear interim indicators of accountability should be considered for each agency measure. Obviously we are all less interested in 'bean counting' than we are in substantive and results oriented tracking which is truly meaningful in terms of salmon and water quality and which resonates with the public's interest.

While the breadth of proposed measures is encouraging, there were few details provided for our review (e.g. ODF proposed almost 60 one-sentence measures). More detailed discussions of scope, level of effort, priority sequence, and relationship to other measures are critical as we try to coordinate our multiple efforts. Therefore, EPA would like to participate in these more detailed discussions, as appropriate.

In the interim, the following limited comments are directed at some of the proposed measures that caught our attention.

ODF

ODF has about 55 field and enforcement personnel statewide. ODF is proposing to cut their numbers by 27% in the coming year. By way of example, the Tillamook district now has 2 enforcement staff for approximately 500 active operations annually on 200,000 acres of private forest lands. Those 2 positions would be cut to 1 under the current proposal. How does this reconcile with the need to demonstrate significant compliance with forest practice rules and regulations?

ODEQ

The recent court decisions giving the state clear authority to use their CWA Section 401 certification for federal lands has great potential for addressing nonpoint source pollution impacts that are inconsistent with the objectives of the CSRI and state water quality standards. State and federal agencies should strategize on how to best use this tool for maximum effectiveness and efficiency in the development of TMDL's.

We appreciate the effort that ODEQ has made in recent years to support the work of watershed management councils and to implement significant elements of the state's water quality programs through these forums. We believe this to be the most effective way to approach both non-point source and cumulative effects.

Oregon's new water quality standards need to be vigorously implemented, and where they are violated, recovery plans should be defined, funded, and implemented. DE will need to be funded to a level that allows them to adequately respond to this challenge. Currently, ODEQ's staffing complement is at a critical low. The surface water program is working without a management position and a number of other senior staff have been eliminated or reduced to half time. We do not believe that it is possible to implement the proposed measures under this staffing scenario.

OWRD

Although offered as 'protective' measure, the fact that 1200 pending water rights were reviewed (OWRD 2) (and decided upon (?)) without the benefit of re-examination of instream flow needs (OWRD 5), adequate stream gauging information (OWRD 6a), diversion inventories (OWRD 8a), or basin program re-assessment (OWRD 14), etc... gives us more concern than comfort. However, we are encouraged by these latter measures and many others proposed by the Water Resources Department, notably OWRD 9 - the development of instream transfers and leases for the benefit of fish - and presumably water quality.

We also note that proposed measure WRD19 on closing areas to fill and removal has never been used. Is the department serious about it's use in the future?

ODLCD

We have worked closely with ODLCD in the development of the Oregon Coastal Nonpoint Pollution Control Program (CNPCP) and definitely concur that the development and implementation of this pollution prevention type of approach will be extremely valuable in supporting the objectives of CSRI. One category of CNPCP's management measures that is not mentioned, but very important to the protection and restoration of salmonid habitat, are the hydro modification management measures. A specific gap noted in our review of Oregon's CNPCP was the ability to improve surface water quality and habitat complexity through the operation and maintenance of existing 'modified' stream channels. A number of different state agencies have roles in helping to design and support the implementation of these measures, but we have not yet been able to bring together our thinking and approaches on how to best accomplish this. Some dedicated and integrated thinking on this issue seems particularly relevant to CSRI.

ODSL

The scattered and uncoordinated nature of mitigation projects represents lost opportunity. ODSL's interest in developing draft rules for mitigation banks and payment-in-lieu approaches should result in more consolidated and higher quality projects.

Potential Federal Measures

Dike maintenance policies and riparian revegetation objectives are in conflict throughout the lower portions of coastal Oregon watersheds. These blanket policies, implemented by both the Army Corp's of Engineers and individual diking districts, do not support or allow revegetation. Changing some of these policies is possible and should be part of the CSRI.

Watershed Councils

Implementation of many of the measures described in the recovery plan will be accomplished through local watershed councils. The plan states that federal and state staff will assist the councils by providing technical support and guidance. The ability to actually deliver such assistance is a big concern, given current staff numbers and workloads. A 'reality check' might be obtained by charting out staff support assignments from each agency to each council or geographic organization unit (e.g. basin or province). We need to find more consistent methods to deliver such assistance to assure that it is timely, substantive, and relevant.

As a supplement to direct and individualized technical support, the state and federal agencies should also commit to developing the tools necessary (e.g., limiting factors analysis, restoration guidance, data development, monitoring support) for councils to develop and implement their course of actions. For many reasons, we strongly concur that watershed management forums are essential for implementing watershed-scale recovery strategies. However, at larger geographic (both basin and coast wide) and institutional scales, the state needs to ensure that more specific templates exist to guide these local actions. We must also address the important needs for regional consistency in terms of technical rigor, prioritization processes, and monitoring design, and demonstration of success.

Another issue that exists within the watershed management council setting is who will bear ultimate responsibility for negotiating and ensuring adequate follow through and adherence to the agreed upon schedules and milestones. The state needs to accept ultimate responsibility for the performance of each council, in the context of council actions being used to satisfy statutory requirements. ODEQ has put considerable thought into this issue of accountability and implementation assurance in an attempt to empower local efforts in developing and implementing water quality management plans (i.e. TMDL's). We believe that the elements outlined in ODEQ would be valuable for both water quality and salmonid recovery efforts.

Although "Watershed Councils that were established in the south-coastal region several years ago have

developed science-based analyses to identify limiting factors and are in the process of implementing action plans to address habitat problems," we do not believe that this is representative coast wide and question the status of watershed technical assessments and management plans summarized on page VI-C-9. From all accounts that we have both seen and heard described, the available technical information and support at the local level is a limiting factor to the effectiveness of our local watershed efforts. Such science based analysis will be necessary for developing watershed management action plans, SB 1010 Agricultural Water Quality Management Plans, general TMDL efforts, as well as focusing salmon recovery activities with some measure of confidence and reference.

Cohesion of effort across both geographic and institutional scales is obviously a concern given the largely decentralized approach described. Somehow we need to ensure that the function of an 'air traffic controller' is provided. Clear definition of priorities (i.e. geographic, sector, and sequential) and provision of more systematic technical tools and approaches for use by watershed councils in developing basin and watershed scale priorities are essential for keeping our efforts aligned and mutually supportive. The 'Bradbury Approach', the federal guide to watershed analysis, ODFW's Restoration Guides, NMFS's draft recovery planning guidance, and the CSRI's integrated monitoring strategy are the types of tools and approaches that we must bring to the watershed councils and support through to the field level.

Risk Factors

We believe that the habitat elements as a whole are weak. This position stems from: a) the underemphasized role of maintaining watershed functions; b) the re-packaging of many measure that generally should already have been in place; c) state staffing levels and resources needed to implement the described measures are declining not building; and d) extensive reliance on the role of watershed management councils without clearly being able to provide them with the support that they will require.

The general document appears to emphasize "restoration" in terms of individual projects focused on instream, reach-level actions. Although restoration has a role in the overall recovery strategy, instream restoration as the foundation for salmon recovery is worrisome. Restoration is not a substitute for maintaining processes that contribute to high quality riparian and aquatic habitat (e.g. natural recruitment of large wood and stream complexity, and the protection of small streams for maintenance of both hydrologic and sedimentation processes). Restoration should not replace sound protection strategies.

While "[t]he plan recognizes that human population growth and related issues such as demand for water and other natural resources... that may affect the habitat that supports coastal coho, steelhead and cutthroat" (CSRI Draft Plan p. VII-A-6), it also acknowledges both the complexity of the 'habitat' (or rather watershed function) and our general lack of understanding and weak baseline and assessment of actual field conditions. Restoration strategies that advocate short term technical fixes (e.g. in-stream structures, barging fish in lieu of natural migration processes, and fisheries supplementation) in isolation of long-term ecosystem solutions are not likely to meet long-term goals. Beschta et al. (1991) states that because of frequent negative effects [or their general ineffectiveness], structural alterations to stream channels should generally be de-emphasized as a long term fish improvement strategy.

We are unaware of any studies that clearly establish a relationship between stream improvement projects and increases in salmonid populations. We must be wary of simplistic or even artificial solutions until we have greater confidence in the scope and effectiveness of our combined actions. As example, site-specific BMPs and mitigation are relied on to limit land use impacts. However, assumptions regarding BMP and mitigation effectiveness have been repeatedly challenged. **As we fail to fully or effectively implement the management practices and approaches that we do have, we further undercut their potential effectiveness and set ourselves up for even more extensive regulatory prescriptions - the very predicament that we now face.** We must continue to examine our implicit assumptions about the effectiveness of existing land management BMP's for forestry, agriculture, hydro modification, and urban land use sectors, especially as we begin to encounter thresholds of cumulative effects. Assumptions regarding BMP effectiveness and potential thresholds must be reviewed (i.e. as road density increases, road related BMPs become less effective).

Our current attempts to offset damaging land use practices through mitigation does not ensure aquatic ecosystem or species protection - this is certainly evident from the effectiveness of our current regulations. It is dangerous to use mitigation and restoration as the main foundation for recovery. 'Restoration projects' cannot be the cornerstone of a long-term recovery strategy, although these projects clearly have a vital role as one component of an overall strategy that includes protection and more sensitive land and watershed management. The combination of restoration, protection, and monitoring efforts must be used to reestablish the aquatic functions and processes of watersheds including physical, chemical, and biological characteristics (National Research Council 1992). We must jointly commit to a comprehensive framework that establishes protection as its priority.

We underscore that the restoration activities that we do cumulatively undertake, should - at least initially -be strategically targeted (e.g. removal of Elk and Savage Rapids dams). A clear strength of the CSRI Plan is the strategic focus on specific categories of restoration priorities such as passage, riparian revegetation, and the maintenance and stabilization of roads (road decommissioning should have been more explicitly addressed). More piecemeal approaches to restoration based on simple instream structures, limited reach/watershed-level assessment, unassessed hardwood conversions, narrow geographic and species review, and ad hoc monitoring is cumulatively inadequate to meet overall resource protection and recovery needs. We encourage further discussion and articulation of clear restoration guidelines to add to the strategic design of restoration projects so as to more effectively address a broad scope of key risk factors. For example:

Examples of Guidelines for Prioritizing Restoration Projects:

1. Projects should be initiated only after the causes of degradation are identified and addressed. Projects should address degradation cause(s) rather than symptoms. Restoration focus should be on process and function rather than short-term solutions to ecosystem degradation.
2. Projects should provide a broad range of benefits to the aquatic system. Projects that modify existing naturally functioning systems to provide narrow benefits at the expense of broader ecological benefits are discouraged.
3. Projects should contribute to the restoration of historic watershed function, composition, and biodiversity.
4. Projects, once completed, should be self-sustaining, requiring minimum maintenance and other human intervention.
5. Projects should restore linkages between refugia and other isolated habitat units.
6. Projects should not be negatively affected by anticipated watershed land uses.

Although restoration may be important in certain locations it will not ensure the long-term survival of salmon populations. Restoration must be balanced with resource protection as well as land management philosophies that are sensitive to ecological processes. These three elements are the foundation for land stewardship and salmon recovery.

Core Areas

The Plan goes into some detail in describing "core areas" - the geographic areas critical to salmon. Not explicitly stated in this description is the need to define historic as well as current ranges used by salmon. This is essential in giving a greater understanding of the magnitude of the areas lost to salmon production and where the greatest potential gains might be made. Most of the supporting data is already mapped by virtue of the good work done by Oregon Chapter of AFS.

The plan describes that salmon are not evenly distributed throughout a river basin and tend to concentrate in more localized reaches. Generally, these areas of concentration are the basis for determining Core Areas. However, it is important to remember that historically these 'Core Areas', at least for a number of the species of concern, generally consisted of the lower gradient parts of the basin (i.e. the floodplains and more unconfined reaches). Human activity has severely squeezed the habitat functions out of these areas and we are now left with 'Core Area' refuges which are further upriver in the basins. This fact adds an important element

of risk that has not been clearly identified in the CSRI Plan. We strongly encourage that historic distribution of 'core areas' be factored into the recovery strategy. In this light, a more critical identification and analysis of meta-populations is appropriate.

Following this same logic track, we must ask ourselves if protecting only spawning and rearing habitat will be sufficient (core area establishment was based on these two factors). Certainly, small and non-fish bearing streams, nodal habitat (ie. habitat important to specific life stages), as well as dispersal corridors are critical to ecosystem/habitat/species maintenance. The document recognizes the importance of securing refugia (i.e. core areas) as well as dispersal corridors. This is critical to recovery plan success. However, there is absolutely no discussion as to how this will be accomplished - both initially and in the long-term. Again, we must question whether the core areas are really representative of all critical "refugia" and the processes outside of core areas that maintain these refuge areas. Another note is that functional refuges are not static but dynamic based on landscape disturbance patterns.

If core area data are to be relied on for management decisions we must be very comfortable with core area data/definition and identification methods. Core areas should be further reviewed and corroborated at the basin-scale with existing designations e.g., key watersheds, healthy stocks, Aquatic Diversity Areas, as well as other land allocation designations. Scientific validity of core areas is still uncertain and review and discussion has been limited. Once GIS maps displaying core areas are released it will be very difficult to change course. Core Areas are of critical importance because the bulk of actions will be directed to these areas.

Goal 6 mentions estuarine habitat - however, with this one exception, the plan does not describe the extent of habitat types to be incorporated into the recovery initiative nor does it provide a discussion of the need to incorporate actions across the full range of ecosystem types required by salmon. The CSRI did attempt to organize actions by both ecosystem type (i.e. freshwater (by stream order), estuarine, near coastal, ocean) and life history needs. However, re-attempting this at the basin scale is very important because it would provide the basis for completing the recovery factors matrix prepared by NMFS, which are similarly keyed to life history needs and ecosystem characterization. Although we do not recall a clear statement to this effect, this basic risk factor matrix - tailored to each basin - will largely provide the scope and indicators for the overall CSRI Monitoring Plan.

Monitoring, Indicators, and Benchmarks

There is much to be commended in the proposal to establish an integrated, multi-level monitoring plan, because without such a plan, success of the overall recovery strategy will be dubious. The authors of the plan recognize this and recommend creating a workgroup to help develop quantitative methods and complementary sampling designs to ensure the monitoring program is sound. This group will also be involved in the iterative process of data analysis, interpretation and modification of the methods, sampling designs and implementation activities.

However, in its present state, the proposed plan is too diffuse and needs to link the limited, management driven objectives identified for each agency with regional-scale objectives that address the larger picture of present and future habitat conditions.

Although adaptive management in theory is a useful method to ensure institutional learning - it has not been successfully implemented, let alone at a scale or with the complexity of measures such as are needed for coastal salmon and water quality recovery. Hypotheses must be developed, data collection and data storage methods established, and policy-science feedback loops developed. If adaptive management is to be a central tenet of this plan these details must be developed and circulated for broad review and discussion. This must include the development and characterization of credible reference conditions.

Additionally, individuals must be identified to oversee plan implementation. Accountability is critical, especially given our overall track record in following through with monitoring and indicator development. Long-term agency accountability as well as resource (i.e., financial and staff) commitments must be

guaranteed. Failure to secure agency-wide assurances will leave the strategy vulnerable - agency attention and resources will turn to the latest high profile initiative. Program development is at an early stage, and as such, provides only an acknowledgement of the importance of coordination, standardization, management accountability, long-term funding and staffing, etc. Concrete measures to support the program will need to be developed. We would be interested in the specifics developed to address these program commitments and implementation strategies.

As part of its approach, the monitoring plan proposes to use both intensive and extensive sampling of physical and biological conditions at a variety of sites throughout the coastal range of salmon. The extensive sampling relies on physical instream sampling protocols developed and in use by Oregon for several years now in their habitat surveys. The use of these methods should be reconciled with the objectives associated with the recovery plan, and modified if found to not provide data at the appropriate resolution to address that objective. Some of the elements of this protocol may be more suitable than others for addressing objectives such as establishing quantitative measures of habitat condition and trends over time. Many of these details would likely be addressed by the assessment and design workgroup mentioned in the plan.

Potentially the weakest elements of the strategy is a clear articulation of program assumptions and the logic track that guided the development of the monitoring framework. Specifically, the framework focuses on the establishment of a nested monitoring design whereby information collected at various scales may be analyzed and synthesized to produce an accurate high resolution image. Information collected at any one scale will support efforts at other scales. The proposal states that, "A program structure is required to place site and reach level monitoring or assessment into a meaningful context at higher levels of resolution." However, development of a nested monitoring design includes more than just a program structure. A consistent and strategic approach to indicator selection as well as standardized protocols must be developed for this approach to succeed. The document should discuss how indicators at various scales will be selected and the appropriate protocols for their application. Only in this way may a truly "nested" design be developed. Finally, indicator analysis including long-term verification of ecological assumptions as well as predictive capability (e.g., landscape characteristics) should be incorporated into the overall plan.

Utilization of the Oregon Progress Board to assist with the development of environmental benchmarks is an important connection to make. However, the environmental benchmarks so far developed through the Progress Board are very limited in their sensitivity to short or even mid term trends, and are not tailored to local conditions or objectives. The indicators and benchmarks put forward must be meaningful over shorter time horizons so that timely feedback is provided and they must be of direct relevance to local forums. Such benchmarks and indicators must resonate within these local forums and be embraced by them as they develop each and every work plan. We do appreciate the need for assimilating and aggregating these benchmarks to a more regional or even statewide scale, but they must be grounded at the basin and watershed scales. These benchmarks should provide the most credible mechanism of accountability.

Specific Comments on Proposed Interim Indicators

The main function of these indicators should be to describe meaningful environmental benefits. We need to be careful that we do not establish indicators that can be used to construct an administrative facade. As mentioned earlier in the measures critique, some indicator of accountability should be considered for each agency measure. Without direct and substantive connections to the proposed measures, the utility of Salmon Report Card is undercut. Ideally, the contents of the salmon report card would have direct application to both salmon and water quality recovery agreements.

ODA
- Should include number and % of individual farm plans developed within each basin and some measure of implementation status.

ODEQ
- Should include % of basin stream network either monitored or assessed.
- Should also include % of basin with approved TMDL's.

ODF
- "Number of ODF culverts modified to allow fish passage" doesn't tell you much without lots of other information (e.g. number and type of problem culverts, location and relative importance of blockages, percent of basin stream miles open to fish, type of modifications employed).
- "Percentage of forest operations inspected that were found to be in compliance..." should be broken down by category of violation and geographical distribution of effort and matched with percentage of total operations inspected.
- Should include number and location of actualized Large Woody Material Placement Incentives and Riparian Hardwood Conversions.
- Should also include % of road network inventoried for risk assessment, maintenance, and decommissioning.
- Should include % and coverage of fish presence and barrier surveys for each basin.

ODSL
- "Percentage of violations resolved" should be percentage of violations resolved with full restoration.
- Should include coverage of woodland inventories completed or underway in each basin.

ODFW
- "Percentage of diversions randomly surveyed that are found to be unscreened" should be percentage of unscreened diversions by basin.

OWRD
- Should include percentage of basin not meeting ODFW's recommended instream flows.
- Should also include % of basin re-examined with respect to current in-stream flows.
- Should also include % of basin diversion inventory completed.
- Should also include number and location of problem push up dams remaining in each basin.

GWEB
- Should also include % of watershed councils with dedicated support staff.

Specific Comments on Monitoring Tasks

Task 1, Stratified Probability Sampling Design, is a necessary and sorely needed contribution to discussions involving landscape-scale monitoring strategies. Identification and evaluation of "important" physical and biological factors as well as their spatial and temporal distributions should be tied to the identification of indicators applied at various scales. This discussion may help to establish the logic behind the selection of key indicators and appropriate scales of analysis as well as the identification of potential indicator interactions at various scales.

Task 3, Summer Juvenile Abundance and Seeding Levels: Identification of reach-level seeding targets based on "appropriate stream habitat" should be tied to an understanding of basin-wide channel alterations including modifications of morphology, micro habitat, width:depth ratios, LWD, etc. Without this basin-level context, estimates for full seeding are deceptive.

Additionally, a basin-wide inventory and assessment may lead to the identification of lost or sensitive channel/habitat types supportive of juvenile and adult salmonids as well as opportunities to restore these elements (see Montgomery et al., identification of bedrock channels sensitive to LWD input and capable of developing into forced alluvial channels).

The statement "relative seeding level is an important component of evaluating the effectiveness of habitat restoration projects" requires clarification. Simple in-stream "fixes" such as additions of LWD may lead to the appearance of increased juvenile abundance. However, regional and basin-scale restoration requires time and requires a commitment to the recovery of processes rather than the "appearance" of a functioning stream-reach. The general public, politicians, and agency managers must be fully aware of the time-frame for recovery as well as the indicators of successful restoration. Without this understanding, long-term support may be jeopardized.

Task 4, Stream Channel and Habitat Assessments, clarify the statement that "stream channel and riparian

surveys provide basic monitoring information at multiple scales of analysis." As stated above, indicators reflective of project goals should be identified and appropriate scales of application determined. Parameters discussed in this section are mostly site-specific and few are process based. There is little support provided to the idea that multiple scale analysis will occur. Identify sub-basin, basin, and regional scale indicators including indicators of risk and recovery. Additionally, protocols to monitor indicators at various scales must be developed (see general comments).

Develop calibrated "regional" relationships that relate basin area to channel width, channel depth, and width:depth ratios.

Ensure that measures of flow are included (absent from Table 1).

Task 5, Spawner Abundance Surveys, should be tied to genetic/life history studies. Also include hatchery-native fish interactions.

Task 6, Genetic and Life History Monitoring, should include a discussion of existing metapopulations, their formation, as well as their maintenance. As was evident during the Western Region AFS Conference, the subject of metapopulations has become a central topic of discussion as well as a ubiquitous theme during restoration planning. Although this topic receives much discussion, there has been little debate regarding the accurate identification of metapopulations or their structure. It appears that any grouping of sub-populations may comprise a metapopulation and that only one model for their formation exists. This is potentially as or more dangerous than ignoring the metapopulation concept.

Task 7, Fish Propagation Monitoring, should include hatchery stock selection criteria as well as genetic and life history information including genetic monitoring procedures.

Sub-Basins, Watersheds, and Streams: Highly supportive of coast-wide network of reference sites including estuaries, floodplains, and forest basins.

Task 10, Salmon "Core Area" Habitat Monitoring, should include information elated to genetic-life history variability and metapopulation concepts as well as dispersal and migration corridors. Habitat Assessment related monitoring activities should include risk assessment/identification and tracking.

Task 11, Evaluate Estuary Populations and Habitats, expand discussion. Monitoring should include time-series tracking of habitat mosaics. See EPA-Corvallis Laboratory's Pacific Northwest Ecosystem Research Consortium project entitled, "Estuarine Landscape Structure Interaction with Ecosystem Processes (Si Simenstad, US, 206/543-7185).

Task 12, Forest Practices Monitoring/Federal Watershed Assessments, should emphasize multiple-scale monitoring indicators and activities. Currently, much of Oregon Department of Forestry efforts are site and reach-specific. Additionally, Federal Watershed Analysis often restricts analysis boundaries thereby eliminating certain biological and physical attributes from the evaluation.

BMP effectiveness should be assessed in both previously disturbed and relatively intact systems. Ultimately, a question that needs to answered is whether a threshold exits for BMP effectiveness (i.e. in response to cumulative effects).

Stream Reaches and Sites: An integrated system to "evaluate the negative impact of failures to protect stream habitats and fish populations" or to identify and track risk will be extremely valuable.

Integrated Synthesis and Distribution of Results: Ensure GIS data standardization. EPA Region 10 has recently developed an Environmental Information Management System including a standardized method to incorporate data. This information is available via internet. EPA would welcome input of additional data. Please contact Tom Haad at 206/553-6689.

Additionally, much of the GIS discussion centers on the analysis and compilation of collected data. However, further information analysis may provide predictive indicators of disturbance, ecological integrity, high value habitat, recovery targets or standards, etc. For instance, the statement, "Much of the basic information used to establish Stratified Probability sampling designs for each task will also utilized to interpret and present context for the monitoring results" should also include the manipulation of data for predictive applications as well as an assessment of applicability of indicators across scales and regions. For further examples, please see the Interior Columbia Basin ecosystem and data management reports (Bruce Riemann, Intermountain Research Station, USFS: 208/364-4386) as well as the Coastal Landscape Analysis and Monitoring Study (CLAMS) (Kelly Burnett, USFS, Pacific Northwest Research Station 541/750-7309).

Enforcement

Agencies have inconsistent approaches to the role of Oregon State Police. ODSL and ODA make it very clear that they do not want the police involved unless staff are at risk (fear of political backlash from public). This is contrasted with very clear statement by OSP that they want to take on new role of habitat protection by enforcing state agency authorities but are constrained by lack of integration (acceptance) with agencies. All agencies need more staff and OSP Fish and Wildlife Division is an existing source of highly trained enforcement experts. ODSL has used them in a team approach in the past (1991 - 1993) with excellent results. CSRI needs to address this problem of integrating OSP into current enforcement programs.

The most important problem is lack of staff for enforcement. Agencies need to be more specific and honest in CSRI about how much enforcement staff it would take to do the job properly. ODSL only investigates unpermitted activities and does almost no permit compliance investigations (sediment/erosion problems are the most common substantive permit violation). ODEQ has never made it a priority to enforce against activities most likely to affect fish habitat protection (i.e. sediment/erosion control). Also they have only 1 staff statewide for 401 certifications. ODF is proposing to cut enforcement staff int heir upcoming budget. State Parks and Recreation basically admit they have zero enforcement capability for scenic waterways. ODFW never acknowledges their crucial role in supporting all of the other agencies in enforcement. ODFW field staff are a major field and technical component of ODSL and ODEQ programs and probably most of the others state programs. This is not addressed nor the fact that ODFW is also losing staff.

We appreciate ODFW's cautious nurturing of land-ownership relationships, but 'co-enforcement' of programs does not necessarily have to be heavy handed (i.e. this can be done in a way that emphasizes education and voluntary compliance versus citations and penalties). However, where there opportunities to point out problems, inconsistencies, and solutions - even though it may be within someone else's authority - this should be done.

Based on our experience, the ODSL enforcement management measures are weak. More "coordination" is not necessarily very meaningful - the two new staff they talk about is good but enforcement will be only one of their duties so the real net gain in FTE for enforcement is quite a bit less. The reclassifying support staff idea might help a little but those people are already overworked in their existing support duties. Bottom line is that DSL enforcement capability will change little.

Also not discussed is role of Attorney General' office. The AG folks are very willing to take on cases if agencies ask them to. The obstacles are whether agencies have the budgets to cover AG costs and the political will for this type of "heavy-handed" enforcement. How to overcome these obstacles needs to be addressed in CSRI.

Outreach and Education

The outreach plan is quite impressive. We have only positive comments. It is broad-reaching, multi-faceted, and well rounded in terms of approaches. it links well with some existing efforts and would be a model in interagency coordination. The public recognition of outstanding contributions is also a clear strength. Some elements not mentioned but perhaps worth considering include: a) more effective publicizing of volunteer opportunities to encourage involvement and investment and developing; and b) encouraging more systematic citizen monitoring approaches (e.g. a tailored streamwalk approach). Of course, much of this could be accomplished directly through the local watershed management forums once some basic templates and coordination mechanisms are developed.

NEW - 2/20/97

Return to top of page

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October 31, 1996

Mr. James T. Martin
Salmon Technical Advisor
State of Oregon, Governor's Natural Resources Office
160 State Capitol
Salem, Oregon 97310

Dear Mr. Martin:

The following is the U.S. Fish and Wildlife Service's (Service) review of the August 1996 Draft of the Oregon Coastal Salmon Restoration Initiative (OCSRI).

GENERAL COMMENTS

The State of Oregon has made a tremendous effort in trying to organize and document the essence of a coordinated salmon and aquatic habitat restoration program over the expanse of Coastal Oregon, and in a short period of time. We agree that any meaningful restoration and recovery program must have local support and involvement, and that fundamental management philosophies must change for conservation and restoration to be ultimately successful.

We understand that the OCSRI is a draft, is receiving extensive review now, and will likely be considerably revised in the near future. We hope that our comments are constructive and will assist the State in improving its plan. We also encourage the State to take better advantage of the available science in future versions of the OCSRI. The work of the science team is valuable as far as it goes, but more scientific input and documentation are needed. We have made some suggestions in our comments, and hope that rigorous, independent peer review will improve the OCSRI's scientific grounding. In particular, the establishment of thresholds for endangered and threatened status must take ongoing scientific work into account.

We also understand that the goal of the OCSRI is restoration of Oregon's salmon fisheries, independent of any

change in Federal or State status. This goal is consistent with both State and Federal Endangered Species Acts, regardless of any listing outcome. However, we have focused on coho salmon in our review, partly because it is difficult to evaluate the potential success of the OCSRI without a specific species and life history as a touchstone for success, and partly because of its timeliness in relation to proposed ESA listings.

Although the OCSRI is an admirable start, much more is needed to demonstrate that it can make a significant difference in the future of Oregon salmon fisheries. Our general concerns are described first, followed by specific comments.

Demonstrate more concretely that the OCSRI will meet its objectives

The OCSRI asks reviewers to "judge the overall likelihood that the elements contained in the Plan, collectively, will be sufficient to achieve conservation and restoration of anadromous salmon and trout in coastal river basins." (page VII-B-1). The OCSRI, as written, does not adequately demonstrate that it can meet its objectives. To address this, the State should conduct an overall assessment of whether existing and proposed actions are sufficient to recover coho and other salmon. Although the OCSRI correctly points out that this is scientifically difficult, the State should attempt such an assessment; we include suggestions for how to approach it.

We recommend as a starting point that the State address the question of how much improvement in survival and productivity is needed to achieve the OCSRI objectives. (This can only be addressed from a species standpoint; while conservation and restoration of anadromous salmon is a good goal, success can only be measured in terms of individual species.) We recognize the scientific uncertainties in making such a demonstration, but recommend that an adaptive management approach be more fully developed. The science team should address the question, how much improvement in survival and productivity is needed to meet interim and long-term objectives? This question should be addressed in an adaptive management framework, by framing hypotheses in the form of conceptual and quantitative models, identifying risks and uncertainties, using the models to guide monitoring, evaluation and research, and modifying the models (hypotheses) as new information becomes available. A more full elaboration of "How much is need to meet objectives", acknowledging scientific uncertainties, would allow reviewers to better judge whether we can get there. It also would help provide a basis for the goals and priorities of watershed groups and for monitoring and evaluation.

Demonstrate that the OCSRI will lead to removal of threats to coho salmon

The OCSRI would be more convincing if it focused on the specific threats that affect coho (and other species) of salmon at each stage of the life cycle, and identified how each measure would remove those threats. As it is written, the OCSRI places more emphasis on what the State can do, primarily given existing resources. This gives the impression that the OCSRI may be able to accomplish little beyond the current condition. The general theme of the measures center on enforcement, expansion or enhancing existing programs and regulations or establishing new programs or regulations. While these are commendable actions, there is no evidence presented to indicate that removal of threats to coho will be forthcoming over a reasonable time-frame. Unfortunately, most of the State and Federal statutes identified have been in place during the period of decline of coho salmon, and have either been inadequate to stem the decline, or not adequately enforced. Further, there is no assurance that the Legislature will provide for new or expanded programs, since they do not at present provide the minimum resources necessary for adequate enforcement of existing statutes. This is true for both State and Federal environmental programs that can and should have helped avert the present crisis, and aid in the recovery of coastal salmon.

Better define the conservation strategy and how it will lead to meeting objectives

The concept of identifying core areas as a focus for protection and restoration is well-founded in conservation biology and one that we support. However, the concept assumes a comprehensive, integrated restoration and

protection strategy; without this, it cannot succeed. The OCSRI is very vague about how core areas and non-core areas will be treated, and what each is expected to contribute to restoration. For example, does the fact that many of the core areas are already on lands that receive some form of protection mean that core areas are not expected to contribute significantly to increased productivity? The role of core and non-core areas and how they will be protected and restored need to be more clearly defined, and this needs to be incorporated into specific guidance given to watershed councils so that there is a comprehensive restoration strategy.

More firmly establish need for extensive restoration of freshwater aquatic habitats

In the Introduction, the point was made that the current status of coho salmon was not attributable to any one segment of society, and that each segment would need to contribute to salmon restoration. In several places the OCSRI frames poor ocean conditions as a factor that overrides all others. Since Pacific salmon have persisted over geologic time, likely encountering poor ocean conditions during their evolutionary history, and apparently did quite well prior to Euroamerican settlement, we do not see the merit in attempting to attribute current status primarily to poor ocean conditions. This gives the impression that restoration potential is limited, with the implication that restoration goals should be limited (particularly in the discussions of production goals and escapement goals). This does not help firmly establish the goal of and need for extensive restoration of aquatic habitats throughout the Oregon coast. This issue was eloquently described by Lawson (1993) who pointed out that during poor and improving ocean conditions it is especially important to restore freshwater habitat to offset poor ocean conditions and to make certain that habitats can recover in time to take advantage of better ocean conditions. Further, healthy freshwater habitat will contribute to healthier populations than degraded habitat; healthy populations are better able to survive poor ocean conditions than unhealthy populations.

Watershed councils need guidelines and support

The OCSRI relies heavily on watershed councils to recover coastal salmon. The ability of existing and not-yet-created watershed councils to meet this challenge will be extremely variable. Everything possible must be done to achieve a high level of performance from watershed councils in terms of successful restoration. The OCSRI acknowledges that planning, prioritizing and strategizing are not at desired levels (page VI-C-8) and that there is a lack of long-term commitment for funding (page VI-C-5). It is also not clear whether or how adequate technical assistance will be made available to every watershed group. We are concerned about these deficiencies. We are also concerned that the OCSRI does not indicate that specific standards and guidelines regarding goals, objectives and strategies for restoration will be given to watershed groups. While we are sympathetic with the desire to empower local initiatives, coho will not be recovered without at least some minimum level of restoration being achieved coastwide. We recommend that some level of guidance be given to watershed councils to improve their ability to assist in the recovery of coastal salmon. Accordingly, we strongly recommend that the final initiative include specific minimum standards and guidelines that will be applicable to all watershed councils.

Acknowledge the important role of estuaries and identify measures for their restoration

Estuaries are the *de facto* link between freshwater and marine environments. Consequently, these fragile and dynamic areas comprise a critical habitat for all anadromous fish, regardless of the amount of time a specific salmonid species may spend within estuarine waters. However, active measures to increase protection and promote restoration of estuarine habitats are lacking in the OCSRI. For example, the sections of the document describing the programs and proposed actions of the Oregon Department of Agriculture (ODA) do not include any mention of ODA's oyster culture leasing program. Oyster culture affects a variety of physical and biological processes within an estuary and, if not carefully controlled and monitored, can result in altered erosion and deposition patterns, loss and degradation of eelgrass habitat, and other estuarine impacts that can adversely affect salmonids. The sections of the document describing the programs and proposed actions of the Department of Land Conservation and Development (DLCD) describe this agency's role in classifying estuaries and establishing the Estuarine Resources Goal and within the Land Use planning Program, but no active measures are identified to improve existing protection mechanisms or promote restoration of estuarine habitat. To remedy this critical deficiency, the Service recommends that the draft OCSRI be revised to include specific focus on restoration and conservation of estuarine health and habitats. We recommend that state agencies be directed to revisit their proposed Phase 1 and Phase 2 activities to look for opportunities to

increase protection and promote restoration of estuarine habitats. Specifically, we recommend the following:

1. ODA should rigorously examine their oyster culture lease program to identify opportunities to:

a. improve assessment and evaluation of potential resource impacts associated with proposed oyster culture prior to granting a lease;
b. improve monitoring and increase enforcement of special conditions included in oyster culture leases;
c. re-negotiate existing leases that conflict with natural resource conservation and restoration goals or that contain poorly worded and unenforceable special conditions; and
d. develop and implement an element of the oyster culture lease program to track, plan, and control associated cumulative impacts to individual estuaries and across estuaries at an appropriate bio-regional scale.

2. DLCD should review Goal 16, Estuarine Resources, and the classification of the state's estuaries, to determine if these measures are consistent with the general salmonid recovery goals of the OCSRI and with the conservation goals established for the specifically identified core areas. Further, this element of Oregon's land use planning program should be reviewed to identify opportunities to increase protection of estuarine resources and promote restoration of estuarine habitats. DLCD should also identify opportunities to integrate Goal 5 (Open Spaces, Scenic, Historic, and Natural Resources) and Goal 16 objectives. Specifically, DLCD should look for opportunities to promote conservation and restoration of areas in which a full range of estuarine habitats, from sub-tidal to high marsh and adjacent upland, are spatially, functionally, and hydrologically linked.

Collaborate on regional water planning

Two state agencies, Water Resource Department (WRD) and Oregon Economic Development Department (OEDD), propose actions aimed at addressing the impacts of growing municipal water demands and wastewater treatment on coastal watersheds and the associated salmonid habitats. We recommend that these agencies work collaboratively with a third agency, DLCD, to develop regional planning approaches that integrate growth, municipal water demand, and wastewater treatment. We also recommend that these agencies, using their separate or combined authorities, develop incentives to enlist local governments in regional growth and water planning efforts.

Enlist participation of local governments and special districts

The OCSRI excludes a critical level of government from its collaborative approach to conservation and recovery of coastal salmon--local governments and special districts. We recommend that county governments, city governments, and special districts within coastal watersheds be asked to contribute to this effort in a similar manner as the state agencies. Active review of a jurisdiction's authorities and capabilities, followed by identification and commitment to implement Phase 1 and Phase 2 activities would increase overall participation in the restoration effort, stimulate local interest, and have direct, on-the-ground results. In addition, several of the Phase 1 and 2 actions identified by state agencies are best implemented, or can only be implemented, in partnership with local jurisdictions. Requesting this kind of participation will accelerate such partnerships. The structure and focus of watershed councils does not substitute for this kind of government-specific participation. And, unfortunately, local government participation in watershed councils is absent or limited in some areas.

Develop additional awards and incentives

A few of the state agencies have identified awards programs as a Phase 1 activity to encourage and reward outstanding contributions. We recommend that all the agencies reconsider including awards and other incentives in their Phase 1 plans. Specifically, we suggest that ODA develop awards for fish-and water quality-friendly ranching or dairy farming in the coastal plain, and that DLCD develop an award for local jurisdictions with land use plans that contribute to the conservation and recovery of coastal watersheds.

SPECIFIC COMMENTS

Page I-1 **CHAPTER I. ESSENTIAL ELEMENTS OF A CONSERVATION PLAN**

Page I-3 **Element 2 - Establish priorities for action.**

We support the strategy of emphasizing certain high-priority basins based on previous analyses such as the Bradbury process, in conjunction with core areas within each basin. The establishment of a system wide network of core areas is crucial for maintaining and restoring fish habitat and is a cornerstone to this conservation strategy. Designated core areas need to be spatially connected habitats that serve as anchors for the potential recovery of depressed fish stocks. Core areas which serve as refugia are crucial for maintaining and recovering at-risk stocks of anadromous and resident fish.

The OCSRI defines core areas as those areas that are of critical importance to the sustenance of salmon populations that inhabit those basins. Core areas are intended to serve two functions: 1) provide the resources and habitats necessary for the persistence of each population, and 2) serve as major sources for seeding new habitats as restoration programs are implemented (Core Area Maps, page 2). A major purpose of core areas is to establish priorities for watershed groups: within each basin, efforts will prioritized, first to secure core areas for anadromous fish, and second to improve habitat and populations in suitable recovery areas nearby.

A successful restoration strategy must, at a minimum, demonstrate that core areas will receive protection from degradation at a level adequate to prevent further losses of freshwater productivity; theoretically this should maintain populations at current levels and prevent future declines. To begin improving freshwater productivity, core areas must be restored to a level that will increase freshwater productivity. For this to be an effective strategy, the OCSRI needs to demonstrate how core areas will be protected and restored.

The establishment of core areas, although crucial, is not sufficient to assure recovery of at-risk fish stocks. The condition of coastal salmon populations, particularly coho, is such that aggressive protection and restoration of core areas alone will not be sufficient to recover these populations. Therefore, the OCSRI also should demonstrate what measures will be taken in non-core areas.

It makes sense to unify the activities of state and federal agencies around a set of core areas, and several examples of how this might take place are given on page I-3 of the OCSRI and page 3 of the Core Area Maps appendix. However, we are concerned that some of the examples are actions that should occur everywhere, such as enforcement of existing environmental laws by Oregon State Police and other appropriate state agencies, implementing the Oregon Wild Fish Management Policy, and screening irrigation diversions. It is important to limit those activities that are destructive to fish not only within the core areas, but also in non-core areas. The identification of core areas should not be interpreted as justification for not enforcing existing laws and regulations elsewhere.

Page I-5 **Element 3 - Establish explicit objectives...**

The basic concepts guiding the OCSRI are based on sound conservation biology principles.

Page I-7 **Element 7 - Provide high levels of certainty that the identified measures and action will be implemented.**

State and federal agencies also should have been asked to respond to an additional question after the fourth

bullet question: If the measure is voluntary, is it likely to be enacted?

Page II-1 **CHAPTER II. GOALS AND STRATEGIES OF THE COASTAL SALMON RESTORATION INITIATIVE**

Page II-1 **Goal 1, Strategy 1.b**

Improved communication and coordination with the private sector should be incorporated into this strategy.

Page II-2 **Goal 3, Strategy 3.a**

The concept of prioritized enforcement is not appropriate; enforcement needs to be consistent and improved everywhere.

Page II-2 **Goal 4**

A strategy needs to be included to provide funding and technical assistance to watershed groups.

Page II-2 **Goal 5**

The scientific understanding referred to here should reflect the findings of the adaptive management working group described in Strategy 8.d.

Page II-3 **Goal 6**

In addition to the strategies mentioned to insure sufficient freshwater and estuarine habitat will be available, there should be a mechanism in place to evaluate whether the current laws are sufficient to provide this guarantee. The current laws have not been effective up to this point, probably given the lack of staffing to enforce them.

Strategy 6.b

This strategy directs restoration to the core areas. However, these areas, by definition (Strategy 6.a), already support relatively high densities of rearing and spawning salmonids. Restoration in areas that have lower density of salmonid spawning and rearing also should be considered, because such areas are likely to respond well to restoration efforts. A coordinated strategy that recognizes the potentials and benefits of restoration of both core and non-core areas is needed.

Page II-3 **Goal 8, Strategy 8.d.**

The adaptive management working group should be independent, and should also serve in a scientific peer review capacity. In addition, it should interpret and translate its findings as needed for education and outreach (Goal 5).

Page III-2 **AUTHORITY AND RESPONSIBILITY OF STATE AGENCIES IN RELATION TO OREGON'S OCSRI**

Page III-2 **Oregon Department of Agriculture**

Senate Bill 1010 gives authority to Oregon Department of Agriculture to develop Water Quality Management Plans to 303d listed watersheds. This program needs to be implemented in a timely manner, and a conduit for implementation needs to be established and supported. Coordination with Oregon's other natural resource agencies is critical to the success of these plans.

Page III-3 **Oregon Department of Fish and Wildlife**

The ability of Oregon Department of Fish and Wildlife (ODFW) to carry out its mandates depends on a stable funding source. Due to the reduction of revenue by licenses in recent years, staff reduction in biologists has occurred and ODFW may suffer further cuts. A source of funding should be developed to offset these losses and funding in the future should be headed towards independence from the licensing revenues.

ODFW fish management plans have been adopted and drafted for many of the coastal basins. These plans direct attention to the most critical problems within each basin and provide management of the fish resources by establishing management priorities so that funds and personnel can be used accordingly. Priority should be given to complete the remainder of these coastal basin plans, particularly the Tillamook/Nestucca Basin, given the current direction of the State and Federal lands to develop resource management plans within this area.

Page III-3 **Oregon Department of Forestry**

The State owned lands have a responsibility to maintain viable fish and wildlife populations through the adoption of best management practices (BMPs). It is unclear in this document exactly what measures Oregon Department of Forestry (ODF) is practicing to ensure this. The State Forest Practices Act provides a level of protection to aquatic resources. However, it does not provide protection for first and second order streams, nor does it designate riparian width buffers as protective as the riparian reserve land allocation for federal lands within the Northwest Forest Plan (USDA & USDI 1994). The riparian zone should provide such benefits as: a source of large wood and litter; shading; buffer from windthrow and accelerated sediment inputs that can result from timber harvest and associated road building; and hydraulic connectivity of the floodplain with associated side channels. In addition, it should provide a buffer to accommodate variability of natural stream channel movement and protection from acceleration of landslides originating in landslide-prone slopes in headwater areas.

There is concern that the standards and guidelines in the State Forest Practices Act that apply to those parts of the watersheds which directly contribute to creating or maintaining aquatic habitat are insufficient to protect aquatic resources. The Service recommends at a minimum, that ODF require a written plan of operation within the core areas for any high-risk forest activities, especially in designated or potential areas of unstable slopes.

In order to develop a conservation strategy that is aimed at restoring and maintaining the ecological health of watersheds, certain elements of the State Forest Practices Act need to be improved to insure land use activities do not alter those processes and landforms that contribute to good habitat condition beyond the range of conditions to which the fish have become adapted. Efforts should be focused at reducing the frequency or magnitude of disturbances accelerated by timber harvest (e.g., landslides and debris flows) and restoring natural physical disturbances (e.g., large wood, boulders, and gravel).

To achieve this, several measures should be evaluated and amended with respect to the current Forest Practices

Act as it pertains to forest harvest activities on State and private lands:

1. Measure 10, Road Erosion and Risk Project:

This measure will help reduce detrimental road-related risks by identifying and addressing roads used for operations after 1973, but should include older, legacy roads. Also, road density and location of roads in relation to stream network should be addressed in the risk assessments.

2. Unstable Slopes:

Land-use activities need to be excluded from parts of the landscape prone to geomorphic disturbance, such as mass movements or bank erosion. The distribution of land use activities, such as clearcuts or roads, needs to be analyzed to ensure that peak streamflows are not being increased.

3. Riparian Zone:

Headwater riparian zones need to be protected from timber harvest, so that they can provide a source of large wood and boulders necessary for creating habitat further downstream. Riparian zones along larger channels need additional protection in the form of increased retention of basal area or buffer zone requirements to ensure an adequate and continuous supply of large wood to channels, accommodate variable stream channel movement, and provide shade and microclimate protection. Riparian habitat adjacent to streams that do not contain salmonids because of artificial barriers that realistically can be removed should be protected as fish-bearing streams.

4. Measure 16, Hardwood Conversions:

ODF needs to set higher limits on the numbers of live standing conifer trees in the riparian zone. Establishment of conifers in hardwood dominated stands should be limited to areas where conifers previously existed. Attempts otherwise have usually been unsuccessful.

State lands make up a significant land base within two of the five coastal basins identified in Chapter 1 as priority for restoration, Nehalem and Tillamook. The OCSRI fails to adequately identify how significant this block of ownership is, in terms of restoration potential (large block of contiguous land ownership adjacent to a system of federal late-successional reserves), and as an important genetic seed source which is available to take advantage of any increases in production potential that result from restoration activities. We recommend that watershed analysis be implemented as an explicit level of planning within State owned lands to evaluate geomorphic and ecologic processes operating in specific watersheds, identify boundaries of riparian zones, which may not be currently covered under the State Forest Practices Act, and provide a blueprint for restoration measures. It would be helpful if the State lands (such as Tillamook State Forest) fully evaluate the adequacy of the current standards and guidelines of the State Forest Practices Act for providing for proper functioning condition of the aquatic system for anadromous fish and other aquatic-dependent species. In addition, a monitoring strategy should evaluate the effectiveness of BMPs at the watershed scale to take into account the cumulative effects of site-specific management activities.

Page III-5 **Division of State Lands**

In order to provide protection from detrimental activities within the designated core areas, the Division of State Lands (DSL) should consider including all core areas within the regulatory boundaries as essential indigenous salmon habitat under the fill and removal law. Providing this added protection to areas designated as refugia helps reduce disturbances by screening potentially detrimental projects, and ensures activities within designated essential habitat will not adversely affect indigenous anadromous salmonids.

Page III-6 **Oregon State Police (Fish and Wildlife Division)**

The success of the OCSRI depends in part on the ability of the State to enforce the environmental laws already in existence. Until now, the State has not had the funding to adequately provide the manpower necessary to get compliance. The success of the OCSRI may rest on the support behind this effort.

Page III-6 **Oregon Water Resources Department**

The Water Resources Department should strictly enforce ODFW's instream water rights and insure that any new irrigation or extended domestic water rights not use summer flows below instream water rights. Alternatives to existing direct stream water withdrawals, such as conservation, should be encouraged.

Page IV-1 **CHAPTER IV. FACTORS RESPONSIBLE FOR THE DECLINE OF OREGON COASTAL COHO**

Page IV-1 **Habitat management risks**

The listed activities do entail risks, but certainly the greatest risks come from the many forms of land and water developments that are listed in the Introduction on this page.

Page IV-2 **bottom paragraph**

"..data do not clearly demonstrate outright extirpation of small populations or range reductions" because past monitoring programs have not been designed to detect this.

Page Iv-6 **The Issue of Seals and Sea Lions as Predators**

This section is informative and well-balanced.

Page V-1 **CHAPTER V. PRODUCTION GOALS AND LISTING CRITERIA**

Page V-1 **Production Goals**

The production goals identified in tables on pages V-3 and V-4 serve well as analytical tools and means to derive goals, but in themselves do not serve well as goals. There are two reasons for this: First, the goals are based on current habitat conditions. Increasing habitat quality, so that there is more high and moderate quality habitat and less poor quality habitat, should be part of the goal. This would offset the effects of poor marine survival by improving juvenile survival in freshwater, with the result that more adults would return to seed spawning beds. Understanding the limitations posed by marine survival should help schedule and prioritize restoration activities, but should not substitute for clearly establishing the importance of improving freshwater habitat.

Second, the lowest marine survival rate, 3%, is likely higher than recent marine survival rates. As the Science Team report points out (Appendix I, page 3), there are no direct estimates of marine survival of wild coho salmon from Oregon. The 3% figure assumes that survival of wild coho is twice that of hatchery coho, an assumption based on limited data. The Science Team report (Appendix I, page 3) states that a marine survival of 2% seems like a reasonable expectation for the near future; certainly it could be lower.

If marine survival were as low as 1%, the total production goal for the Oregon Coastal Evolutionarily Significant Unit (ESU) would be about 47,000, similar to current population estimates. The approach leads to considering the status quo as a goal, and overemphasizes the effect of low marine survival.

A better approach to goal setting would be to project the effects of improving habitat quality by a given amount of total production, and use these projections as a basis for establishing reasonable benchmarks for improvement. This approach also could be linked to core areas and recovery areas. As a result, the effects of improving habitat in core areas (or recovery areas) by given amounts could be projected.

Page V-2 **Production Levels of Healthy Populations**

Paragraph 2: "Healthy coho salmon populations for Oregon coho were considered to occur when full production of current freshwater habitat was achieved." This definition of health is too limited; other factors, such as current population abundance, population trend, current range in relation to historical range, trends in habitat quality, life history diversity, and genetic integrity should also be considered. The definition given reinforces the emphasis on current freshwater habitat; populations achieving full production of current habitat still could be unhealthy if habitat is very limited or of poor quality.

Pages V-3 and V-4 Production Goals tables. See above.

Page V-7 **Listing Criteria**

Paragraph 1: "The stock level where depensatory effects began to override normal, density dependent population dynamics was chosen to define endangered status for each basin. The proposed endangered criteria are derived from the best assessment of stock sizes that would be vulnerable to random events in population dynamics." This threshold represents the lowest level that could possibly be considered endangered, and more likely represents functional extinction. When population levels are so low that two sexually mature adults may not be present at the same time or can't find each other, it is difficult to imagine how recovery could occur. This threshold ignores two other risk factors that affect very small populations: loss of genetic variation and environmental stochasticity. Including these factors in the analyses would result in higher thresholds. Moreover, determination of threatened or endangered status should take advantage of all available data, including population trends and habitat trends.

The thresholds given on page V-9 seem very low (approximately one-third the present abundance for the Northern Oregon (ESU), especially if taken on a population-by-population basis. If the totals for each Gene Conservation Group (GCG) are divided by the number of populations in each GCG as identified in the ODFW Biennial Status Report (ODFW 1995), the population thresholds for endangered status are 53, 287, 27 and 29 for the North-Mid Coast, Umpqua, Mid-South Coast, and South Coast GCGs, respectively. Thresholds for threatened status are 159, 862, 71 and 99, for populations in these CGCs, respectively. A paper forthcoming in Conservation Biology by a team of geneticists and ecologists considered that spawner abundances less than 350, in addition to precipitous population declines, constituted very high risk; abundances between 250 and 2,500 with chronic decline or depression were considered to be at high risk (Nehlsen et al. in press). This is only one example of related scientific work that is completed or ongoing. ODFW has contracted with University of Oregon researchers to work on population viability analysis of salmon, and National Marine Fisheries Service is sponsoring an extinction risk workshop (November 13-14, 1996, Seattle). The proposed thresholds and the approach for deriving them should be rigorously reviewed in the context of related work.

Page V-9 **Table of thresholds for threatened and endangered status**

See **Listing Criteria** above.

Page V-10 **Proposed Criteria for Delisting**

It is not clear how "More than 50 percent of the major basins in the ESU must be in compliance with the ODFW Wild Fish Policy..." should be interpreted, since the policy applies to individual populations of wild fish, not to entire basins. In addition, there is an inconsistency in the population thresholds; the wild fish policy calls for minimum population levels of 300 fish, which would be higher than the proposed threatened status threshold for individual populations in 3 of the 4 CGCs (see comments under **Listing Criteria**).

Page V-11 **Criteria for Hatchery-Wild Interactions**

Paragraph 1: Hatchery fish also have behavioral effects on wild fish.

Paragraph 2: "Local broodstock" should be defined as the target wild population or closely related population (not just any population within the GCG).

Paragraph 3: It needs to be clarified whether this refers to the minimum population levels in the wild fish policy, or only the hatchery operations criteria. Also, how this will be applied at the basin level needs to be specified.

Page V-12 **Action Integration Team**

An interdisciplinary integrated team to outline emergency measures is a good idea.

Page VI-A-1 **SECTION VI-A. SUMMARY OF STATE AGENCY MEASURES**

Most of the stipulated measures are vague, offering little information on how, when and where they will be implemented. There are very few specifics available that aid in analyzing the OCSRI's ability to remove threats to coho salmon. Many of the state agencies appear to rely on existing programs that are either ongoing or never have been fully implemented. Further, several agencies (Department of Environmental Quality (DEQ), DLCD, ODFW, and OEDD) did not provide any Phase II measures. The adequacy of measures based only on existing resources to remove threats to coho needs to be justified.

Page VI-A-I-1 **CHAPTER VI-A. PART I. DEPARTMENT OF ENVIRONMENTAL QUALITY. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

PHASE I ACTIONS

DEQ1 - *Coastal Nonpoint Control Program*

"nonpoint sources of pollution will be minimized in coastal areas through comprehensive state and local programs. Full implementation of management measures designed by EPA and NOAA is expected by 2004, with benefits to coho continuing beyond full implementation."

There is no indication of the nature of state and local programs or management measures designed by the Environmental Protection Agency (EPA) and National Oceanic and Atmospheric Administration (NOAA) and no indication of the success of similar programs or measures. We are unsure what will be fully implemented

by 2004, and if an 8 year delay in implementation of unspecified programs and measures would be sufficient to remove existing threats to coho in a reasonable timeframe. The only specific contributing programs noted at the state level are related to construction, septic systems, and road and bridge construction, with no mention of existing or planned programs that address the bulk of nonpoint pollution from land management activities.

The effects of discharge from non-point pollution vary depending on the type of activity and its contribution to cumulative effects within a particular aquatic system. If not already proposed, an effort to identify the most detrimental sources of non-point pollution should be initiated up front from a landscape perspective, particularly basins identified for priority restoration. A strategy to reduce these sources could be addressed and efforts could begin with these sites first.

DEQ2 - *Implementation of recently revised water quality standards for temperature and dissolved oxygen*

"Implementation plans will be developed for both permitted and nonpoint sources of pollution. Particular attention will be paid to coastal streams as these parameters are critical limiting factors in every life stage of salmonids."

Implementation plans need to be developed under timeframes that will remove threats to coho in a timely manner and be sufficient to achieve desired results. Since Oregon has had a water quality program in place since 1938, and the number of 303(d) water quality limited water bodies appears to be increasing rather than decreasing, we are concerned that this measure may not lead to significant improvement, especially without assurance that the Oregon Legislature will appropriate resources sufficient to enforce existing regulations.

DEQ3 - *Implementation of 303(d) List Priorities for TMDL Development*

"Prioritize list of water quality limited waters to address limiting factors for coastal coho salmon recovery. The presence of threatened or endangered species within a given waterbody and the Oregon Coho Salmon Restoration Initiative will become a rated criteria for priority action."

See the above comments regarding 303(d) listed waterbodies.

The determination of priority water quality limited waters rated on the presence of threatened and endangered species within a given waterbody should be considered very important and presented as a high priority. This information should be available to State and Federal resource agencies and watershed councils, to provide direction for setting restoration priorities and allocating funding. This list of prioritized 303(d) listed waters would be very useful for the Clean Water Act 401 and 404 programs which reviews and enforces State and Federal permitted activities within coastal salmonid waters.

DEQ4 - *Watershed Council Support*

"The department will enhance and improve support of local watershed council efforts to improve water quality in the coho salmon's range."

Will the Legislature provide resources necessary to support this activity? Are there Federal funds that can be used to fund this activity?

DEQ5 - *Enhanced 401 Certification Program in Coastal Watersheds*

Similar to other Clean Water Act programs, this program has been in place for a substantial period of time, including the period of decline of coastal salmon and resident fish communities.

What assurance is there that appropriate resources will be allocated to allow adequate stream protection and removal of threats to coho?

DEQ6 - *Tillamook Bay National Estuary Program*

"Continue to support and provide technical assistance for the development of a coordinated conservation management plan in the Tillamook Bay watershed that addresses salmon concerns."

Although planning is a beneficial and necessary process, how will the National Estuary Program (NEP): 1) through the local management committee identify problems and potential solutions; 2) implement an adequate plan; and 3) ensure that adequate resources will be available to allow implementation. Have other NEPs been successful in removing threats to natural resources?

Page VI-A-I-3 **DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

DLCD1 - *Statewide Land Use Program*

"Oregon's Statewide Planning Program, first adopted in 1973, provides a basic level of resource protection through the mechanisms of enforceable local comprehensive land use plans."

We are concerned whether planning has been successful in reducing threats to coho and other aquatic species within the coho's range, and whether enforcement actions have been successful in reducing threats to coho and other aquatic species. Since this program has been in place during the period of decline of the coho salmon, what changes will be forthcoming that will aid the program in reducing the level of threat to coho and other aquatic species?

Many jurisdictions lack adequate baseline information on their natural resources to effectively know what needs to be protected.

DLCD2 - *Implement New Goal 5 Rules for Riparian Protection*

"DLCD's task is to ensure that coastal local governments integrate the new riparian requirements into their comprehensive plans and ordinances as soon as possible."

Since riparian protection is a new feature to the statewide planning program, what time-frames can be expected for there incorporation into existing comprehensive plans? Is there adequate assurance that stipulated protective measures will be integrated and enforced in a manner that will provide for a timely removal of threats to coho?

DLCD3 - *Implement the Coastal Nonpoint Pollution Control Program (CNPCP)*

See comments regarding DEQ1.

DLCD5 - *Periodic Review*

"Further, DLCD will urge local jurisdictions to amend their plans as necessary to integrate new provisions implementing the requirements of the Coastal Nonpoint Pollution Control Program".

As stated, State Law requires that local jurisdictions periodically review and update their plans and ordinances to address new requirements and changing circumstances. Does urging imply initiation of enforcement action both to comply with State land use planning law and nonpoint source pollution requirements? Will the Legislature appropriate the necessary resources to fund enforcement actions? There are no activities stipulated to correct current zoning where necessary to achieve restoration of salmon and aquatic habitat, for example tide-gated pasture areas that may be essential rearing habitat for salmon, but that have limited agricultural value.

Page VI-A-1-4 **DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

DOGAM1 - *Change Mine Inspection Priorities*

What are the consequences to non-coastal sites, especially those that contain aquatic species in danger of being listed, such as bull trout?

DOGAM3 - *BMP Manual for Mine Reclamation*

Will BMPs be required, and how will they be enforced? The OCSRI should briefly describe what is currently required in the way of aquatic resource mitigation/restoration.

Page VI-A-I-5 **DIVISION OF STATE LANDS. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

Although the actions specified by the Division of State Lands (DSL) are commendable, most will not result in any immediate improvement of habitat or the status of biological resources. As indicated in other comments, there is no assurance that the Legislature will allocate resources to the agency in sufficient amounts to fulfill the stated obligations.

DSL1 - *Analyze 404 Program Assumption*

This is a prime example of the funding question. Although the scope of authority would be expanded beyond the current program (drop the 50 cubic yard minimum), there is no indication that DSL would be provided adequate resources to meet this objective. Further, unless there is a transfer of Federal dollars into the program, there may actually be less resources available overall than currently exist. In addition, section 404 of the Clear Water Act has been in place during the period of decline of coho, making it difficult to attribute execution of this program with removal of threats to coho and other aquatic species.

DSL2 - DSL6 *Establish Best Management Practices for Removal-Fill Activities, Strengthen Interagency Coordination, define "Acceptable Adverse Impacts" in Essential Habitat, Make GA for Road Construction*

More Fish Friendly, Make the GA for Erosion Control More Fish Friendly

See above comments. Many of these measures are new efforts or revisions of existing regulations. There is little probability that the measures will reduce threats to coho for several years at best. Given the present status, preventing further harm, although a necessary component of restoration activities, will not be sufficient to remove threats in the near term.

Pages VI-A-I-7 and VI-A-I-8

DSL7, DSL8, DSL11, DSL12, and DSL15 - *Facilitate more Fish and Wetland Restoration Projects, Replace Push-Up Dams that interfere with Fish Passage, Surcharge on Stream Gravel Removal, Target Compensatory Welands Mitigation to Fish-Friendly Projects.*

These are necessary and commendable measures but are not likely to remove threats to coho salmon for several years at best. They do outline activities that actively restore habitat and go beyond limiting additional harm. Eliminating push-up dams and providing passage is a direct removal of threat.

DSL9 and DSL10 - *Develop Guidelines for Individual Permits versus General Authorizations and Develop Permanent Rules for Recreational Placer Mining.*

These programs are not presently in place and will not help reduce or eliminate threats to coho and other aquatic species in the near term. The measures are commendable, and will likely have a positive effect on stream habitat following adequate implementation.

DSL12 - *Analyze Imposition of a Surcharge as Compensatory Mitigation for Gravel Removal, to be Dedicated to Fish Habitat Projects*

Gravel removal has the potential for substantial negative impacts to anadromous fish. Gravel removal activities cause direct impacts in the reach where they are conducted and indirect impacts upstream and downstream of the project site. Cumulatively, these activities may result in the loss of spawning and rearing habitat and a general loss of habitat diversity. Furthermore, in most cases, there have been no analyses comparing gravel recruitment with gravel extraction to determine sustainability over time. If the designation of essential indigenous habitat were expanded to include the core areas, DSL would have the authority to deny any new projects such as gravel extraction, unless the permittee could prove the activity is neutral or beneficial to salmon. Imposing a surcharge on gravel removal does not prevent detrimental activities from being permitted. Mitigation measures should be implemented prior to and during project activity, and initiated first to avoid, and secondarily to reduce detrimental activities. Further, we suggest that DSL investigate alternate upland gravel sources that could reduce the demand for instream gravel removal.

DSL13, DSL14, DSL16a, DSL17, DSL19, DSL21, DSL22 - *Develop information for watershed Councils, Public education materials on Removal Fill Projects, Inventory Coastal Wetlands, Reduce Water Pollution from Waterway Lessees, Evaluate Habitat Potential of Scattered Tracts in Coastal Basins, Clarify Jurisdiction Over Woody Debris Removal and Fill the Gaps, Analyze Limiting Gravel Removal to Annual Recruitment.*

While these measures should aid restoration in the long run, they are unlikely to have any immediate effect on the status of coho salmon or other aquatic species.

DSL18 - *Improve Fish Habitat on the Elliott State Forest*

Timely efforts to improve fish habitat, i.e., road removal, culvert replacement, and habitat enhancement, should be identified for each State Forest, not just the Elliott State Forest. Funding needs to be allocated to each Forest to conduct watershed analysis in order to evaluate current riparian width designations, and identify aquatic habitat restoration opportunities. We suggest that DSL explore the opportunity to dedicate timber revenue to fish and wildlife habitat enhancement on and/or adjacent to harvest areas.

Pages VI-A-I-7 and VI-A-I-8

DSL18, DSL20 - *Improve Fish Habitat on the Elliott State Forest, Implement South Slough Estuary Conservation Strategy*.

Both measures could have direct influence on removal of threats to coho salmon. Will the Forest have adequate funding to implement these actions?

PHASE 2 ACTIONS

Page VI-A-I-8

DSL16a, DSL24 - *Inventory Coastal Wetlands, Install New Computer System Enabling Tracking of Cumulative Impacts*

See comments above. While these measures should have long term restoration benefits, they are unlikely to have immediate effect on threats to coho or other aquatic species.

DSL22 - *Analyze Limiting Gravel Removal to Annual Recruitment*

This measure discusses evaluating gravel removal and recruitment on individual gravel bars. However, as we noted in our comments under DSL12, there are impacts from gravel removal both upstream and downstream from the removal site that must be considered.

DSL23, DSL25 - *Add Field Staff in Coastal Salmonid Areas, Reclassify Staff to Free up Professional Staff Time For Field Work*

These measures could have immediate effects on coastal aquatic habitat depending on how quickly they are implemented, and the effectiveness of enforcement activities. They are likely to have limited effect on coho salmon in the short run.

Page VI-A-I-10 **OREGON DEPARTMENT OF AGRICULTURE. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

ODA1 - *SB 1010 Program to develop Overall Water Quality Management Plans*

This action describes the opportunity to develop water quality management plans with "cooperative" farmers and ranchers. However it does not address how to resolve water quality problems attributable to farm and/or ranch operators not willing to cooperate with ODA. The final OCSRI should describe how these water quality problems will be corrected if the operators are not willing to cooperate.

ODA2 - *CAFO (Confined Animal Feeding Operations) Program*

The description of this program should be modified to state "...requires compliance.." rather than "...ensures compliance...". The statute only provides a legal basis to require compliance; to ensure that the regulations are met, enforcement is necessary.

ODA3 - *Hire the Fisherman Program and ODA4 -ODA-GWEB SWCD $2,000 Grant Program*

The final OCSRI should briefly summarize the activities of each of these programs in terms what is actually being accomplished for salmon.

Page VI-A-I-12 **OREGON DEPARTMENT OF FORESTRY. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

Page VI-A-I-13

ODF18 - *Large Woody Debris Placement Incentives*

Providing incentives to landowners to place wood structures in the stream in order to receive a basal area credit allows a leave-tree reduction in the riparian buffer zone. Large wood in streams has been reduced because of a variety of past and present-day timber harvesting and associated activities and is essential for creating and maintaining good fish habitat in streams. In concert, harvest and salvage logging operations in buffer zones have further reduced the long-term recruitment of large wood. There is a concern that credit for placement of instream large wood allows the harvest of trees in the buffer zone which currently contribute to proper riparian function and also to future recruitment of large wood to the stream. The placement of large wood in streams should be based upon an analysis of limiting factors for the target species and viewed only as a short term measure, and should not supersede the value of standing live trees within the riparian zone, which may be the primary source of large wood in the future.

Page VI-A-I-16

ODF42 - *State Forestry Lands Road Assessment and Expedited Remediation*

During the assessment of the road damage caused by the 1996 floods, Oregon Department of Forestry (ODF) should also consider a reduction in the current road system, which may include waterbarring, subsoiling, culvert removal/replacement, and road obliteration. Roads have a significant impact on slope stability and water routing and can cause the greatest threat to the aquatic ecosystem. Until the mid-1970's, most roads were constructed using sidecast methods which made them more prone to failure than roads constructed by compacted-fill technique. Road treatments vary depending on resource conditions (proximity to high quality fish habitat, age and construction method, culvert condition, etc.) and management objectives. By eliminating the need for road maintenance on non-essential roads, funds can be more effectively utilized on preventative expenditures on the essential road system, and can be done in a way to not preclude future options, such as closure through stabilizing and waterbarring. At a minimum, road treatments should modify the road prism to be self draining with little to no reliance on structural drainage features that require frequent or expensive maintenance.

ODF55 - *Watershed Assessments*

Assessment methods that consider the presence or absence of fish (fish bearing streams) should be modified to consider the realistic potential of a stream reach to support fish. This would allow streams that once supported fish but currently do not because of a reversible barrier, e.g. a poorly positioned culvert, to be treated as a fish-bearing stream.

Page VI-A-I-18 **OREGON DEPARTMENT OF FISH AND WILDLIFE. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

Except as noted below, Oregon Department of Fish and Wildlife (ODFW) has offered many very sound measures that, if implemented, should considerably improve the management and status of salmon. Will ODFW be adequately funded to implement these measures?

ODFW IA1 - *Establish New Escapement Goals*

Disaggregating the present single escapement goal into smaller subunits is clearly necessary to improve harvest management of coho. It makes sense to establish interim escapement goals now, and to plan for a comprehensive review of escapement goals in the year 2000. The scheduled evaluation and monitoring programs described in the Draft OCSRI Science Team Attachment, Management of Oregon Coastal Natural Coho Fisheries make sense. In addition, in establishing escapement goals and conducting the comprehensive review, ODFW should call on the expertise of the larger scientific community. There has been much work on whether escapement goals should be based on Maximum Sustained Yield, and how escapement goals should be set for conservation (e.g. Overholtz 1994). ODFW should take advantage of the availability of this work and numerous scientific experts.

The proposed interim spawner escapement goals total about 64,600 spawners (Draft OCSRI Science Team Attachment, Management of Oregon Coastal Natural Coho Fisheries). This may be a reasonable short-term goal given that mean 1990-95 spawner abundance was about 44,400 spawners. However, it is not reasonable to initiate harvest after this level is met if the total production goal and theoretical capacity of the habitat at the lowest marine survival is about 145,900 (total of the tables on pages V-3 and V-4). Initiating harvest when 64,600 spawners return would seem to guarantee that the production goal cannot be met, incentive to improve habitat will be eroded and coho recovery will occur very slowly if at all. The escapement goals are based on current habitat, assuming that because of freshwater habitat limitations there is no point in returning additional fish to the spawning grounds. This assumption is not justified, because our ability to estimate habitat capacity is not very accurate, and because there are biological and ecological reasons why returning more fish to spawning grounds than there is habitat available is beneficial. The objective should be to increase freshwater habitat capacity, not to assume current habitat conditions and initiate harvest as soon as possible.

ODFWIB1 through ODFWIB4 - *Adult Escapement and Juvenile Coho Salmon Production Information, Information Base for Habitat Restoration, Habitat Restoration Evaluation, Inventory of Artificial Barriers*

Excellent measures that should be high priority for implementation.

Pages VI-A-I-18 and VI-A-I-19

ODFWIC1 through ODFWIC3 - *Policy on Management of Salmonid Predators, Predator Impacts, Predator Management*

We question the value of predator control in salmon recovery. Considering that ODFW funding is limited and the scientific evidence indicates that predation is not a major factor affecting salmon survival, predator control should be a very low priority.

Page VI-A-I-19

ODFWIIA1 - *Implement Gene Conservation Strategies*

Guidelines should be developed along with regular monitoring to insure that the genetic integrity of localized wild stocks be maintained in the hatchery broodstocks. Thresholds to limit the percent of strays should be established and monitored within basins where hatcheries operate.

ODFWIIA2 - *Reduce Coastal Hatchery Coho Smolt Releases*

Hatchery production to maintain coho in the Columbia Basin should consist of local origin fish from the Lower Columbia Gene Conservation Group to reduce the impact of hatchery strays on wild populations. The harvest of these hatchery coho salmon has contributed to the mixed stock harvest problem in the ocean and will likely again once the fishery is opened. Marking all hatchery coho in the ocean is good, but excessive mortality on wild coho could still occur. In order to reduce wild coho mortality, ODFW needs to determine real mortality rate on released and drop off wild coho exposed to a selective hatchery based fishery, which would mean monitoring interceptions on fishing boats and not solely depend on modeling results. Selective ocean fisheries for fin clipped hatchery coho should not resume until wild coho spawning escapements reach or exceed Gene Conservation Group escapement goals.

Page VI-A-I-20

ODFWIIB1 - *Utilize Hatcheries To Rebuild Wild Runs*

Wild populations, in addition to the rivers listed, may be impacted by interbreeding with hatchery coho. Other negative impacts hatchery fish may have is on the environment and includes such things as resource competition, predation, and disease transfer. Efforts should be made to evaluate the effects of hatchery fish on wild stocks in all coastal basins to determine if it is appropriate to recommend additional closures, or reduction and/or supplementation to help build wild coho populations using local wild broodstock.

ODFWIIB2 - *Evaluate Effectiveness of Using Hatchery Reared Fish*

Effective guidelines and monitoring need to be developed to help the hatchery personnel do a better job in conserving genetic resources. This will require a strong financial commitment by ODFW to stand behind the Wild Fish Management Policy. The Natural Production Program, which began with five staff positions to implement this policy, is currently reduced to one. If one uses native stock for the hatchery, there is concern that without strong genetic measures, it may be impossible to prevent domestication, reducing fitness of the hatchery fish in nature. Hatcheries select against fitness in nature. This divergence cannot be avoided, only controlled.

ODFWIIIA1 - *Minimize Fishery Related Impacts*

See comments under ODFWIA1 regarding when directed harvest should be allowed.

Page VI-A-I-21

ODFWIIIA4 - *Develop a Management Strategy for Future Harvest Opportunities*

See comments under ODFWIA1 regarding when directed harvest should be allowed.

ODFWIVB1 - *Direct Habitat Restoration To Where It Will Do The Most Good*

ODFW's efforts to prioritize habitat restoration projects are sound and should be supported.

Page VI-A-I-25 **OREGON DEPARTMENT OF TRANSPORTATION. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

ODOT7 - *Culvert Inventory, Assessment and Remediation*

Oregon Department of Transportation (ODOT) should look at other means of crossing streams besides culverts, e.g., construct bridges whenever feasible, and to look at ways of reducing the number of existing crossings. A regular culvert inspection program to ensure passage problems are addressed should also be instituted if one is not already in place.

Page VI-A-I-33 **OREGON STATE MARINE BOARD. MANAGEMENT MEASURES THAT SUPPORT OCSRI**

One of the responsibilities of the Oregon State Marine Board (SMB) is to administer funds targeted for providing public boating access facilities. We recommend that the SMB, as a Phase 1 activity, investigate the potential for these funds to be used to retro-fit existing public boat access facilities that are contributing to degradation of salmonid habitat. For example, repair of boat ramps that are exacerbating erosion problems, up-grading parking areas that drain directly into waterways without receiving water quality treatment, and replacement of undersized or poorly performing septic tanks at public launch facilities would reduce existing cumulative impacts to salmonids and their habitats. These kinds of activities could be combined with Phase 1 Action SMB7 (Information Kiosks) to inform the boating public of the variety of ways their actions and facilities can harm or help salmon.

Pages VI-A-II-1 through VI-A-II-14 **SECTION VI-A. PART II. SUMMARY OF THE STATE MANAGEMENT MEASURES BY SPECIFIC MANAGEMENT ISSUES ADDRESSED**

The small proportion of Phase 2 actions in this section gives the impression that the OCSRI assumes that coho can be recovered based largely on existing resources. A more clear demonstration of how measures in the OCSRI will remove specific threats would show whether this assumption is fair. It is reasonable to have no Phase 2 actions in some areas, such as harvest and hatcheries (pages VI-A-II-1 and VI-A-II-2) because, while management changes are needed, these may not require additional resources. However, there are relatively few Phase 2 actions in the areas of physical habitat, water quality and fish passage. While we support the concept that it should be possible to make significant progress by re-orienting existing resources, it seems unlikely that salmon will be recovered with so little emphasis on additional actions to protect and restore habitat.

Page VI-A-II-11 **Phase 1 Actions, Monitoring**

ODF and ODOT should initiate efforts to evaluate the effectiveness of restoration/mitigation projects. Benchmarks to measure the progress and success of a project should be established, as well as, monitoring protocols, to allow consistent and useful information to be obtained.

Page VI-B-1 **SECTION VI-B. MANAGEMENT MEASURES FROM FEDERAL AGENCIES**

Although Federal measures were not included in this draft of the OCSRI, they should be incorporated into a future review process. The Service has submitted measures that should assist in the recovery of salmon.

Page VI-C-1 **SECTION VI-C. WATERSHED COUNCIL PROCESS AND GOVERNOR'S WATERSHED ENHANCEMENT BOARD**

The OCSRI relies upon watershed councils for most of the on-the-ground assessment, restoration, and monitoring activity. However, the draft OCSRI indicates that very little support, either monetary or technical, will be available to the councils. The OCSRI recognizes the importance of providing long-term, stable funding for watershed council coordinators and acknowledges that the tentative nature of existing support is a critical weakness of the OCSRI. Unfortunately, the OCSRI neglects to discuss the importance of technical and planning support such as water quality monitoring equipment and training, data and map acquisition and synthesis, and computer software for database management. Most available grant programs emphasize on-the-ground actions leaving few sources of funds to support necessary assessment, synthesis, and planning actions. We recommend that provision of equipment, training, funds for planning activities be given a similar priority to provision of funds for watershed council coordinators. Further, we believe that the Governor's office should develop baseline performance guidelines to ensure that each council has a clear understanding of what is expected in terms of its efforts as they relate to salmon recovery.

Page VI-F-1 **SECTION VI-F. ROLE OF ENFORCEMENT IN THE COASTAL SALMON RESTORATION INITIATIVE**

This section is well written and provides among the most valuable insight as to what could be done under existing authorities to significantly contribute to coastal salmon recovery. The response by ODFW on the bottom of page VI-F-5 strongly supports the need for increased levels of enforcement and alludes to the anticipated benefits.

Page VI-G-1 **SECTION VI-G. MONITORING, BENCHMARKS, AND INTERIM INDICATORS**

Page VI-G-1, **MONITORING**

First sentence: We agree that development and implementation of a monitoring program is a crucial component of the OCSRI. Given the many scientific and institutional uncertainties in the OCSRI and the current condition of coho populations, a sensitive monitoring program is critical.

Page VI-G-1, second paragraph (bullets): These elements provide a sound conceptual framework for an excellent monitoring program. Bullet 5 (opportunities for collaboration with watershed councils, landowner associations, and interested groups or individuals) and Bullet 6 (structure that incorporates peer review of the sampling protocol, results, and interpretation; ongoing reporting of the information used to support adaptive management approaches) are key components of an adaptive management framework that makes certain that there is a link between what is learned in monitoring, and the understanding and actions of managers and the public.

Pages VI-G-2 through VI-G-4

The approach is sound; leadership and commitment of resources will be key. The obstacles and opportunities are realistic and well-defined.

Page VI-G-5 **BENCHMARKS AND INTERIM INDICATORS**

Page VI-G-6 **Interim Indicators for OCSRI**

Department of Fish and Wildlife

Additional indicator: Percent of juvenile abundance surveys that find increased abundance of juveniles.

Department of Forestry

The first indicator should read "Miles of stream in properly functioning condition (using BLM criteria)." Proper functioning condition include vegetative, hydrologic, and geomorphologic indicators.

Pages VI-H-1 through VI-H-6 **SECTION VI-H. CORE AREA MAPS**

The concept of basing a conservation strategy around core areas is sound, and core area maps appear to have been developed in an appropriate way based on the available data. Once core areas have been finalized, we encourage additional analyses that will strengthen the OCSRI, and that should help in identifying standards and guidelines for watershed groups:

1. Conduct the analyses in the tables on pages V-3 and V-4, for core areas and non-core areas. Use these analyses as the basis for addressing questions, at least in a qualitative way, about general levels of protection and restoration that are required to meet (or at least move significantly closer to) production goals. These questions are aimed at bringing more focus to how much of the restoration burden must be borne by core areas vs. non-core areas. For example,

--If core areas are protected from further degradation but non-core areas continue to deteriorate, what would be the result?
--If all habitats (core and non-core areas) are not allowed to degrade further, and core areas are restored, what would be the result?
--What level of core area restoration (e.g. 25% more habitat in the high quality category?) is required to see significant improvement?
--Etc.; a full range of scenarios could be developed and addressed in this way.

2. What can be expected from core areas in terms of improved production?

--For each basin, how much of the core area is on Federal (especially protected categories, such as Congressionally or Administratively withdrawn lands, or key watersheds), State and private lands?
--How much must be achieved in core areas on private lands?

3. The foregoing analyses should help in developing guidelines and priorities that address questions such as:

--What kinds of strategies should be used in basins where the percent of anadromous fish habitat in core area is high (e.g. Siltcoos, 85%)?
--What kinds of strategies should be used in basins where the percent of core area is very low (e.g. Lower Rogue, 19%)?
--In basins where the amount of core area in State lands is very high (e.g. Tillamook, Nehalem, Coos), what must be the expectations from State lands to meet objectives in these areas?
--What should be done in the South Coast ESU, where there is relatively little core area?
--What should basins with nearly all of their core areas in private lands (e.g. Necancicum) do to improve coho populations?

--What about basins (such as Alsea and Siuslaw), where core areas are almost entirely in protected categories of Federal lands--can they be complacent?

Page VI-I-1 **SECTION VI-I. COASTAL SALMON RESTORATION INITIATIVE OUTREACH AND EDUCATION**

Page VI-I-7 **Summary of Specifically Identified Actions and Measures**

Bullet 5, Network with Federal outreach counterparts to identify joint venture opportunities

The Service is willing to partner with the State and other organizations in identifying opportunities to assist in recovery efforts.

Page VI-J-1 **SECTION VI-J. FUNDING OPTIONS AND PROPOSALS FOR ECONOMIC INCENTIVES**

Pages VI-J-4 through VI-J-12 **Federal Funding Needs for Oregon's Coastal Salmon Recovery Initiative**

The funding that the Service can provide for this effort was described in the list of measures submitted to the State. Potential funding from the Service includes Jobs-in-the-Woods restoration projects, Partners for Wildlife restoration projects, Greenspaces program, watershed councils, Forest Plan monitoring efforts, as well as funding numerous programs and activities within the Service that will benefit the recovery of salmon.

Page VII-A-1 **SECTION VII-A. MAJOR CHANGES IN MANAGEMENT RELATED TO RISK FACTORS**

Page VII-A-3 See comments on proposed escapement goals, page VI-A-I-18.

Pages VII-A-7-8 **Science Team findings**

This section describes the difficulties in projecting the effects of the habitat-related management measures and restoration projects. This is an important effort, especially in relation to determining whether the proposed measures are enough to meet the OCSRI's objectives. It might be more successfully pursued by turning the question around: How much is needed to meet interim and long-term objectives? This question should be addressed in an adaptive management framework, by framing hypotheses in the form of conceptual and quantitative models, identifying risks and uncertainties, using the models to guide monitoring, evaluation and research, and modifying the models as new information becomes available. The science team should develop a work plan to accomplish this.

We appreciate the opportunity to comment on the State's OCSRI and look forward to working with you and other partners in implementing recovery efforts. If you have any questions, please contact Willa Nehlsen or Carol Schuler at 503-231-6179.

Sincerely,

Acting Russell D. Peterson
Oregon State Office Supervisor

cc: Salmon Plan Review, Capitol Building
Jay Nicholas, ODFW
Jacqueline Wyland, NMFS

Literature Cited

Lawson, P.W. 1993. Cycles in ocean productivity, tends in habitat quality, and the restoration of salmon runs in Oregon. Fisheries 18(8):6-10.

Nehlsen, W., P.C. Trotter, T.H. Williams, F.W. Allendorf, D. Bayles, D.L. Bottom, K.P. Currens, C.A. Frissell, D. Hankin, J.A. Lichatowich. Prioritizing Pacific Salmon Stocks for Conservation. Conservation Biology in press.

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NEW - 2/20/97

Return to top of page

December 18, 1996

Oregon Coastal Salmon Restoration
Initiative Review Team
Salmon Plan Review
Capitol Building
Salem, Oregon 97310

Ladies and Gentlemen:

We would like to commend you on your effort in developing the Oregon Coastal Salmon Restoration Initiative (OCSRI) and thank you for this opportunity to comment on the plan. The Bureau of Land Management (BLM) supports this effort and looks forward to working with the watershed associations and agencies of the State of Oregon in restoring watersheds and recovering coho salmon habitats and populations.

The Northwest Forest Plan through the Aquatic Conservation Strategy is designed to protect and recover salmonids and their habitat on federal lands. The Forest Plan has also given BLM the direction to form partnerships across watersheds in order to develop a whole basin ecosystem approach for land management and restoration. BLM has been actively involved in several watershed associations with support from both management and technical staff. Through programs like *Bring Back the Natives,* BLM has helped watershed associations secure funding from the National Fish and Wildlife Foundation for watershed enhancement projects. Also, the recent passage of legislation introduced by Senator Ron Wyden has given BLM the legal authority to fund projects on private lands that demonstrate a benefit to fisheries resources on public lands. For example, the "Jobs-in-the-Woods" program has utilized crews supervised by watershed association coordinators for the implementation of watershed improvements on public lands. These types of cooperative efforts among watershed associations and state and federal agencies will be a key element in the recovery of Oregon's salmonids.

Please accept the attached specific comments as suggestions for improving the OCSRI. If you have any questions regarding these comments, please contact Mike Crouse at 503-952-6068 (Oregon State Office) or Bill Hudson at 541-756-0100 (Coos Bay District Office).

Sincerely,

William L. Bradley
(for)

Elaine Y. Zielinski
State Director

1 Enclosure (as stated)

Oregon Coastal Salmon Restoration Initiative
Comments

General Comments

The Coquille and Coos Watershed Associations are organized with Executive Councils representing state and federal agencies, small and large landowners, and public interest groups. The associations also utilize Technical Committees comprised of agency experts. Technical committees provide advice regarding the development of watershed plans and assessments, restoration projects, and monitoring. This working relationship has been one of the reasons for the progress achieved by these associations. This concept may be worth incorporating into existing, future, or newly formed associations.

The state has done an excellent job of examining factors related to harvest, hatcheries, and habitat management and, in many instances, has adopted more restrictive approaches for protecting aquatic habitat than have been used in the past.

Response to Specific Issues

Essential Elements of a Conservation Plan

Nine elements were identified as being essential components of the Oregon Coastal Salmon Restoration Initiative (OCSRI). Elements 2-7 need to be further developed and focused to satisfy the fulfillment of plan requirements. For example:

Element 2. ***Establish priorities for action***. Action elements are listed in Chapter VI-A, but they are not prioritized.

Elements 3, 4, and 5. ***Establish objectives and time lines for recovering populations, establish criteria and standards to measure progress towards objectives, and adopt measures (actions) needed to meet explicit objectives***. The plan currently contains general *Goals* and *Strategies* (Chapter II) and *Actions* (Chapter VI-A) but needs to contain specific and measurable objectives in this regard. Each action (Chapter VI-A) needs to relate to a stated objective. For example, actions ODF 34-37 (p. VI-A-I-15) relate to the preparation of watershed analyses to determine stream health, assess road condition, identify high risk areas, etc. The preparation of a watershed analysis might relate to an objective stated as such:

> "Conduct watershed analyses in [state basin names - or the number of basins] for the purpose of identifying high risk areas and restoration opportunities. Analyses and action plans for restoration would be completed by [state time line for implementation]."

In another example, action ODFWIB 2 (p. VI-A-I-18) relates to conducting salmon habitat inventories to determine habitat quantity and quality. This action might relate to an objective stated as such:

> "Conduct aquatic habitat inventories according to ODFW [or other] protocol within [state basin names, the number of basins, or the % of basins across the state] to be completed by [state time line for implementation]."

Element 6. ***Establish a comprehensive monitoring plan***. What are the specific objectives for core areas, and how will achievement of such objectives be monitored? The plan includes *Benchmarks* (p. VI-G-5), but they need to relate to specific/explicit objectives.

Element 7. ***Provide high levels of certainty that actions will be implemented***. Certainty only comes with funding and legislative support; there needs to be more assurance in this regard.

Core Areas

I-3, 4. The identification of core areas and refugia, a concept borrowed from terrestrial management, continues to be a major part of recovery proposals but does not directly translate well to salmonid habitats. The idea that a few streams can be set aside as refugia from which other streams can be colonized does not match reality for several reasons. First, individual basins and portions of basins do not have the capability to create the same types of habitats throughout, although there are similarities in habitat patterns within a geomorphic type. Second, the selection of basins for refugia under the Forest Ecosystem Management Assessment Team Report (i.e., Key Watersheds) relied heavily on the federal ownership pattern (key watersheds gave a high percent of federal ownership). If the distribution of relatively healthy salmon populations or the potential for restoration are compared to the key watersheds, the match (outside northern California) is poor. Finally, each of the major coastal basins has a unique aquatic fauna, much of which has been ignored in the planning process. The Bradbury Prioritization Process essentially perpetuates the refugia process. It does not give adequate consideration to the problems of colonization and to the issue of the genetic uniqueness of individual basins.

The OCSRI moves closer to a more reasonable concept of core areas. Core areas exist and should be identified in each basin, rather than on a regional basis. They should represent areas throughout the basin and should provide not just for coho but for the basin community. The Bureau of Land Management (BLM) would like to be involved in the identification and development of priority core areas.

Estuaries

VI-1, 7. In the effort to recover coho salmon, a greater emphasis should be placed on the management and restoration of estuaries. Estuaries are the principal rearing areas for chinook salmon; coho salmon and steelhead utilize them for several weeks to months as they make their transition to the marine environment; and searun cutthroat may spend a majority of their time in them. According to work done by Dr. Pearcy, the size of future adult coho runs is largely set by the time smolts move permanently into the open seas. Estuaries are where most of the interactions occur between fish and predators, including the pinnipeds.

Estuaries have changed over the century, some dramatically. Many feeding areas are silted in, and channels for ships have been dredged. Dredging changes hydraulics and promotes early movement of fish into the ocean. Perhaps one of the biggest changes has been the removal of woody debris. Some studies on habitat selection in estuaries show that the same fish that rely on woody debris in the stream seek it in the estuary. As in streams, large wood provides escape cover for both smolts and returning adults; in the absence of cover (especially the high density of woody debris cover that once existed), fish are much more exposed to predators. Woody debris also provides shelter from currents and serves as a template for food organisms.

Fish Health

Issues such as disease, pathogens, genetics, and exotic species need to be further addressed in the plan.

Threatened & Endangered Listing/De-listing Thresholds

V-9. The listing criteria appear to be a primary factor in the state's argument against listing coho salmon. It appears that assumptions have been selected to hold down the suggested minimum population values. The methods and assumptions used to obtain threshold population abundances need to be stated. It is unclear whether these values are based on actual counts, index counts, random spawning counts, or any particular model. The table presumes that a run of about one fish per mile will provide enough spawners to perpetuate the run, and four fish per mile will provide for a stable, long-term run, which is inconsistent with early findings by the Oregon Department of Fish and Wildlife and its predecessor agencies.

Threshold values appear to have no relationship to production goals. For example, threatened and endangered thresholds for the southern Ecological Significant Unit (ESU) are 23 percent and 7.6 percent (respectively) of the minimum production goals based on *current* habitat; threatened and endangered thresholds for the northern ESU are 10 percent and 3.3 percent (respectively) of the minimum production goals based on *current* habitat.

V-7. It is also unclear why "the stock level at which depensatory affects begin to override the normal, density dependent population dynamics" was chosen to define the endangered level (i.e., why not use it to define threatened?).

The proposed thresholds may not be adequate to maintain current runs or restore run size in the future. They do not reflect distribution patterns (e.g., most of the fish tend to be in a few locations, making them highly vulnerable to catastrophic events), genetic needs, productive capabilities of the basin, or historic values of the runs. Finally, they leave absolutely no margin for stochastic events that might further stress populations.

Specific Actions - Oregon Department of Forestry (ODF)

VI-A-I-15. Could ODF provide trees from state lands for instream habitat? The current practice of taking down wood from riparian areas (where it is in short supply to begin with, thus reducing the limited habitat for amphibians and other species even further) conflicts with other species management.

Specific Actions - Oregon Department of Fish and Wildlife (ODFW)

VI-A-I-18. Escapement goals for each river system should be based not only on the historic level, but also on the current productivity capacity of the basin. Values should not be absolute but should be adjustable as changes (positive and negative) occur in the basin. One problem in the past has been the lack of allowance for additional spawners to utilize major habitat restoration efforts.

VI-A-I-19, 21. The recommendation for a terminal fishery management scheme is good. The potential for production hatcheries (e.g., Young's Bay, Newport) to increase catchable fish has received too little attention; particularly when combined with a tight terminal fishery program, it offers real opportunities for augmenting harvest while still progressing toward recovery goals.

VI-A-I-19. The issue of pinniped predation deserves far more attention than just whether they are eating salmon and steelhead. The findings of the scientific team are accurate in this regard (the impact is greater because the runs are smaller). What is usually not addressed is the role of fishing in reducing alternate food sources for the pinnipeds, the impact of estuary alteration (particularly the loss of cover for the fish), the impact from the harvest of white sharks (the main predator of pinnipeds), and other contributing factors.

VI-A-I-21. Limiting coastal "trout" fishery is appropriate. The sport "trout" fishery appears to catch far more coho salmon and steelhead than cutthroat trout (with high mortality). In some areas, this may have a major impact on the number of fish surviving to become smolts.

VI-A-I-24. Why not expand the concept of ODFW job rotation to include other state agencies, federal agencies, and tribes? Why not propose a program of shared biologists or shared knowledge beyond just ODFW?

Specific Actions - Oregon Department of Transportation (ODOT)

VI-A-I-28. Two other issues that should be included: ODOT road maintenance (especially side casting and their practice of dumping spoils in or immediately adjacent to streams) and the use of chemicals along the roadways (e.g., vegetation control).

Economic Incentives

VI-J-13. The incentive proposal is a good start, but needs further development.

Add economic incentives to private landowners to close or upgrade problem roads and culverts to current Forest Practices Act (FPA) standards.

Add economic incentives to industrial forest landowners to emphasize greater protection (expanded stream buffers) and restoration in riparian areas.

We strongly support expanding and strengthening incentives for landowners to use the Fish Habitat Tax Credit and the Riparian Tax Incentive programs.

Outreach and Education

The OCSRI relies heavily on voluntary compliance with the plan's recommendations and with existing state laws. Public outreach and technical assistance to individual and corporate landowners is essential. BLM has been involved with shared public outreach events such as the Coos County Fair, joint watershed association and *Bring Back The Natives* project tours, and the development of watershed videos.

Forest Practices - Riparian Rules

There is no guarantee of coho habitat recovery in the OCSRI, as it relates to current Forest Practice Rules (September 1994). Rules should be reviewed to see if they ensure that a supply of large woody debris would be retained and available for incorporation into stream channels. Vegetation retention requirements in the Revised Forest Practice Rules increase the potential delivery of large wood to streams but may not be near optimum levels, as stated in the OCSRI draft.

It is important to monitor the effectiveness of current stream protection (riparian) rules, as ODF is already doing.

Additional economic incentives to industrial forest landowners may facilitate greater emphasis on the protection and restoration of riparian areas.

Roads and Stream Crossing Structures

The plan correctly recognizes that roads are the primary source of sediment for streams on forest lands, and it proposes that state and industrial forest landowners identify and upgrade problem roads and culverts to current FPA standards. There needs to be economic incentives for private landowners to do this. BLM has provided technical assistance to watershed associations, state foresters, and private timber companies on culvert evaluations, replacement designs, and modifications to meet FPA rules and to provide for fish passage. We strongly support the 1994 FPA rule change requiring new stream crossing structures to provide upstream and downstream passage for juvenile and adult fish.

Livestock

We strongly support the Governor's recent efforts in encouraging the livestock industry to implement better grazing practices in riparian areas. The attainment of water quality goals cannot be accomplished without the cooperation of all entities in a watershed.

Mining

Rather than limit gravel mining to annual recruitment, as stated in the OCSRI, we believe it is advisable to limit aggregate production, at least in the near future, to areas above the 100-year floodplain to help compensate for gravel removal over the last 30 years when the cumulative effects on fish habitat were not examined. Gravel deposits above the 100-year floodplain probably have a limited chance of contributing to salmonid spawning habitat most years, so this is where aggregate mining should be concentrated. The OCSRI recognizes the lack of information regarding how the removal of over 800 million cubic yards of aggregate from the state's streams and rivers since 1967 has affected channel characteristics and anadromous salmon. Persistent removal of aggregate material, particularly when the rates of removal exceed the rates of replenishment, can cumulatively result in major changes to a stream or river system. We believe it is highly probable that such impacts have occurred. A well implemented monitoring program should provide better information about how aggregate production can continue and simultaneously minimize potential adverse impacts to salmonid production and channel morphology.

Water Quantity

One very important thing OCSRI can do is aggressively pursue the purchase and lease of old water rights for instream flow. Without adequate summer rearing habitat, other administrative and land use rules are meaningless. The state water masters' offices need additional help to assist with inquiries regarding water rights and for assistance in the field monitoring water use.

Watershed Analysis

We are glad to see that OCSRI endorses the use of watershed analysis to determine factors that potentially limit salmon production. BLM uses this process to identify locations and amount of timber harvest in a given watershed, and to determine the priorities for watershed restoration projects. It is important for industrial forest and agricultural landowners to develop a similar process to minimize adverse impacts to water quality and riparian and stream habitat.

Monitoring

We agree with many of the recommendations for monitoring that are contained in the Botkin and National Research Council's reports. Some recommendations are too simplistic for monitoring complex ecological processes. Nevertheless, there is no substitute for a sound monitoring program. We would suggest that watershed associations and state and federal partners coordinate their monitoring to more effectively and efficiently spend the limited funding which is available for this effort.

Go to top of page

Go to Peer Review:

- OSU
- American Fish Society
- Invited
- Industry
- Conservation/Environmental Group
- Public Comments
- Questionnaries

Go to home page

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PEER REVIEW 1996

COASTAL SALMON RESTORATION INITIATIVE

December, 1996

TABLE OF CONTENTS

- 2/20/97

INDUSTRY

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Dave Bowden, Chairman of The Board

S.P. Cramer & Associates, Inc., Fisheries Consultants

Steven P. Cramer

Sun Studs, Inc, Sun Veneer Division

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Rex Storm, Forest Policy Analyst

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Russ Crabtree, Port Manager

City of Ashland, Office of Mayor

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John Wilson

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Gordon Ross

NEW - 2/20/97

OREGON FOREST INDUSTRIES COUNCIL (OFIC)
PO Box 12519
1149 Court NE
Salem, OR 97309-0519
(503)371-2942

November 1, 1996

The Honorable John Kitzhaber, M.D.
Governor of Oregon
State Capitol
Salem, OR 97310

Dear Governor Kitzhaber:

I am writing to let you know of OFIC's strong support for the draft Oregon Coastal Salmon Restoration Initiative, and our appreciation of your leadership in developing a comprehensive and credible state plan to protect and restore Oregon's coastal salmon runs.

We also appreciate the inclusive process used to put this plan together, and the opportunity we had to work with the state Department of Forestry on the forestry "chapter" of the plan. As you know, the forestry portion of the plan requires forest landowners to fully comply with existing forest practices rules, including the extensive revisions to the stream protection rules adopted by the Board of Forestry in 1994. It is our view, one that we have already communicated in great detail to the National Marine Fisheries Service, that these new rules, over time, will provide fully functioning fresh-water habitat for these species on private forestland in Oregon.

The forestry portion of the plan also calls on forest landowners to go beyond these regulatory requirements by voluntarily taking substantial and specific steps to restore and enhance salmon habitat. Many of these efforts are already underway, and we want you to know that our commitment to these measures is real. The most significant is the "road erosion and risk reduction project" described in the plan. Through this project, risks to coastal salmon related to forest roads, primarily those built prior to 1973, and stream crossing structures (primarily culverts) will be systematically assessed and identified. Engineering protocols designed to correct identified problems associated with these roads will be developed. This will be accomplished through a collaborative process involving OFIC, the Department of Forestry, the Department of Fish & Wildlife and the Forest Engineering Department at the OSU College of Forestry.

The process will also produce guidelines that will enable landowners and cooperators to identify and prioritize those areas that pose the greatest potential risk to salmon -- and those that could provide the greatest potential benefits -- and to tackle those areas first. Roads and stream crossing structures posing potential problems in core area watersheds will receive the highest priority. Specific benchmarks and deadlines for completing various portions of the project -- ranging from December 1996 to January 2007 -- are included. The result will be significant improvements in fish passage and protection of salmon habitat on forest land throughout the Oregon coastal zone.

In addition to this comprehensive process, ODF&W district biologists have been asked to immediately identify the "top twenty" problem culverts in each of their districts, so that landowners can begin work on some of the more obvious projects even before formal protocols and priorities are established.

In core areas and other sensitive areas, OFIC members have also voluntarily agreed to locate in-unit wildlife trees along small fish bearing, non-fish bearing and domestic use streams when asked to do so by ODF and ODF&W. While these trees are required by rule to be left in many harvest units, this commitment by OFIC significantly modifies the discretion landowners would otherwise have to leave most of these trees wherever they want. That should help alleviate the concerns of the National Marine Fisheries Service that our rules do not provide adequate stream buffers, particularly along small streams.

We are painfully aware of the fundamental difference of opinion between your office and the National Marine Fisheries Service as to whether the voluntary components of the state salmon plan are or are not "reliable." We would like to assure you, again, that our commitments are both substantial and real. And we can point to a track record of recent voluntary efforts to improve conditions for salmon on our lands that should reassure NMFS that they too can count on our commitments.

Since 1993, thirty-two industrial forest landowners have voluntarily spent $2.5 million to conduct comprehensive fish habitat surveys on more than 3000 miles of fish-bearing streams in Oregon. And that data has provided the foundation for an aggressive -- and, again, completely voluntary -- program of fish habitat and restoration projects on forest land across the state, mostly in coastal areas. Almost 200 restoration projects have been completed by these same companies at a cost to date of more than $3 million. At least that many more will be completed over the next two years.

NMFS also needs to know that even the regulatory side of the forestry portion of the state plan is based in large part on proactive commitments by forest landowners to protect public resources occurring on our lands. The legislation that directed the Board of Forestry to upgrade the stream protection rules was fully supported by the industry every step of the way through the Oregon Legislature in 1991. Those new regulations, according to a 1995 fiscal impact analysis prepared by the Legislative Revenue Office, cost private landowners more than $35 million each year in foregone timber volume left behind in riparian zones. Yet we hear few if any complaints about the cost of complying with these rules.

In short, we have a solid resource protection track record that we are proud of and one that ought to convince anyone, including NMFS, that we are willing to take whatever reasonable and productive steps are necessary to ensure our continued contribution to the long term health of Oregon coastal salmon.

NMFS needs to understand that cooperative efforts like our road and culvert initiative are much more likely to be widely embraced through the kind of effort you and the state have put together than through a federal regulatory approach. These are pro-active restorative measures that are beyond the scope of the federal ESA and cannot be compelled by NMFS under the ESA. While NMFS seems to believe more rules is the answer, our stream habitat survey information indicates that a cooperative approach, emphasizing affirmative actions employed by motivated, informed landowners working with state agencies to restore habitat, will be much more effective in achieving the desired results.

The new rules and voluntary measures being applied on forest land are in response to data and concerns about salmon abundance and habitat problems. Time and monitoring is needed to tell how effective these efforts will be, or if modifications will be needed. But while it may not be possible at this point to definitely judge the effectiveness of what we are trying to do, there is no question that the trend will be upward, and steady, significant improvements over time can be projected. And it is not appropriate to use data on historical practices and effects to conclude that current practices and efforts are or will be ineffective. It is also wholly inappropriate to employ "guilt by association" logic to conclude that the mere fact that forestry activities occur in areas where species are experiencing difficulty necessarily implies a causal relationship between the two.

We again applaud your leadership in developing this plan. It shows that Oregon can collaboratively manage these issues in a way that is far better for all parties, particularly the fish, than a top-down federal regulatory approach. We know there is a long way to go in resolving remaining issues with the National Marine Fisheries Service, and we stand ready to assist you in any way we can. That will include support for whatever legislation is needed to provide adequate funding to ensure the success of the plan.

Sincerely,

Dave Bowden
Chairman of the Board
Oregon Forest Industries Council

cc: Mr. William Stelle, Jr.
Regional Administrator
National Marine Fisheries Service
7600 Sand Point Way NE
Bin C15700, Bldg. 1
Seattle, WA 98115-0070

NEW - 2/20/97

Return to top of page

S.P. CRAMER & ASSOCIATES, INC
Fisheries Consultants
300 SE Arrow Creek Lane
Gresham, OR 97080
(503)669-0133 FAX (503)669-3437

September 14, 1996

Jay Nicholas
Oregon Department of Fish and Wildlife
28655 Hwy 34
Corvallis, OR 97333

Dear Jay:

I have read through "Oregon's Plan for Conservation and Restoration of Anadromous Salmonids in Coastal River Basins" and have the following general comments to offer. I was both impressed and excited by what I read. The plan has all of the foundational elements to be a successful Recovery Plan. The Plan has some rough spots, as would be expected in a first draft issued to meet deadline, but the Plan addresses the key issues that need resolution for coho recovery. My recent work with simulation modeling of Oregon coho indicates that your harvest measures alone are sufficient to substantially recovery natural production of coho in Oregon's coastal basins. I am enclosing a manuscript that has been submitted to the Journal of the American Fisheries Society for publication - I believe it will be a valuable citation for your plan. You have my permission to use any portion of the manuscript in the Oregon Plan.

I would like to have offered more detailed comments, and even some alternative text, but my time window was too narrow to accomplish that. I am hustling to send this letter to you before I leave on a week's vacation tomorrow.

General Comments

- The plan needs a tabular summary up front of the key measures that are proposed. The summary should show a contrast of past vs future, so that a reader can quickly grasp how the future will differ from the past.
- References need to be cited throughout the plan. As is, the reader just has to trust that you know what you are talking about.
- Your description of Explicit Objectives on p I-5 is not explicit, but rather vague.
- Goal 5 is not clear. Do you mean that the public must be educated about stochastic variation?
- The discussion of hatchery impacts on p IV-3 is vague and needs to be beefed-up with citations. You have my

permission to draw text from my report on the status of Oregon's coastal coho. Call my office if you need a copy.

- The delisting criteria (p V-10) are described in such a way that they sound arbitrary. I have enclosed a section on risk evaluation in a report that I helped prepare for California steelhead. Doug Neeley and I also prepared an extensive report (BPA report) on delisting criteria for Snake River salmon, which you may find helpful.
- Unless I misunderstood the intent of Interim Indicators (p VI-G-6), the indicators for ODFW are woefully inadequate. How about simple measures like spawners/mile or juveniles/surface area in index pools?
- Conclusion for the Appraisal section leave too much of a "just trust me" description of habitat measures. Here and elsewhere in the report, you need to emphasize the number of new habitat measures compared to the past, and the number of streams or stream miles impacted. Or perhaps the number of habitat structures. You must have some basis for your professional judgment. Perhaps a Consumer Report type of ranking system could help you in this regard.

Jay, I hope these brief comments help. If you get an extension of time from NMFS, I can give you more help then.

Sincerely yours,

Steven P. Cramer

cc: Jim Martin

NEW - 2/20/97

Return to top of page

SUN STUDS, INC
SUN VENEER DIV
PO Box 1127
Roseburg, OR 97470-0257

October 31, 1996

The Honorable John Kitzhaber, M.D.
Governor of Oregon
State Capitol
Salem, OR 97310

Dear Governor Kitzhaber,

Thank you for the opportunity to comment on the Oregon Coastal Salmon Restoration Initiative. You are to be commended for taking a very sound approach to salmon restoration.

The attached comments are the result of an initial look at the Plan. Undoubtedly, with an extension of time, there should be an opportunity for a more detailed look.

I hope these comments -- some general and some specific -- will be of use to you and your staff. Please feel free to follow up if neded.

Sincerely,

Rick Sohn
Lands Manager

attachment

October 31, 1996

RE: Oregon Coastal Salmon Restoration Initiative

Comments submitted by:
Rick Sohn
Sun Studs, Inc.
PO Box 1127
Roseburg, OR 97470

phone: 541-673-0141 x323
fax: 541-440-2516

The Governor's Coastal Salmon Restoration Initiative is a very ambitious and timely first large step in the recovery of west coast salmon stocks. The goal of addressing all the different stocks simultaneously is welcomed. The use of the local watershed council as the basic unit of organization is helpful. Problems can be solved locally with the participation of all affected constituencies. This builds not only support for restoration, but provides an important piece (not all) of the resources required for restoration.

There are important roles for state government in restoration. First, regulatory agencies must work together and in concern with the local watershed councils. This process has begun with the departmental information in the draft plan. Second, there must be broad public financial support for the projects, on state, federal, county, municipal, corporate, non-profit-corporate, and personal levels. The State of Oregon should play a lead role in putting forth an ambitious plan to finance a sizable share of the restoration program. Our company and I will work to assist legislators and interested parties in understanding the benefits of this funding.

The meetings about the Oregon Coastal Salmon Restoration Initiative, conducted by Jim Martin and Mike Golden, assisted by the heads of the state agencies, were very informative. They also significantly raised local awareness about the plan.

In the Umpqua Basin, we appreciate the strong level of support provided by the Governor's Natural Resource Office and Governor's Watershed Enhancement Board. This support can play a constructive role in keeping very diverse constituencies focused on coastal salmon restoration, while moving ahead at the greatest rate possible.

Below are some specific comments on the Oregon Coastal Salmon Restoration Initiative (OCSRI) Plan.

1. What is an effective mechanism for assuring (without regulation) that the watershed councils are implementing the vision and guidance put forth in the OCSRI?

   The solution lies in monitoring and feedback, by providing information to the Watershed Councils. Constant participation by the State in each watershed council, providing information and feedback on the success of projects, will work because all interest groups share the vision of restoring salmon populations.

   At first, the success of the watershed council efforts can be measured by the rate and magnitude of assessment, monitoring and restoration work in the watershed. Later, with appropriate allowances for variation, estimates of populations will be an important measure.

2. The Benchmark section (p. VI-G-5) has a listing of key subbasins. It should be pointed out that while the Umpqua is a separate Gene Conservation Group (GCG) for Coho, it is not included as a Benchmark population. It appears that this is anomalous, relative to the other GCG's.
3. Restoration and assessment measures should be organized not only by agency, but by watershed. Book 5, "Federal Measures" may be appropriate for some reporting, but in general, reporting of specific restoration projects and assessments would be most useful to the reader and to the watershed councils, if organized by subwatershed and basin. At the same time you understand that reporting and accountability by state and

federal agencies is critical to the success of the program.

4. Attachment 3. The Restoration Guide. The summary indicates that "we were unable to narrow our list to those sites appropriate for immediate project design." When the ODFW state office originally offered to help design the Restoration Guide, the goal was to prioritize projects. Clearly, the extent of data available in the Umpqua Basin makes prioritization a complex project. Having seen information from the other restoration guides in the OCSRI, it appears that more work will be needed on the Umpqua Restoration Guide in order that it reaches a comparable level of detail.
5. The call for a comprehensive fish habitat and population monitoring program summarized in section VI-G is important. The establishment of benchmarks, however, is complicated. Each stream has its own set of ideal conditions. One option would be to set benchmarks in a very site-specific way. This would result in a huge matrix of ideal conditions. Another option would be to track trends of specific factors over a large area. For example, recognizing that some streams have a temperature problem, others not; some have a lack of pools or large woody debris, and others not, some streams have more coho. Some more steelhead, etc, only the general trend of temperature, LWD, pools, fish populations, etc. would be important. This may be the only practical way to summarize progress.
6. Book 4, Attachment 1. Oregon's Land Use Measures. Each county should be sent its section for review. As it is now organized, this section contains an identical template for each county. The land use plan sections merit more individualization by county, particularly since each county has its own land use plan. It appears, from my limited knowledge of the Douglas County Land Use Plan, and a preliminary conversation with the Douglas County Planning Department, that the summary does not adequately represent the pertinent guidance contained in the Douglas County Comprehensive Plan. It appears that direct feedback from each county would be helpful.
7. There are a few errors in terminology which can be easily corrected. In general, the State should not impose new terminology. It is not consistent with the grassroots-driven focus of the OCSRI.
    a. The listing of officially recognized watershed councils (Attachment I, Book 2, section 1A) contains erroneous information about Basin Fisheries Restoration Initiative. The correct information is appended (Exhibit 1).
    b. Book 3 Tabs for the River. The terms "North Fork" and "South Fork" are incorrect. There are three designations which are locally accepted. There is the "Umpqua River," the "North Umpqua River," and the "South Umpqua River."
    c. In the same section of Book 3, there is a reference to the "Mid Umpqua" (see Exhibits 2 and 3). This is another unfamiliar term. The Umpqua River is sometimes referred to as the "Main Umpqua," whereas the tidewater area of the river below Scottsburg is referred to as the "Lower Umpqua." For further information, please refer to the fisheries biologists at the ODFW office in Roseburg.

8. There has been a lot of activity in the Umpqua Basin that has not been included in the OCSRI, and should be.
    a. Assessments and monitoring have included stream habitat surveys, culvert surveys, fish distribution surveys, smolt traps, coho spawning surveys, and other population assessments. Work projects have included riparian enhancement, culvert replacement, road upgrades, fencing, livestock watering, fish screen installations, instream structures, off-channel ponds, Umpqua Fishwatch, and others. There has also been local participation in the funding of cutthroat research.
    b. There are several local sources of funding developing. Douglas County Salmon Habitat Improvement Program provides about $50,000 per year toward cost-share of restoration projects. The Umpqua Fisheries Enhancement Derby is raising about $25,000 per year, which was spent on restoration. The newest project is the Joe Merchep Umpqua River Foundation, Inc. which has formed and is beginning to raise money for an endowment, the proceeds of which will be donated to restoration projects.
    c. Additional information could be provided about Umpqua Basin Fisheries Restoration Initiative. This includes the Charter, the annual reports of activities and expenditures, and current organizational activities.

These comments have come from a cursory reading of the OCSRI. With an extension of time, it will be important to have the plan more broadly available, if requested, so that others can undertake a comprehensive review.

INSERT TABLE "OFFICIALLY RECOGNIZED WATERSHED COUNCILS-NORTH TO SOUTH"

EXHIBIT 1 (continued)

To: Teresa

From: Rick Sohn

RE: Officially recognized Watershed Councils-North to South

Organization: Umpqua Basin Fisheries Restoration Initiative

First Name: Lee

Last Name: Russell

Address: 251 NE Garden Valley Blvd., Suite L

City: Roseburg

State: OR

Zip: 97470

Telephone: 541-673-8316

INSERT EXHIBIT 2 TABLE (WATERSHED ASSESSMENT FORM)
INSERT EXHIBIT 3 TABLE (WATERSHED ASSESSMENT FORM)

NEW - 2/20/97

Return to top of page

GEORGIA-PACIFIC CORPORATION
Georgia-Pacific West, Inc.
Western Wood Products Manufacturing Division
900 SW Fifth Avenue
Portland, OR 97204-1255
Telephone (503) 222-5561

October 30, 1996

Salmon Plan Review
Capitol Building
Salem, OR 97310

To Whom It May Concern,

Georgia-Pacific West, Inc. welcomes this opportunity to comment on the Oregon Coastal Salmon Restoration Initiative (OCSRI) Plan. It is our hope and desire that the OCSRI demonstrate the commitment of the individuals, agencies, and industries of this state to the recovery of the coho salmon.

Georgia-Pacific West, Inc. manages 292,000 acres of forest land in coastal Oregon. The management goal of this land is to produce high quality forest products while protecting and enhancing fish and wildlife habitats.

Georgia-Pacific West, Inc. manages 292,000 acres of forest land in coastal Oregon. The management goal of this land is to produce high quality forest products while protecting and enhancing fish and wildlife habitats.

Georgia-Pacific recognizes the decline in the coho salmon populations and has been working closely with the Oregon Department of Fish and Wildlife to monitor, protect, and enhance the populations and habitats that can be found on company lands. Work has been conducted to improve stream conditions; forestry regulations have been changed to protect these stream habitats; and local interests are cooperating with industries and state agencies to identify, correct, and improve the situations. Georgia-Pacific has been involved in stream enhancement activities on its lands since 1990. To date, we have completed multiple projects in the Siletz, Alsea, Coquille and Sixes River basins and are planning many additional projects in the coming years.

Georgia-Pacific realizes that there are no "quick fixes" for the coho salmon and has developed and initiated long-term monitoring and enhancement plans that have been reviewed by the appropriate state agencies. Georgia-Pacific's long-term monitoring plans include the following: continuous temperature monitoring during the summer months; stream substrate sampling to assess spawning gravel; juvenile salmonid and aquatic vertebrate population sampling; adult salmonid spawning surveys; pH and dissolved oxygen monitoring; aquatic macro-invertebrate sampling; aquatic habitat surveys; stream enhancement projects; and culvert evaluations. All data derived from monitoring are analyzed and summarized annually in a report which is available to appropriate state and federal agencies.

To date, Georgia-Pacific has conducted aquatic habitat surveys on over 210 miles of streams within our Oregon ownership. These surveys have indicated that some streams within the Georgia-Pacific ownerships were lacking quality over-wintering habitats. Thus, the surveys have resulted in the construction and/or placement of 109 instream structures consisting primarily of large woody debris and secondarily of rock-weirs.

Since 1992, Georgia-Pacific has chosen to take an aggressive, proactive position on the restoration of habitat and salmonid populations found within our ownerships. Georgia-Pacific believes that the salmon are an integral part of the communities where we operate. Thus, Georgia-Pacific is doing what it can to contribute significantly to the recovery of the coho salmon populations.

Georgia-Pacific actions are offered as an example of what other businesses, small landowners, and state/federal agencies are doing. The forest products industry is working together through the efforts of the Oregon Forest Industries Council and with local watershed councils to identify and enhance the habitats and enhance the habitats and salonid populations. Furthermore, the forest products industry is working closely with state fish and wildlife agencies for recommendations and guidance to assist in the recovery of the salmon. There are many significant factors affecting the coho salmon. The entire state has responded to the decline of the coho salmon. As individuals, groups, and industries we are working together to restore our coastal salmon.

In summary, Georgia-Pacific supports the OCSRI and would like to applaud the efforts of all the individuals involved in the preparation of this immense task. However, we find that we have some concerns with the tone of many of the comments relating to forest management activities such as timber harvest and road building. We would suggest that a less biased approach to these issues in this document would better serve its purpose.

Sincerely,

Blair A. Holman
Group Manager
Land Management

Attachments

INSERT 4-PAGE TABLE "COMMENTS"

NEW - 2/20/97

Return to top of page

Georgia-Pacific West, Inc
1170 Newport Avenue
PO Box 1528
Coos Bay, OR 97420-0332
(541) 269-5540
FAX (541) 269-5904

September 6, 1996

Mr. Mark Grenbemer
GWEB
Salem, OR

Mr. Grenbemer:

Georgia-Pacific West, Inc. owns land in both coastal south-west and west-central portions of Oregon. This letter directly applies to the approximately 170,000 acres of our "Coos Bay Timberlands", located in Coos, Douglas, and Curry Counties. Our objective for these lands is to efficiently produce wood products, while protecting and enhancing wildlife and fish habitat. In the past, we have taken an active role in evaluating fishery habitat conditions; identifying and accomplishing habitat enhancement projects; and monitoring stream quality. Please consider the following comments regarding the Governor's Coastal Salmon Restoration Initiative -- Strategic Plan and the designation of salmonid "Core Areas":

The Governor's Coastal Salmon Restoration Initiative -- Georgia-Pacific supports the 45 Phase I actions and 11 Phase II actions proposed within the Governor's initiative. We feel that the Phase I actions are well-covered by current Forest Practice Rules and ongoing private/agency actions. In fact, action item ODF27 consists of Georgia Pacific's monitoring of three primary river drainages traversing our lands. We feel that the existing rules and landowner actions adequately address stream temperature, large woody debris recruitment, and cumulative effects issues.

The 11 proposed Phase II actions are well thought-out and show that additional effort can be constructively directed toward anadromous fish and their habitat. We strongly support the notion of tax incentives to those landowners who wish to voluntarily participate in fishery projects. From past experiences, we believe that future environmental efforts must be based on encouragement of voluntary actions rather than expanded regulations that frequently have punitive effects on landowners.

Salmonid "Core Area" Designation -- Georgia-Pacific understands that the identification of salmonid Core Areas is an important step in the Governor's Coastal Salmon Restoration Initiative. These areas are viewed by the State as having both healthy salmon populations and habitat. We feel that it is important to note that a significant portion of the habitat typing of these streams, needed for determining habitat quality, was accomplished or facilitated by private landowners. While most of the Core Areas were determined by a relatively objective process, it appears that the Sixes River drainage Core Areas were heavily based on professional judgment. We suggest that this highlights an informational void that should be high priority to fill.

The described Core Area streams drain much of Georgia-Pacific's Coos Bay Timberland landbase. We estimate that approximately 30 percent of our landbase in the Sixes River drainage (Curry County) and 60 percent of our land in the Coquille River drainage (Coos and Douglas Counties) is contained within Core Area boundaries. We have accomplished many habitat improvement projects in these Core Area streams and trust that our efforts have had a positive impact on their anadromous fish--perhaps contributing to their designation as "Core Areas".

Your Core Area description packet states that Core Area designations are not intended "...to prohibit any human activity near Core Areas..." and "...are not intended to result in economic penalties to private landowners if salmon currently concentrate for spawning or rearing in stream reaches on their property." (Both quotes from page 5.) Based upon these statements, Georgia-Pacific is not philosophically opposed to the notion of Core Areas, nor are we opposed to the possibility that Core Areas fall throughout our lands. (In some respects this might be considered

a compliment!) However, we are concerned by a statement made on page 3 of the packet--that one of the purposes of the Core Area designation would be to "Possibly adopt stricter protection measures for these areas..." [for Federal Agencies]. It is always a possibility that when any specific designation is made, such as the "Core Areas", which we see as a tool to help agencies and landowners prioritize sampling, monitoring, and habitat enhancement projects, could be viewed by others as representing threatened or endangered species' *refugia*. Following a *refugia* concept, the drainages may be considered as critical to the protection of a species from extinction. Under this logic the next step would likely be a set of very restrictive Forest Practice Rules. It would be ironic, and very counter-productive, to penalize landowners within a Core Area that had exhibited good land stewardship and had accomplished habitat improvement projects by enacting more restrictive Forest Practice Rules.

To reiterate a point made earlier, Georgia-Pacific is confident that existing Forest Practice Rules adequately address cumulative watershed effects (by clear-cut size and adjacency constraints), Stream temperature and large woody debris recruitment (by Riparian Management Area rules) and soil and mass movement (by incorporation of Best Management Practices). Any additional rules, proposed in conjunction with the Coastal Salmon Restoration Initiative and designation of Core Areas, would be made without an adequate assessment of the effectiveness of the post-1994 rules and without a scientific basis. Consequently, Georgia-Pacific strongly opposes any such rules.

In summary, Georgia-Pacific strongly supports the Governor's Coastal Salmon Restoration Initiative. We are willing to put highest priority on the voluntary monitoring and enhancement efforts on designated Core Area streams flowing through our lands. However, we disagree with the notion that the Core Areas are *refugia* critical for salmonid survival and for the need of any additional Forest Practice Rules for these drainages. Regardless of the outcome of the Restoration Initiative and any future listing actions, Georgia-Pacific is committed to continued voluntary efforts to improve both fish passage and habitat conditions throughout out lands. Thank you for this opportunity to comment on this topic.

Sincerely,

GEORIGA-PACIFIC WEST, INC.
Coos Bay Forest Resources

Joseph A. Matejka
Resource Manager
JAM:ks

NEW - 2/20/97

Return to top of page

PACIFIC COAST FEDERATION
OF FISHERMAN'S ASSOCIATIONS
Northwest Regional Office
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Eugene, OR 97440-3370
(541) 689-2000
FAX (541)689-2500

November 1, 1996

Salmon Plan Review
Attn: Jim Martin, Office of the Governor
State Capitol Building
>Salem, OR 97310

RE: Comments on Draft Oregon Coastal Salmon Restoration Initiative (CSRI)

To the Review Committee:

PCFFA is the largest organization of commercial fishermen on the west coast, and as such we and our member organizations have a keen interest in salmon restoration coastwide. These comments are prepared on behalf of PCFFA as well as its affiliated conservation organization, the Institute for Fisheries Resources (IFR).

We fully support the Governor's effort in this direction, even though we do not believe the CSRI is or can be legally sufficient to prevent a listing under the ESA, nor even that such a listing should be avoided. Ultimately it is further declines (not a listing) which we have to prevent. A coastwide listing under the ESA combined with the CSRI as the backbone of a recovery plan administered within a state-federal partnership is, we believe, the best and most equitable option. Ample flexibility already exists under the ESA to make Oregon's CSRI Plan the centerpiece of a coho recovery strategy as well as to create a comprehensive state-federal partnership to work toward coastwide recovery of *all* salmon species. A listing is currently pending only for coho salmon. The CSRI should be, and is expressly intended by Governor Kitzhaber to be, much more comprehensive. We treat it as such in our comments.

We are also committed to helping improve the CSRI so that it is the best plan it can be. We will continue to work with your office in helping to fund it and to help see that it is fully implemented. We are also committed to the watershed council concept in and of itself. As you know, PCFFA backed the original watershed council legislation, fought hard in the last two Legislative sessions to get and keep the program funded, and I personally served on the Watershed Health Forum as part of the advisory group that helped guide the formation of these local councils and to help obtain state resources to them for their use. PCFFA also played a major role in getting NEAP funding channeled to that effort as well, so the watershed councils could be staffed.

These comments are in response to Jim Martin's challenge to help improve the CSRI with constructive comments and suggestions. It is obviously a work in progress and as such still has a number of flaws, some of which are probably inherent or unavoidable. It is, however, a major and bold step in the right direction. We hope these comments and critiques are useful in making it work better.

SUGGESTIONS FOR PLAN IMPROVEMENTS

Issue 1: Avoid bogging down over listing/delisting criteria-- An excessive amount of energy has already gone into establishing listing and delisting criteria. My understanding is that the scientific review team and per review debate is also focussing heavily on delisting criteria. Such a debate could go on almost endlessly. In reality we will never know exactly just how few fish are needed to sustain any specific population until that threshold has been crossed and they are headed for extinction. Numerical guesses as to just how few are needed to prevent extinction is missing the point. The section on "Production Goals and Listing Criteria (Chapter 5)" of the Plan document, while scientifically interesting, fundamentally *has nothing to do with the real issue which the Plan needs to address*, which is habitat assessment, critical factor analysis and habitat restoration.

If necessary, NMFS will determine listing and delisting criteria at a later date, and it will then be reviewed by the courts. Bogging down now on what is really a side issue diverts much needed energy from habitat protection efforts which ultimately are what will make the major difference in these populations. If these populations can be recovered and restored to reasonable numbers soon, then that debate becomes irrelevant.

Over-emphasis on ESA listing and delisting criteria also contributes to the public perception that this Plan is in reality *just one of a whole long string of subterfuges by state agencies (at the bequest of politically powerful landowners) merely to delay and put off an ESA listing as long as possible*, not a serious restoration effort per se. The mission statement for this program is as follows:

> "It is the mission of the Oregon Coastal Salmon Restoration Initiative to restore our coastal salmon populations and fisheries to productive and sustainable levels which will provide substantial environmental, cultural and economic benefits."

This mission statement rightfully has nothing to do with whether or not salmon become ESA listed. The listing process NMFS is now going through is a parallel process, and should not be made dependent on the fine points of this Plan. As a policy the CSRI should therefore explicitly acknowledge that this is not merely another effort to delay listing, but rather an effort to restore these species to population levels which are increasing. If the Plan is successful, that alone will bring these species away from the threat of extinction. Nothing else will.

Frankly, from PCFFA's perspective an ESA listing is much less to be feared than to be welcomed as a key element of any restoration effort. The ESA may be the only law capable of bringing all the key players to the table as well as requiring them all to contribute equitably toward restoration. The ESA also imposes important immediate protections against "taking" the habitat of these species under the Section 7 consultation process as well as the recent *Sweethome* decision. If the fish are in fact listed (as we believe most likely) then the CSRI clearly will become the backbone of a jump-started restoration program. The CSRI is therefore fully compatible with a listing, should that be warranted based on the science. Ultimately the ESA listing decision must be based on the science, not on the existence or sufficiency of states' efforts.

Issue 2: Need for Additional Measures by the Agricultural Sector--Measures outlined by the Department of Agriculture amount to little more than implementation of SB 1010. Compared to the contributions to this effort by other agencies and sectors, the agricultural sector efforts are noticeably lacking in addressing agricultural impacts. There has never been an "Agricultural Practices Act" similar to the Forest Practices Act in this state. Even California regulates private grazing practices through its Board of Forestry. No such regulatory authority exists in Oregon, and agricultural practices (including the widespread use of chemicals which affect fish populations) remain largely unregulated in this state. Among the issues that need to be addressed are:

(A) ***Better monitoring and regulation of agriculture pesticide use:*** The recent "Botkin Report" noted:

> "Chemicals used in industry and as fertilizers and pesticides in agriculture, forestry, and urban areas are detrimental to salmon and may be a factor in the alteration of abundance and distribution of salmon populations...

Recognizing the extremely large poundage of agricultural chemicals used in Oregon, the Botkin panel also noted:

> "With such large applications of pesticides and fertilizers, some portion is surely to make its way into nearby streams, especially since most agricultural land lies in close proximity to streams and rivers...*Since little monitoring is done to detect the presence of pesticides and fertilizers in streams, the levels of exposure by fish to chemicals are largely unknown.*" (emphasis in original)[1]

[1] From Status and Future of Salmon of Western Oregon and Northern California: Findings and Options. Center for the Study of the Environment (May 1995) pgs. 102-104, cited herein as the "Botkin Report." It should be noted that this prestigious scientific panel, commissioned by the Oregon State Legislature, made a large number of recommendations for actions which would benefit Oregon salmon. To date almost none of these actions have been taken, and in the last Legislative session some of legislative initiatives passed actually loosened some of the existing environmental protections, particularly with respect to water law and protection under the state's own ESA.

A recent report by the Northwest Coalition for Alternatives to Pesticides summarized the growing evidence that pesticides and many other common agricultural chemicals may be a contributing factor in coho declines.[2] I include a copy of this report as ATTACHMENT A for the record.

[2] Toxic Water: A Report on the Adverse Effects of Pesticides on Pacific Coho Salmon and the Prevalence of Pesticides in Coho Habitat (December 1994). Northwest Coalition for Alternatives to Pesticides (Eugene, OR).

Many commonly used agricultural chemicals are now know to have persistent chronic impacts on the reproductive systems of fish and other organisms even at sublethal levels. Few toxicity studies take into account the heightened chemical sensitivities of salmon in their juvenile and egg stages -- almost all studies on fish for chemical toxicity are done with adults, even though fish can be an order of magnitude more sensitive to these chemical impacts in

their juvenile and egg stages than as adults. There is currently no way to track or verify what chemicals are *actually used* in the environmental (either in agricultural production or in forestry), and very little monitoring of either exposures or long-term impacts is now being done. The Department of Agriculture could beef up its monitoring and impacts research programs considerably as well as develop better best management practices (BMP's) for the use of these chemicals generally.

(B) Assessing and mitigating the impact of overgrazing--Overgrazing of riparian areas is clearly a serious problem in many areas and greatly impedes long-term salmon restoration efforts when it does occur. So far a I am aware the Department of Agriculture has no program to assess or monitor the impact of overgrazing on salmonid habitat, nor does it have any enforcement authority to require remedial efforts such as fencing and restrictions on grazing timing or area.

This festering problem is what led to the recent Measure 38 "Clean Streams" initiative. We need improved funding of cost-share programs to help pay part of the costs for riparian fencing.

(C) Riparian protection rules on farmlands--The Department of Agriculture should develop a set of enforceable best management practices for agricultural farmland management required in order to mitigate (and if possible eliminate) the impact of agriculture on aquatic resources. This should include enforceable rule standards for riparian setbacks as well as programs for replanting damaged riparian areas and providing them some measure of permanent protection.

Fencing of livestock away from water quality limited streams and provision of off stream watering facilities should also be mandated by rulemaking for all those areas not under a water quality management plan per SB 1010. As you know, PCFFA supported Measure 38 but see that provision only as a means toward the end of correction of serious livestock impact on riparian areas. We therefore also support the Governor's efforts to solve these problems as well, including providing additional funding sources to help underwrite costs of needed fencing.

Issue 3--Improving Compliance with the Forest Practices Act: We are impressed by the many measures proposed or underway by the states forest landowners, and we concur that these are needed measures. In particular we strongly support their measures ODF 48, 49 & 50 in concept. The reauthorization and expansion of riparian and fish habitat improvement tax credits will help promote these actions through financial incentives rather than a purely regulatory approach.

(A) Improved habitat restoration tax credit incentives: We would like to see the fairly stringent "caps" on fish habitat improvement tax credits raised or removed as one of the Governor's top legislative priorities. At present fish habitat improvement credits are "capped" at 25% of the amount certified (ORS 315.134(1)) against costs not to exceed $100,000. Similar credits (under ORS 315.138) for fish screening projects are capped at 50% but only allow a total credit up to %5,000. Reforestation projects, however, are allowed tax credits of 30% of all costs "actually paid or incurred." It makes no sense to have such stringent caps on fish protection activities while reforestation has no such caps. Fish protection project tax credits should have much more liberal caps so that their costs can become more affordable by landowners.

(B) Controlling logging road erosion: Clearly one of the most serious impacts on stream systems caused by forestry practices is the widespread logging road and skid trail system throughout private and public timberlands. Poorly maintained roads and culverts are "sediment timber bombs" awaiting the next big storm event to wash out. Many skid trails result in erosion pattern changes which may become permanent over time.

The FEMAT Report estimated the total extent of logging roads within its study area (the range of the northern spotted owl) at about 110,000 road miles.[3] In recent conversations with the Oregon State Forester, he indicated that the extent of logging roads in Oregon on private timberlands is at least comparable to that on federal lands, and probably greater. However, he also indicated that there are no requirements under Oregon's rules to inventory or map those roads, and that there are not requirements under Oregon's rules to inventory or map those roads, and that there are no requirements under Oregon's rules to inventory or map those roads, and that there are no requirements for logging road maintenance schedules under the rules. All maintenance is left entirely to landowner discretion. Enforcement of road maintenance standards is only done, he admitted, "when we see a gross violation." In most instances, however, he also conceded that state enforcement foresters never see most violations. There are

currently no accurate figures on road density per acre in Oregon for nonfederal timberlands. Though there are some recent efforts by the Board of Forestry to upgrade road maintenance standards, with recent rules adopted and to take effect January 1, 1997, these will apply only to road built after these rules go into effect, not to the many washed out logging roads already built. These unregulated and poorly constructed roads are a time bomb waiting to go off in the next major flood event.

[3] FEMAT Report page II-40.

Recent sediment budget studies of the Scott River in California (a major tributary in the Klamath Basin) have given us some figures as to the magnitude of difference logging roads can make to the sediment loads of streams in areas of granitic and other unstable soils. The work of Dr. Sari Sommarstrom is especially important in this regard. Her study on the Scott River watershed indicated that (primarily due to logging road contributions) soil in her study area is being "mined" by erosion at rates on the order of two orders of magnitude greater than it can be replaced by natural soil formation processes. This study was also able to quantify the soil erosion contributions of various parts of typical logging roads.(4) This study bears further inspection and similar studies should be done under Oregon conditions, particularly on high rainfall coastal areas where steep slopes are commonplace.

[4] Sari Sommarstrom, et. al... Scott River Basin Granitic Sediment Study, for the Siskiyou Resource Conservation District (Nov. 1990).

The Dept. of Forestry should develop an aggressive program for road erosion hazard assessment and mapping as well as develop maintenance programs with landowners, either by way of MOA's or rule-making. Considerably more staff effort and money needs to be given to road inspection and remediation programs in the Governor's budget. The voluntary efforts or landowners are helpful as outlined by the CSRI, but the impact of these roads is too important to be left entirely to landowner's voluntary efforts without state oversight, resources if necessary enforcement.

(C) FPA Rule compliance monitoring: There appears *never* to have been a comprehensive compliance monitoring study in Oregon to see to what degree steam protection and other FPA rules are in fact followed on the ground. Rule compliance foresters have a huge caseload and the whole compliance and monitoring program has suffered repeated budget cuts over the years. One of the Governor's budget priorities should be to get the Dept. of Forestry the manpower and monetary resources it needs to adequately enforce its own rules.

There is also every reason to believe that as applied on the ground there is widespread noncompliance with the FPA as it is. Rule compliance studies in California required under the Clean Water Act, for instance, found noncompliance (some of it serious) with their own FPA n a majority of timber operations.(5) That study also helped develop many improvements which have since been implemented. Similar recent compliance monitoring in Washington state disclosed noncompliance with their FPA in roughly 80% of the timber operations surveyed. There is no reason to believe, based on the present lack of enforcement staff and budget, that Oregon's compliance with its own FPA is any better. In any event, compliance monitoring of the Department's own rules should be a high priority in any salmon restoration effort so that we can see whether BMP's are in fact followed, and how they could be made more workable in actual operations on the ground. I do not see that listed as an action item under the proposed plan.

[5] See Final Report of the Forest Practice Rules Assessment Team to the State Water Resources Control Board (April 24, 1987), State of California Resources Agency.

(D) Reversing the disturbing trend toward relaxation of existing forest protection rules: Given the current emphasis by the Governor on compliance with *existing* law, it is disturbing to see efforts to dilute existing laws to the point where they become meaningless and ineffective. One of the proposed legislative measures being developed by the Dept. of Forestry would amount to virtual deregulation of the timber industry by simply creating exemptions from existing laws.

Specifically, a draft bill referred to as the "Forest Practice Stewardship Alternatives" bill (L.C. 897) being developed by the Department with the timber industry would allow the DOF to enter into written agreements by which the timber landowner *would become essentially self-regulating*. The potential for abuse should be obvious. Such legislation would essentially allow the Trustee agency to "opt out" of efforts to protect that trust altogether, leaving it up to the landowners to police themselves. The Governor should go on record as opposing these deregulation efforts.

Another disturbing issue in the efforts by the Oregon Forest Industry Council (OFIC) to extend what became known last session as SB 160. This bill, ultimately adopted as part of the split up of the Light Rail bill, was first vetoed by the Governor but later adopted in a modified form and with a 2-year sunset clause. That time period will soon expire. As predicted, OFIC will be seeking to make these restrictions permanent in the upcoming Legislative session.

The effect of SB 160 was to impose a number of unprecedented administrative barriers on the Board of Forestry before it could act to further protect public resources. If even the right to harvest *one tree* would be further restricted, a long list of expensive and time consuming findings and monitoring studies would be required before the Board cold act. These restrictions go far beyond what any other agency is required to do before it can protect public resources. The current OFIC draft bill would go much further still, including imposing "takings" compensation requirements on the state which would effectively prohibit it from protecting major public resources such as salmon and riparian areas. The underlying assumptions of this bill is that the landowner has an absolute right to strip every tree from his or her land at will and to the detriment of every public resource which that land also provides (such as clean water), and that any restriction of that newly created "right" must therefore be heavily scrutinized and if necessary compensated. Such a legal philosophy would turn the Public Trust Doctrine on its head and substantially disable the Board of Forestry's efforts to protect salmon resources in accordance with the CSRI. The Governor should strongly oppose these efforts.

(E) The Board of Forestry should require written plans within 300 feet of salmon bearing streams: Although the state ESA does not specifically apply to private lands, some additional restrictions on private timberlands under the Forest Practices Act (FPA) do automatically "kick in" once a listing does occur. Specifically, ORS 527.670(3)(a) specifies:

> "The board's determination ... *shall require* a written plan for operations:
>
> (B) within three hundred feet of a resource site inventoried pursuant to ORS 527.710(3)(a);
>
> (C) On lands determined by the State Forester to be within high risk sites, unless the board, by rule, provides that a written plan is not required because there is no reasonable likelihood that such operations would damage a resource described in ORS 527.710(2); ..."

ORS 527.710(3)(a) requires the board to establish inventories of:

> "(A) Threatened and endangered fish and wildlife species identified on lists that are adopted, by rule, by the State Fish and Wildlife Commission or are federally listed under the Endangered Species Act of 1973 as amended; .....
>
> (C) Biological sites that are ecologically and scientifically significant; ..."

ORS 527.710(2) states in relevant part:

> "... Consistent with ORS 527.630 [the FPA policy statement], the rules shall provide for the overall maintenance of the following resources: ....
>
> (b) Water resources, including but not limited to sources of domestic drinking water; ....
>
> (d) Fish and wildlife."

Consistent with these provisions, with the CSRI, and in light of the high risk of additional economic dislocations that further salmon declines entail, the State Forester should immediately declare salmon bearing streams to be "high risk sites" under 527.670(3)(a)(C), and declare salmon spawning areas "biological sites that are ecologically and scientifically significant" so that timber operations within 300 feet of these areas have the added protection of a written plan.

There are all actions that the State Forester can take *unilaterally* and in his own discretion in order to discharge his fiduciary duty as the Trustee of these public resources. If the State Forestry fails to act, alternatively the Department should craft a special rule for the Board of Forestry to adopt designating the equivalent 300 foot written plan zone *as though these fish were listed* as a proactive measure to help prevent future ESA listings from becoming necessary. Waiting until the fish are listed is usually too late for these modest protections to be meaningful.

All this provision would do is require a written plan. Such plans can be a useful tool, however, in crafting special protections for this resource as well as a tool for "tracking" what actions are actually taking place within sensitive riparian areas. Without a written plan the enforcement of the rules under the FPA becomes much more problematical--not to mention the fact that there would be no public record of the actual operations allowed within those areas, making compliance monitoring that much more difficult.

I should also point out that taking these steps proactively not only makes sense but would also take some of the incentive for listing away, at least so far as triggering automatic FPA protections are concerned. At the present time, salmon streams only require a written plan for operations within a 100 feet zone of a fish bearing stream (ORS 527.670(3)(a)(A)). As presently set up these additional FPA protections do not "kick in" *until the fish are listed*. The present incentive, then, is to list in order to obtain the highest degree of protection under the current FPA. It would be better if these protections were already in place. These actions could be taken by the State Forester immediately. They are clearly warranted.

(F) Incorporate cumulative impacts analysis and mitigation measures into forestry rules: Under Section 15, Chapter 919, Oregon Laws 1991 the State Forester was obligated to "conduct a study of cumulative effects related to forest practices on forestland in Oregon" (Sec. 15(a)) and submit a report to the Legislature "along with recommendations for addressing any problems that may be identified during the course of such study. That study was specifically required to include a number of analyses, including:

"Sec. 15(2)(f): The impact of cumulative effects of harvest operations on air, soil, water and fish and wildlife."

This effort has languished. It needs to be reviewed, if necessary completed, and Board rules need to be developed to implement its recommendations. ORS 527.710(8) in fact states:

> "If based upon the analysis in section 15(2)(f), chapter 919, Oregon Laws 1991, and as the results become available, the board determines that additional rules are necessary to protect forest resources pursuant to ORS 527.630, the board shall adopt forest practice rules that reduce to the degree practicable the adverse impacts of cumulative effects of forest practices on air and water quality, soil productivity, fish and wildlife resources and watersheds. Such rules shall include a process for determining areas where adverse impacts from cumulative effects have occurred or are likely to occur, and may require a written plan to be submitted for harvests in such areas." At the minimum, both the Board and the Department of Forestry need to make or review this analysis and justify their decision on the basis of the best available science and best management practices. This is also something that can be done now, in conjunction with the CSRI.

Issue 4 -- Actions by the Dept. of Fish and Wildlife:

(A) Proposed Actions in the CSRI: Of the various proposed measures by ODFW there are several which need additional emphasis, including:

ODFW1b1-- Juvenile coho salmon production information. Noticeably lacking in the fisheries database is smolt outmigrant survey data. Adult fish are harvested at the end of a long line of events which may effect overall mortality. Without juvenile smolt counts it is impossible to determine whether declines in escapement are due to adverse ocean conditions, habitat destruction or overharvest. Data needs to be collected and maintained about mortalities at each stage of the salmon's life cycle. Otherwise it is impossible to determine what the limiting factors are or to adequately address these problems.

ODFW1B4--Inventory of artificial barriers. There are an estimated 3,000 significant human-caused fish passage barriers in the State of Oregon. To date there has been no complete inventory. Worse yet, several fragmentary and conflicting inventories exist. To date there has been no effective program for either mapping and assessing the impact of these barriers, nor has there been any real effort to cure the passage problems they create. Less than one FTE staff person is now devoted to this issue at ODFW.

Inventory and correction of passage problems should be given the highest priority in both the agency's budget and as a funding priority for the Governor. You just get a lot more "bang for the buck" unplugging a passage problem than any other type of restoration. Sometimes a single culvert can block many miles of otherwise suitable salmon spawning habitat. The positive benefits of correcting these passage problems can be very dramatic.

Push-up dams are poorly regulated in this state, yet are a major passage problem in many areas. ODFW should work closely with the Water Resources Department in its assessment and removal of push up dams that interfere with fish passage (see WRD1a & 1b).

ODFWIIA4--Mark all hatchery coho. This is an essential step in the creation and management of more selective fisheries as well as in tacking (and thus avoid) coho migration routes.

ODFWIIIC2--Evaluate coho hook and release mortality. Hooking mortality assumptions (both immediate and long-term) are the very basis of all fisheries management. In many cases, however, these studies are out of date and incomplete. Both commercial and recreational hooking mortality and encounter rate studies badly need to be updated and many data gaps filled in. This type of research has been identified by the Pacific Fishery Management Council as one of its highest research priorities.

ODFWIVA3 & ODFWIVB5--Protect & restore instream flows. The Department of Water Resources has concluded that almost every Oregon water basin in over-appropriated for at least part of the year, often during times most critical to salmon spawning. Oregon's water laws are archaic and based on the presumption that it is an inexhaustible resource. The recent "Botkin Report" identified water diversion as one of the leading factors in salmon declines in Oregon:

> "Diversion of water is potentially one of the most serious factors adversely affecting salmon in western Oregon and northern California.. As noted above, apparently it is legal for a farmer with rights to water in a stream to divert all the water in a stream temporarily, but only if it is for the beneficial use of irrigation.... While the temporary diversion of all water many not severely affect landowners downstream who need water for irrigation and other purposes, it is fatal to fish that occupied or were attempting to migrate through that stretch of dried-up stream... *As competition for water increases with growing human populations in Oregon, water rights are likely to exert greater and greater influence on salmon, and, in the opinion of the panel, are likely to become a major factor affecting salmon abundance*." (Emphasis in original)[6]

[6] From Botkin Report, pgs. 101 - 102.

The Botkin report also noted that as of that report date only 36 certificates for in-stream water rights for the protection of fish had been granted as of the date of the report, out of close to 1,000 such applications received. To its credit, one of the action items of the Water Resources Department is the issuance of 550 pending on-stream water rights with another 350 proposed final orders issued as of June 1996 (WRD4 and WRD5). These reviews must be given the highest priority. However these applications likely cover only a very small fraction of the total in-stream water needs that must be secured for salmonids in this state if they are to survive. Some thought needs to be given as to how to expedite this process. The very slow processing of in-stream water right applications for fish is still a serious bottleneck which needs better funding and more staffing.

Where in-stream flows no longer legally exist (i.e., in the many already overappropriated streams) funds should be made available to purchase existing water rights and dedicate them to in-stream flows for fish and wildlife. We suggest two mechanisms:

<u>Funding Mechanism 1</u> -- Establish a water rights "royalty" as a small charge on the use of the public's water based on flows and scaled to the size of the flow. This royalty would be a small charge intended to compensate the public trust for granting the exclusive use of this public resource. Even a penny per cfs "royalty" would ultimately generate a great deal of money. These funds should be placed by the

WRD or appropriate water utility district in a dedicated and independently managed "Water Rights Trust Fund" to be used for the sole purpose of the purchase of existing water rights to be dedicated to in-stream fish use in those areas that have been overappropriated.

Funding Mechanism 2 -- Establish a state "Water Trust" to which willing donors could donate unused water rights in return for a tax credit or write-off. This would be akin to the work of the Oregon Water Trust, a private I.R.C 501(c)(3) organization which already exists and which is qualified (like a Land Trust) to grant tax benefits to donors of water rights. The idea is a good one and should be institutionalized as a state managed entity so that these rights can be held in trust by the *state* in perpetuity, rather than relying on private entities.

Some combination of the two could also be achieved. If not, then water rights should be condemned under the state's powers of eminent domain and converted to in-stream water rights. ORS 273.061 specifically allows the state to condemn and seize water rights under eminent domain for "carrying out its powers and duties." One of those duties is to "restore native stocks of salmon

(B) Other actions which should also be taken by ODFW:

(1) Establishment of a "Commercial Fishing Vessel/permit Buyout Trust Fund" --

When the commercial fleet is overcapitalized everyone suffers and the risk of accidental overfishing is exacerbated. The present policy is to simply encourage fleet cannibalization so that the economically "weaker" fishermen perish, go bankrupt and get out. This is a terrible policy which promotes a great deal of human suffering and economic dislocation in many coastal communities. Instead there should be established a state managed Trust Fund to accumulate funds from any of a variety of sources (poundage fee, vessel permit surcharge, appropriations, etc.) for the explicit purpose of voluntary vessel buyouts whenever the State Fish & Wildlife Commission determines that overcapitalization exists. This would allow fishermen retiring their boats to recapture at least some of its value as an economic transition into a new career or into retirement. Buyouts would be arranged on a "willing seller basis" on the basis of vessel surveys and appraisals by an established formula. A look should also be taken at any institutional or legal barriers toward rapid, efficient and humane downsizing of the commercial fishing fleet when that becomes biologically or economically necessary.

(2) More research and development funds for test selective gear development -- Although mentioned peripherally in ODFW IIIB, developing and testing more selective fishing techniques (both commercial and recreational) needs to become a much higher priority of the agency, including committing serious amounts of research and development funding to these programs.

(3) Establish a "State Salmon Habitat Conservation Trust Fund" -- A special state Trust Fund should be formed to accept and purchase dedicated easements of land and interests in land to be held specifically as salmon habitat. This could be funded by lottery contributions or a tax return checkoff system (as examples). Some of this ability already exists, but can be centralized and publicized as well as better funded.

Issue 5 -- Various actions by the Water Resources Department: Many of the measures proposed by the WRD are mentioned elsewhere in these comments. One in particular should be emphasized here, however: the need for ore off-stream water storage (WRD22). The Department needs to have additional resources and this needs to become a high priority for the state. We are nearly out of water in most basins, and most basins are in fact already overappropriated for parts of each year. Capturing winter run-off in off-stream storage facilities in a more efficient way will help to assure more adequate in-stream water supplies throughout the year for both people and fish.

I should also be noted however that last sessions's Legislature was one of the most hostile in history toward fish restoration and other environmental protection measures. Several bills proposed major roll-backs of in-stream water rights for fish. Another successful bill raised odious financial barriers against public participation in water rights cases.

Another measure which needs to be better addressed in the CSRI is the issue of dams. The State of Oregon should be a complete survey of *all* dams of *any* size and thoroughly assess their impacts on salmonids and other aquatic resources. There are well in excess of 1,000 small and medium sized dams in this state (no one knows for sure just how many there are), many in coastal areas which impact salmon. Why are all these dams necessary? Which can be improved for fish passage and other salmon survival parameters? Which are nearing the end of their useful life or are obsolete? Which should quite simply come down? In particular, why is the state still allowing dams to be built (such as the Milltown dam) while simultaneously trying to remove others? What is the state's policy toward dams in general?

Issue 6 -- Actions by the Dept. of Geology and Mineral Industries: There are many long abandoned mines in Oregon which still contribute heavy metals and other pollutants to critical salmon waterways. One action that was not mentioned but which needs to be done is a survey of mine-related pollution problems created from these sources, with an action plan developed and implemented on how these problems can be cleaned up. There are a number of sources of federal assistance (both technical expertise and financial) which can be tapped for this purpose, including NOAA Damage Assessment and Recovery Program (DARP).

Issue 7 -- Removing institutional barriers and fostering coordination: This program must be sustained over a long period of time to be successful. This leads to several concerns as to how this program will be institutionalized so that it can be *sustained through changes in the Administration and Legislature during the next decades*. Governor Kitzhaber is clearly the driving force behind this effort and is taking a major leadership role in its development. Later Governors (not to mention later agency heads and legislators) may not be either as competent or committed as those now grappling with this problem. The Plan is already heavily dependent upon voluntary actions with no assurances that these efforts will continue. At the very least we must assure some *institutional* continuity to make sure those commitments are kept when they are in fact made.

We strongly recommend that as much of the program as possible be mandated in *statute* to "lock it in" to Oregon's legal and administrative structure as firmly as possible. Some effort in direction is implied by reference to the Oregon Progress Board (OPB) involvement and the development of benchmarks for the program (page VI-E-2). The entire section VI-E needs to be fleshed out more thoroughly so that the Plan does not become dependent not only on the voluntary efforts of landowners but also upon state leadership *which inevitably will change*.

This Legislative session provides a golden opportunity to achieve these changes and lock in a state commitment to this program as deeply as possible.

Among other institutional barriers which need to be overcome are:

(A) Overcoming the historic fragmentation of state agency efforts -- Some single agency or board needs to be in charge of and oversee this effort. I would suggest GWEB play a major role in coordinating this effort, thus keeping it within the Governor's office and because GWEB's agency head coordination built into the GWEB structure.

(B) Coordination with federal agencies and with California and Washington -- restoration of the shared ESU depends upon the cooperation and equivalent commitment from California. To date no such commitment or leadership has been shown. Oregon needs to do everything it can to drag the California administration along the path it is charting.

In addition, there needs to be a strong effort to coordinate with all federal agencies which impact land and water use in this state. Some because they have regulatory authority, other because they have important resources (and funds) which they can bring to this effort. This area of the Plan is very sketchy. At the minimum there needs to be an interagency review team designated to monitor the Plan and provide suggestions as to how both the Plan itself and its implementation can be improved.

(C) Assuring scientific credibility and oversight -- Page VI-E-2 of the Draft CSRI mentions the creation of a "Science Team" including scientists and technical experts who are representatives of the NMFS and local, state and federal governments to provide interpretation and analysis of data. The formation and composition of this

team is *very important* and should be given a very high priority. Without an independent scientific body assessing the Plan and helping to improve it as it is implemented we cannot have anything approaching true "adaptive management" and we risk duplicating the mistakes of the past.

(D) Creating and maintaining compatible data collection protocols and shared data bases -- This factor is all too often overlooked. Many local, state and federal agencies collect watershed information. However, more often than not they do so each in their own independently developed format, within their own specially designed computer systems, and collecting data unique to their own agency needs. THESE SYSTEMS ARE ALMOST ALWAYS INCOMPATIBLE. Some serious work needs to go into designing uniform data collection protocols, standardized data collection forms, compatible computer software (such as GIS systems), compatible and statistically meaningful databases, and means of rapidly collating such data across agency, state/federal and interstate lines. *Otherwise much of the data collected by local watershed groups or by particular state agencies will be meaningless and largely useless. If the various data sets collected are not statistically compatible and in share computer formats they simply cannot be merged*. How will the compatibility of the data to be collected be assured?

(E) Locking in as much funding as possible outside of the biennial appropriations process -- For the same reason it is necessary to "lock in" as much of the administrative structure of the Plan as possible, it is also necessary to assure and safeguard the financial supports of the CSRI to assure that these funding sources do not dry up or be tapped for other budget priorities. Otherwise what must be a sustained effort over decades will be tossed about by the whims of each Legislature and battered by the priorities or crises of the moment.

Therefore as much of the program as possible should be locked into separate funding mechanisms that: (a) consist of automatic funding programs such as tax credits for stream rehabilitation; (b) consist of automatic funding programs such as tax credits for stream rehabilitation; (b) Trust Fund accounts with locked in statutory funding mechanisms and which are "off budget," i.e., outside of the biannual appropriations process and therefore dedicated in such a way that they cannot be raided and squandered for unrelated purposes; (c) various incentive based programs an cost-sharing mechanisms which will assist small landowners who wish to do the right thing but lack to resources to do so out of pocket; and, (d) programmatic changes within the agencies to assure that agency salmon restoration programs not only continue but become internally institutionalized.

Issue 8 -- Removing the legal barriers prohibiting salmon restoration & the inadequacy of existing regulatory mechanisms: 16 U.S.C. 1533(a) establishes the legal criteria for listing under the federal ESA. This includes subsections 1533(a)(1)(A) and (D), which states:

> **16 U.S.C. 1533(a)(a):** "The Secretary shall by regulation... determine whether any species is an endangered species or a threatened species because of any of the following factors:
>
> (A) the present or threatened destruction, modification, or curtailment of its habitat or range; ....
>
> (D) the inadequacy of existing regulatory mechanisms; ..."

The failure of existing regulatory mechanisms are clearly a very large part of what has brought Oregon's stock into decline in the first place. The salmon problem is primarily a problem of habitat destruction caused by land use practices which are, unfortunately, a fundamental part of the way Oregon now does business. Compared to either Washington's or California's, many of Oregon's current regulatory mechanisms are weak or ineffective and cannot, in our opinion, adequately control, curtail or reverse the widespread pattern of salmon habitat destruction in this state that we have witnessed over the last few decades. Additional enforcement will certainly help. However, in those areas where *the law itself is weak,* no enforcement actions can make up for this deficiency.

Among the regulatory failures which have probably contributed to this problem are the following examples (among many others which could be cited). These are all laws on the books which have allowed or encouraged widespread salmon habitat destruction in this state for many years. In fact some of these laws *actually prohibit* the state from protecting salmon resources. Our fear is that the ultimate goals of the CSRI simply cannot be achieved in the long run until these and other fundamental land use problems and legal barriers *prohibiting* restoration are eliminated.

(A) Prohibitions on protection of "essential indigenous anadromous salmonid habitat" in state waterways -- No more than 20% of a waterway can be designated and protected as "essential indigenous anadromous salmonid habitat" (ORS 196.810), which defines "essential indigenous anadromous salmonid habitat" for purposes of prohibiting gravel extraction but then states:

> "The habitat shall not exceed more than 20 percent of any particular waterway."

Salmon production is severely constrained by lack of adequate gravel spawning grounds in several areas. This provision allows 80% of salmon spawning habitat in "any particular waterway" to be carted away by gravel extractors by neatly defining 80% of Oregon's waterways as outside the circle of protection.

(B) No regulatory restrictions on removal-fill activities of less than 50 cubic yards, regardless of impact on salmon or other aquatic resources. State law is much weaker than the federal Clean Water Act, which does regulate all removal-fill activities. Oregon will be able to control those impacts only by the assumption of federal Clean Water Act 404 permitting process, as in being contemplated by DSL (see CSRI Measure DSL1) because of the inadequacy of existing state law.

(C) Inadequate protection of riparian areas under the Forest Practices Act: While Oregon's FPA has recently been improved, the best that can be said about the new riparian protection rules is that they are better than the prior rules as written by the timber industry itself. I am personally quite familiar with the new Oregon Riparian Rules. I was in fact a member of the Waters of the State Advisory Committee (appointed by the Board of Forestry) which actually negotiated the current rules, reviewed the scientific basis of the rules, and followed the rules throughout their development and current implementation. My criticisms of these new riparian rules are several fold:

1. There is no scientific basis for the choice of riparian zones under the Oregon Rules: Option 9 riparian zone widths are the equivalent of two site-potential tree heights, with some adjustment available to increase zone width as conditions may require to produce adequate protection. This zone cannot, however, be less than 300 feet to each side of a fish-bearing stream. Oregon standards are much less restrictive, as summarized below:

Comparison of Option 9 Buffer Zones to ODF Riparian Rules

Type of Stream	Riparian Buffer Option 9 (key watershed areas)	Riparian Buffer OR rule
Fish-bearing streams	Minimum 300 ft. no entry (2 site potential trees ht.)	50 - 100 ft. w/partial entry*
Non-fish bearing streams	Minimum 150 ft. no entry (1 site potential tree ht.)	10 - 70 ft. w/partial entry*
Seasonally flowing or intermittent small streams	Minimum 100 ft. no entry (1 site potential tree ht.)	No protections

*Note: Oregon's rules vary the width depending upon size of stream. Small fish-bearing streams, for instance, would have only 50 ft. buffer strip protection, even though for many species (such as coho) these small (generally upland watershed) streams are key spawning habitat. Protections for non-fish bearing streams depend upon whether there is domestic use, and if not, then riparian zones for those streams may be as narrow as 10 feet with little or no conifer retention for perennial streams, with no protection at all for intermittent streams.

It is immediately obvious that Option 9 standards are **between 3 to 15 times greater than stream widths called for in Oregon's new rules.** Furthermore, Option 9 rules allow no harvesting within these riparian areas, while Oregon's still allow substantial harvesting with associated stream and soil disturbances. FEMAT reasoning on its zone widths is based on the need to protect an inner zone against blowdown and edge effects, which requires a substantial outer buffer zone. Oregon's rules had no such basis. It is clear that Option 9 standards are biologically based, i.e., based on site potential trees and site characteristics, while Oregon's rules are purely numerical rather than biologically based.

During the process of drafting the Oregon rules, several committee members including myself repeatedly brought up the disparities between these two protection rules. The final zone widths chosen by the Oregon Department of Forestry were **chosen primarily for political (and not scientific) reasons.** The Department believed that these zone widths were the maximum widths which could survive a vote of the Board of Forestry, given that the Board is dominated by timber interests and under pressure from landowners attempting at that time to remove *all* restrictions on private timberlands. These zone width standards were imposed by the Department on the drafting committee process without any scientific jurisdiction. In fact, scientific evidence suggests they will not be adequate to assure anywhere near normal riparian functions over the long-term.

In recognition of this fact, the FEMAT Report itself states:

> "Two major differences between current state requirements and proposed federal requirements are apparent. ***First, the states allow significant harvest within the riparian management areas. Second, the width of the protective buffers are smaller in state programs. This is particularly true for intermittent and small perennial streams. None of the states require protection for riparian areas for intermittent streams.... Current state forest practice rules do not adequately protect ecological effectiveness nor provide any margin for error to accommodate natural disturbances or uncertainties in knowledge.... Habitat conditions on private and state lands are inadequate to provide well distributed, stabilized populations of salmonids.*** If measures are not taken to improve management practices on state and private lands, options for federal land management may become more limited. (FEMAT Report, V-61 -- emphasis added)

These problems have not been cured in any significant way by the new Oregon Riparian Rules.

2. <u>No protection under Oregon's rules for seasonally flowing or intermittent small streams, or for small perennial Type N streams throughout coastal areas</u>: Of particular concern in Oregon's new riparian rules is the minimal to nonexistent protection afforded to small Type N perennial and seasonally flowing streams. Reading the fine print in the protection standards for small "Type N" streams in OAR 629-57-2250, the only protection afforded for these streams is the retention of understory vegetation within a 10 foot zone *but only for small Type N perennial streams:*

> "OAR 629-57-2250(6): Operators shall retain all understory vegetation and non-merchantable conifer trees (conifer trees less than six inches DBH) within 10 feet of the high water level on each side of *small perennial Type N streams indicated in Table 5*."

Table 5 of the rules specifies that such retention need only take place for *all perennial* streams in the Eastern Cascades and Blue Mountains area. Within the South Coast, Interior and Siskiyou areas, similar retention is required *only for perennial streams of given (160 - 580 acres depending upon region) specified drainage area,* and <u>no vegetation or conifer retention whatsoever is required for small Type N perennial stream within the Coast Range and Western Cascades areas</u> -- the very areas most likely to contain critical spawning habitat for severely depressed coastal salmonids, especially coho.

What is also only apparent when looking into the finer details of the new Oregon rule sis that *no riparian protection whatsoever is required for seasonally flowing or intermittent streams*. The Oregon rules accomplish this by simply leaving them out of the protection scheme. This was one of the many political compromises forced on the process by the timber industry. Any protections specified for the very large number of such streams was, they felt, too great a burden on private timberland owners, and if adopted they threatened to remove their support from the rule package as a whole. Thus important biologically required protections have been sacrificed for largely political reasons.

The biological importance of small seasonally flowing or intermittent "feeder streams" is only now becoming recognized: The FEMAT report addresses the need for protection of intermittent streams as follows:

> "Intermittent streams are an important, and often over-looked, component of aquatic ecosystems... Several important ecological processes occur in them, including storage and processing of organic materials, the products of which are later transported to downstream areas. Intermittent streams store sediment and wood and are sources of these materials for permanently flowing streams. Removing the connection between intermittent and permanently flowing streams may have detrimental consequences to the physical and biological components of stream ecosystems, particularly in the long-term.
>
> "Intermittent streams and adjacent areas are often the lands prone to slope instability problems in a watershed. Protection of intermittent streams is important for preventing increased rate and frequency of landslides in time and space, preventing accelerated surface and fluvial erosion, providing habitat for species unique to small stream riparian areas, and maintaining the landslide-and flood-delivered supplies of large woody material throughout the landscape.

> "The width of Riparian Reserves necessary to protect the ecological integrity of intermittent streams varies with slope and rock type. Figure V-14 shows the estimated size of Riparian Reserves necessary to protect the ecological values of intermittent streams with different slope and rock types. These estimates were made by geomorphologists, hydrologists, and fish biologists from the Bureau of Land Management, U.S. Forest Service, and the U.S. Environmental Protection Agency. *These distances are consistent with the height of 1 site-potential tree discussed previously*." (FEMAT Report V-37, 38 -- emphasis added)

Figure V-14 of the FEMAT Report in turn shows recommended intermittent stream riparian protection zones of between 50 to 200 feet, depending on slope and rock type. *Oregon's rules provide no stream buffer zones whatsoever for these types of streams*. This inconsistency has no scientific justification whatsoever. The rationale, quite frankly, is that it would cut too much into the profits of the timber industry to require such set-asides or that it is politically impossible to impose such limits in the face of timber industry lobbying pressure in the Legislature.

The end result of the nearly total lack of protection for upper watershed intermittent streams under Oregon's new riparian rules is likely to be further impoverishment of the nutrient base for larger fish-bearing streams, increased erosion and landslides in upper watershed areas which will tend to increase sediment burdens for the entire watershed system, increased water temperatures in key upper watershed salmonid spawning areas, and major changes in hydrology of the upper watershed system, since over time these streams will have less and less organic debris in them to provide filtering and slowing processes for water flows as well as other critical biological functions.

3. Larger clearcuts as the cost of stream protection under Oregon's rules: Another provision of Oregon's new rules is that they allow the use of in-stream leave trees in credit for compliance with upland leave trees within clearcuts. The Oregon Forest Practices Act requires (effective as of July 1, 1995) that a certain number of trees and snags be left within clearcuts exceeding 10 acres (ORS 527.740(5)). The intent of this legislation was to help create snags and larger trees well distributed over the landscape to help preserve crucial habitat for a number of bird species.

The new Oregon Riparian Rules, however, contain the following language:

> "OAR 629-57-2250((6J)(c): Operators are encouraged whenever possible to retain understory vegetation, non-merchantable trees, and leave trees required within clearcuts [citation to statute] along all other small Type N streams within harvest units."

The Riparian Rules thus allow for "double counting" of leave trees, i.e., a tree required to be left in the riparian area under one rule could also be counted toward clearcut leave tree requirements -- the same tree serving in the place of two trees in different locations.

This policy will result in clearcuts with far fewer leave trees actually distributed within them, and thus more overall forest fragmentation, as the price to be paid for riparian shade. The landscape would thus tend to become composed of riparian green strips, with most upland areas of the forest recently clearcut with few if any trees retained in those clearcut areas. A landscape that is simplified to be a strip of forest along the riparian zone but completely cleared elsewhere is likely to be inadequate for protection of salmon production in the long-term. However, this is precisely what such a double counting as allowed under the current riparian protection rules will lead towards.

An additional problem is that the FPA's riparian rules do not take into account impacts on riparian areas which originate in the upslope areas, such as landslides and erosion factors. The current Oregon rules extensive clearcutting of unstable soils in upland areas which will lead to greater erosion as well as hydrological changes, all of which can be detrimental to aquatic ecosystems in so-called "protected areas." Under the Option 9 approach, these impacts would be assessed as part of an overall and extensive watershed analysis. Under the Oregon Rules, there will be no such analysis, and in effect the riparian zone will be considered as biologically disconnected in any way from what goes on in upland areas. This artificial distinction cannot be made in the real world where the entire watershed acts synergistically on riparian areas.

4. Slope measurement system in the Oregon rules will provide less protection in steeper slope areas requiring

greater protection to prevent erosion: The Oregon rules provide that in most instances the riparian areas are to be measured by the *slope* distance, rather than the horizontal distance. [7] The steeper the slope, in other words, the smaller the riparian zone in actual *horizontal* distance for the same slope distance. Those slopes needing more protection need less.

[7] OAR 629-57-2200 sets forth the procedures for measuring the riparian zones. These measurements will be based on slope distance except on actual rock talus or exposed high slope soil, with the remainder measured as slope.

Yet it is the steeper slopes which require the greatest protection, not *vice versa*. It should therefore be the horizontal distance which is used to measure the width of the riparian protection areas, since the horizontal measure is self-adjusting for slope (i.e., steeper slopes would automatically have wider riparian zones (measured by slope) under a horizontal measure rule). A horizontal measure of riparian buffer zones would thus afford the greatest protection to the very steepest slopes which are at the greatest risk of land failure and erosion.

The current rule of slope measurement will tend toward a landscape where the steeper, upper watershed areas (usually associated with the steeper slopes) will have the smallest degree of protection, and thus be more prone to mass failures and erosion. Again, this rule was adopted for political reasons under pressure from the timber industry, without any scientific basis.

Under Option 9, federal managers will also be using a slope measurement system. However, federal managers have the option of increasing riparian zone sizes under such conditions as high erosion potential or landslides, based on the results of watershed analysis. The Oregon rules allow no such discretion, regardless of how meritorious the case for additional zone width may be.

Coupling this fact with the lack of riparian zones for many smaller or intermittent streams under the Oregon Rules, it is clear that Oregon's riparian protection rules will do little to prevent massive landslides in the highest erosion potential sites within the upper watershed.

5. Private land logging road system -- erosion contribution: Clearly one of the most serious impacts on stream systems caused by forestry practices is the widespread logging road and skid trail system throughout private and public timberlands. I have gone into some detail on these issues above. Suffice to say that the existing method of mapping, monitoring and maintaining these roads is seriously deficient. This is probably not the fault of the Department of Forestry nor the State Forester (although there is certainly more that could be done), but of the weakness of the regulatory structure itself as well as a serious underfunding of the agencies responsible for enforcement.

6. Clearcutting impacts on forest ecosystem health and hydrology: The timber harvest practice of choice in Oregon is clearcutting. The original philosophy behind clearcutting was that it would mimic natural fire processes. However, in the light of much better knowledge from decades of forest ecosystem research, it is clear that there are major differences between clearcutting and natural fire conditions and that they are not biologically equivalent. Clearcutting, among other things, changes the basic hydrological regimen through road construction and removal of filtering vegetation, heavily disturbs soil through heavy equipment operations, removes trees and snags that might otherwise survive all but the hottest fires, and removes nutrients from the soil which would otherwise remain in the form of burned wood. Over time, clearcutting would likely adversely impact soil fertility as well as stability by removal of soil micronutrients.

Clearcutting is a major part of modern industrial forestry practices which tend toward monocropping, which in turn results in much reduced biological diversity in our forests. In many areas, the original diverse mixture of tree species has now been supplanted by "tree farms" dedicated to one tree commercial species, often of the same genetic characteristics. This has inevitably led to an impoverishment of local wildlife diversity, and this has also in turn had impacts on aquatic ecosystems. In some instances these industrial practices -- such as the widespread introduction of non-native but commercially valuable tree species in arid forests east of the Cascades -- have had major impacts on overall forest health, including fuel buildup and fire hazards. Overall resistance of a forested area to pathogens and pests is greatly reduced if the trees replanted in a clearcut are all of one species. A perfect example of this is the recent spruce budworm outbreak throughout much of the area east of the Cascades. In many areas, spruce are non-native and poorly adapted for these dryer climate conditions. During the recent drought, these trees were already highly stressed and thus easy prey for spruce budworm.

While it is true that fires were a part of the natural variation of forest ecosystems, from what data I have seen, the prevalence of clearcutting is many times greater than natural fire conditions in times prior to settlement. The impacts on aquatic ecosystem are also likely to be proportionally greater as well. Better analysis of the magnitude of forest disturbance due to timber harvests, as compared to historic baselines, should be part of your final analysis. Is, in fact, the current rate of timber harvest on nonfederal lands sustainable over the long term? There are no rules in place in Oregon which govern the rate of timber harvest on private lands -- these are governed only by what the market will bear.

In short, one can say with some justification that the new Oregon Riparian Rules are in improvement over past practices, but only because past practices were so poor. There is little justification for deeming them "adequate" to promote true recovery of most salmon species over time, particularly for species highly dependent upon upper watershed conditions (such as coho). Certainly Oregon's current standards are grossly inadequate as compared to FEMAT Option 9 standards now in place on federal lands.

7. Substantive due process problems and lack of meaningful Board of Forestry appeal rights for affected landowners or public interests. There is no effective right of appeal to the Board of Forestry for any timber harvest operation. Unlike California and other states, timber harvests in Oregon are done by mere *notice* and not by *permit*. The distinction is a vitally important one under the law. Since there is no state *permit* being issued, the public's (and the agency's) rights of review and appeal are extremely limited.

Notice to the public of a proposed timber operation is extremely limited, occurs only to those specifically requesting that information, and the public comment period for any timber operation closes within a very short 14 calendar days of the filing of the original notice with the State Forester. As a practical matter, processing time at the State Forester's office and mailing delays take up about a week of this time. Effectively the public would have *at best only about 7 days of notice* before the close of the public comment period on a timber harvest plan, *when such notice is given at all*. Notice is rare because in most cases the public actually has *no* right of notice.

Actual notice is rare because the notification statute itself says (ORS 527.670(9)) that:

> "Notwithstanding the provisions of this subsection, the State Forester may waive any waiting period for operations not requiring a written plan...except those involving aerial application of chemicals."

Public notice of any sort is thus routinely waived because very few timber operations actually require a written plan. Most timber operations are done solely based on the first written notice and the assumption that those rules in place will be followed. As a practical matter actual public notice is already rare, and the policy at the Department is to cut down expenses of the notification program in times of budget crunch by simply doing fewer of them.

The fact that no timber harvest operation has ever been appealed by members of the public to the Board of Forestry is often used as evidence that Oregon's rules are effective. The real reason no one has appealed such a plan is that the appeals process itself is extremely draconian. In order to appeal a timber harvest plan (ORS 527.700) a citizen must (1) fulfill stringent "standing" requirements by having commented on the proposed plan originally (impossible for the majority of operations since for most no written plan or notice exists -- a classic "Catch 22" situation); (2) post a *minimum* bond or surety of $15,000 or more, with costs determined by "the damages potentially resulting from the stay" with no upper limited specified; (3) comply with stringent time requirements for presenting the case to the Board of Forestry; and must (4) pay the costs and attorney's fees of the timber operator(s) if the appeal fails. (If the timber operator loses the appeal, however, the State of Oregon pays the costs and attorney's fees of the citizen who appealed, not the timber operator.) The appeal would be heard, finally, by a Board of Forestry which is widely perceived to be highly sympathetic to (and frequently dominated by) timber interests.

Losing such an appeal could cost a small fortune. It is hardly surprising no one has chosen to appeal any of them. The end result is that the public's right to appeal timber harvest plans or to point out in public forums the deficiencies of such plans is effectively non-existent.

(D) Little or no regulation of farming and grazing practices statewide. There has never been anything

like an "agricultural Practices Act" similar to the Forest Practices Act which regulates forestry practices on private lands. Even California regulates private grazing practices through its Board of Forestry. No such regulatory authority exists in Oregon, and agricultural practices (including riparian grazing, wetlands draining and many other actions that affect fish) remain largely unregulated in this state. A number of statutes also specifically exempt agricultural practices from regulation. A typical example is ORS 196.810 requiring fill and removal permits for operating in state waterways. Section (1)(b) of that statute in fact states:

> "Notwithstanding the permit requirements of this section and notwithstanding [other permit provisions cited] if any removal or fill activity is proposed in essential indigenous anadromous salmonid habitat, **except for those activities customarily associated with agriculture**, a permit is required." (Emphasis added)

Oregon's laws are riddled with various exceptions and exemptions carved out specifically for agricultural interests from watershed protection and water pollution laws. Many other examples could be found as well. What few laws do regulate agricultural practices also need to be better enforced. It is disturbing that the Department of Agriculture in its approach to the CSRI puts so little emphasis on enforcement of those laws now on the books. The unevenness of the various agency commitments to this process and the tendency toward denial by some of those habitat users whose activities most affect salmon threatens to undercut what is otherwise a much needed and credible effort.

Issue 9 -- Monitoring programs and enforcement: Scientifically credible and comprehensive monitoring programs are essential to the success of this program. So also is compliance monitoring of the agencies themselves, both internally as well an independent monitoring and auditing program to determine how well the agencies keep their commitments and *enforce those laws which currently exist*. A clear baseline for all protections is to enforce those laws now on the books. The records of several agencies on the issue of enforcement are spotty -- improvement is certainly needed in many areas.

Thank you for the opportunity to help improve the CSRI Plan. We look forward to working with you and with the Governor to see that the CSRI is fully funded, fully implemented and achieves its long-term goals for the benefit of all Oregonians.

Sincerely,

Glen Spain
Northwest Regional Director
Pacific Coast Federation of
Fishermen's Association *and for*
Institute for Fisheries Resources

Enc: "Toxic Waters" report

TOXIC WATER

A Report on the Adverse Effects
of Pesticides on Pacific Coho Salmon
and the Prevalence of Pesticides in Coho Habitat

by Norma Grier, Erik Clough and Anna Clewell

December, 1994

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Credits:

This report was written by the Northwest Coalition for Alternatives to Pesticides (NCAP). The idea for the report was conceived by a working group of primarily Oregon Coast Range residents who have met over the past year to share concerns and strategies for addressing the pervasive problems of pesticide use in forestry. Members from the following organizations have been instrumental in preparing this report: Forest Matters, Lincoln County Watershed Watch, and Oregon Coast Range Association. Invaluable assitance with research and editing came from Jane Helrich, Ray Kinney, Ray Nolan, and William M. Gates.

NCAP is a 17-year old, five state regional membership organization whose mission is to promote sustainable resource management, prevention of pest problems, use of alternaives to pesticides, and the right to be free from pesticide exposure.

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TOXIC WATER

A Report on the Adverse Effects of Pesticides on Pacific Coho Salmon and the Prevalence of Pesticides in Coho Habitat

Northwest public agencies, political and community leaders, and numerous residents are now discussing protection and possible Endangered Species Act listing of the Pacific coho salmon (*Oncorhynchus kisutch*). While many organizations and individuals have contributed needed information to this important discussion, none has focused on the potential toxic effects of pesticides on coho in the region's water. ***Toxic Water*** (a) documents these issues, (b) explains what is known and not known about pesticide residues in the region's surface waters, and (c) makes recommendations regarding these topics for coho protection and restoration.

The issue of pesticides in water must be included in plans to restore indigenous coho salmon populations. In the past two years, a number of reports and Endangered Species Act petitions specific to the Pacific coho have been prepared for the National Marine Fisheries Service (NMFS) and others. These documents have identified several causal conditions contributing to coho population decline and extinctions, including loss and fragmentation of historic population ranges, failure of artificial propagation techniques to restore locally depleted coho runs, deterioration of freshwater habitat, deterioration of ocean water habitat and marine food webs, overfishing, interspecific hybridization, and inadequacy of existing regulatory mechanisms.

Toxic Water is written to document the adverse effects of pesticides and show how commonly pesticide residues are detected throughout Pacific coho habitat. Much of the evidence of concern that is presented in ***Toxic Water*** is drawn from research experiments and monitoring of pesticides used in forestry. However, agricultural and urban and suburban pesticide uses must also be considered because these uses also contaminate watersheds for coho habitat. Additionally, while many of the studies cited in these comments pertain to direct effects on coho, the important effects of pesticides on the flora and fauna that constitute the coho's habitat and food supply deserve detailed attention.

Toxic Water is not an exhaustive treatise on pesticides and coho salmon. Rather, selected studies are used to illustrate key points that deserve attention. The information presented supports the document's recommendations.

I. How Pesticides Affect Fish

Pesticides are biocides designed to kill or otherwise harm living organisms; they include insecticides, fungicides, herbicides, and rodenticides. "Pesticides are perhaps the only toxic substance purposefully applied to the environment," wrote the National Academy of Sciences in a recent report. (National Research Council 1993)

Pesticides affect coho (and other fish species) both directly and indirectly. Fish can be exposed to pesticides in a manner that is acute (short-term) or chronic (over a prolonged period). Pesticide's toxic effects on fish can be acute (having relatively rapid onset of either mild or severe symptoms that result in short-term, long-term or permanent damage) and/or chronic (symptoms or disorders that continue for an extended period of time).

Direct toxic effects can kill fish. Sub-lethal exposure to pesticides can affect fish directly resulting in reduced reproduction and survivability. (Symons 1973, Johansen 1990) Habitat deterioration directly linked to pesticide use can also cause indirect effects resulting in mortality of weakened coho populations.

A. Direct, Lethal Effects of Pesticides

Most pesticides are toxic to aquatic organisms at some level of exposure. Tests using coho salmon and other fish species can determine what amount of exposure to a specific pesticide kills fish. These acute toxicity experimental results are presented as a concentration (e.g., milligrams of pesticide per liter of water, or mg/L) at which half of the experimental fish population dies (LC_{50}, or lethal concentration for 50 percent of the fish).

Results from these types of acute toxicity studies show high inter-study and intra-study variability. For example, acute toxicities of the herbicide Roundup ranged from a LC_{50} of 2.3 mg/L for fathead minnows to a LC_{50} of 134 mg/L for channel catfish. (Folmar 1979) Published LC_{50} values for Roundup on rainbow trout varied by a factor of thirty. (Servizi 1987)

Even the most conservative studies of LC_{50} values may be inappropriate data on which to determine water quality standards which are relevant to endangered coho salmon populations. This is because the lethal concentration that kills the first fish (not the amount that kills half of the fish in the population) is what would be strategic information for endangered species protection.

In proposing water quality criteria for the states of Oregon and Washington, researchers from Oregon State University have used LC_{50} values from various scientific studies and applied safety factors to arrive at surface water concentrations of a particular toxin which are not to be exceeded. In the proposal of these water quality criteria the authors state, "For non-human life forms, protection of populations of organisms rather than the protection of each individual is the usual strategy, except when rare or endangered species are involved." (Norris 1991)

Therefore, when pesticides are used in forest and other settings the highest standards must be applied when considering threatened or endangered species. Regulatory agencies have yet to propose these standards. Under the Endangered Species Act, death due to pesticide poisoning could be considered a "taking."

Age can greatly affect the response of fish to toxic exposures, with juvenile fish often being more susceptible than adults to a pesticide's toxic effects. In one study, juvenile fish were more susceptible to the herbicide Roundup than adult fish. (Folmar 1979) Since coho salmon are born and spend the juvenile stage of life in fresh water, consideration of this increased vulnerability is important.

Some studies are not entirely applicable to coho as they develop in their natural environment. In one study using the herbicide dicamba, no effects on yearling coho salmon were observed at concentrations up to 100 parts per

million (ppm). However, yearling coho were killed by much smaller doses as low as 0.25 ppm during a seawater challenge test that simulated their migration from rivers to the ocean. (Lorz 1979)

Different formulations of a pesticide can affect its toxicity. For example, the propylene glycol butyl ether ester formulation of the herbicide 2,4-D was more toxic to experimental fish than a butoxyethanol ester formulation. (Finlayson 1985) Similarly, the ester formulation of triclopyr (Garlon 4) is 167 times more toxic to fish than the amine triclopyr formulation (Garlon 3A). (Norris 1991)

Any analysis of the impact of pesticides on coho populations must include full consideration of both the "inert" ingredients in pesticide products and adjuvants. Pesticides products contain two types of ingredients. "Active" ingredients are identified by name on product labels and are in formulations to perform the intended function of the product (e.g., kill insects, desicate plants). "Inert" ingredients are all other compounds in pesticide products, and they are not necessarily biologically, chemically or toxicologically inert. These ingredients which may not have been tested in any way for toxicity to human or non-human organisms. "Inerts" include solvents, surfactants, emulsifiers, preservatives, and propellants. Generally, "inerts" are not identified by name on product labels, and pesticide manufacturers and formulators consider them to be a trade secret. At times and upon request, manufacturers may publicly disclose the identify of "inerts."

Adjuvants are products intentionally mixed with pesticide products at the time pesticides are prepared for application. Adjuvants perform various functions including retarding pesticide degradation by ultraviolet light or allowing dissimilar pesticides to mix together in a tank. Many of the ingredients in adjuvants are also trade secret.

Most research studies do not consider pesticides as they are actually used in the environment. Usually only the pesticide active ingredient is studied, rather than the full formulation or formulations in combination. Public agency personnel or pesticide users often do not know the identity of all the ingredients in pesticide products and cannot consider the harm that may occur from the use of a certain product.

It is well known that glyphosate, the active ingredient in Roundup and Rodeo, is not the ingredient most toxic to fish that is present in the formulations that are applied in the field. (Wan 1989, Servizi 1987, Mitchell 1987) An adjuvant which was used in conjunction with an herbicide containing dicamba and 2,4-D was responsible for a fish kill in Douglas County, Oregon. (PARC 1991-92)

B. Direct, Sub-Lethal Effects of Pesticides

Coho mortality due to pesticide exposure is a significant concern. However, the sub-lethal effects of the many pesticides applied in watersheds are perhaps more important to the coho's survival as a species. Most likely, these sub-lethal effects are both insidious and widespread.

As the following studies show, sub-lethal exposures of a variety of pesticides have deleterious effects on salmon. While not all these studies were conducted using coho salmon as the experimental animal (trout was the species studied in some instances), there is direct applicability to the current concern for coho.

In one study of juvenile coho, the herbicide triclopyr caused behavioral changes such as reduced predator avoidance and downstream drift. Such sub-lethal effects could threaten survival. This same study noted that, as the recommended application rate of 2.5 kilograms per hectare with an overspray of side channels, concentrations of this herbicide could cause behavior changes and lead to mortality. (Johansen 1990)

Another study with juvenile coho found hypersensitive reactions to stimuli and increased respiration. These behavioral effects were noted as concentrations of the triclopyr ester formulation that were less than 0.1 milligrams per liter (mg/L). This concentration is 20 percent of the LC_{50} value. (Janz 1991)

The extensive, and often cited, field study at Carnation Creek, British Columbia found several different effects. In addition to direct mortality of coho salmon due to waterway overspray of Roundup (glyphosate), the coho catch

(of food prey) per unit of effort (CPUE) declined after the herbicide application. The study also looked at whether fish were less likely to enter a tributary after it had been sprayed (when compared with data collected for three years pre-spray) and whether fish were more likely to leave the tributary. For two years after the spraying, there was a decline in coho returning to one of the two sprayed tributaries, and this was accompanied by an increase in fish (coho) leaving the tributary. (Holtby 1987)

In a study of sub-lethal toxicity of six pesticides (carbaryl, chlordane, 2,4-D, DEF, methyl parathion, and pentachlorophenol) to rainbow trout (*Oncorhynchus mykiss*), several parameters of behavior were adversely affected and, in most cases, showed a dose-related response. This study found that exposure to the tested pesticides significantly reduced the trout's survival from predation, and behavioral changes were evident within 96-hours of exposure even when contamination concentrations were below EPA-established ambient water quality standards. The study indicated that "carbaryl...impaired fish behavior at concentrations that might be expected to occur in the environment." (Little 1990)

A Canadian study of stress response of sockeye salmon (*Oncorhynchus nerka*) to sub-lethal exposures of the butoxyethyl ester (BEE) of 2,4-D found a clear stress response by the sockeye fry, as indicated by interrenal hypertrophy (kidney dysfunction) at exposure as low as 0.3 mg/L. The study's summary states, "The recommended dose for 2,4-D application (nominal concentration) to control aquatic weeds is 1 to 5 mg/L. Thus, the degree of safety for sockeye exposed to BEE 2,4-D in terms of either concentration of herbicide or duration of exposure appears to be marginal." (McBridge 1981)

Another Canadian study says the 96-hour no effect level (survival) for coho salmon fingerlings was less than 1 mg/L for BEE 2,4-D, and a 27 percent fry mortality occurred after this 96-hour exposure. (Meehan 1974)

In a Canadian study, young Atlantic salmon (*Salmo salar*) were exposed to 1 part per million (1 ppm; 1 mg/L) of the insecticide fenitrothion for 16 to 16 hours. The exposure caused a 50 percent decrease in the number holding territories six days after treatment, and territories were not reclaimed for two to three weeks after exposure. At 0.1 ppm, there was a 20 percent decrease in the number holding territories. The same study looked at young salmon force fed mealworms injected with fenitrothion. Although the fish regurgitated 50 percent of the mealworms after ingesting them, all fish ingesting the mealworms had lowered escape response. (Symons 1973)

A second study with juvenile Atlantic salmon (*Salmo salar*) found that very low levels of exposure to fenitrothion affected foraging behavior. Concentrations as low as 0.02 micrograms per liter (ug/L) for the active ingredient (technical grade) and 0.08 ug/L for the fenitrothion product formulation (operational grade) caused significant decreases in the salmon's attack sequence. Concentrations as low as 0.005 ug/L for technical grade and 0.04 operational fenitrothion produced significant decrease in the salmon's reaction distance to prey. Concentrations of 0.05 technical grade and 0.08 operational fenitrothion decreased the number of ingestions made by the fish. (Morgan 1990)

A third study with fenitrothion found the exposed yearling Atlantic salmon (*Salmo salar*) were more vulnerable to predation by large brook trout than unexposed salmon. (Hatfield 1972)

A fourth study with fenitrothion found juvenile coho stopped all behaviors involving locomotion after two hours of exposure at concentrations of 0.04 ppm, and the fish displayed signs of stress. Feeding was depressed at concentrations as low as 0.1 ppm, and the study found decreased feeding persisting even in the presence of large amounts of uncontaminated food. (Bull 1974)

Research on the sublethal effects of pesticides indicates that coho can be harmed at much lower levels of exposure than the concentration levels needed to kill fish.

C. Indirect Effects of Pesticides

The use of pesticides in anadromous fish watersheds raises important questions about subtle adverse effects such exogenous chemicals have on the fish via effects on their aquatic habitat. These indirect effects can seriously

weaken coho.

Scant research has been done to look at these kinds of ecosystem effects on organisms, much less on coho. Research done in the Carnation Creek watershed in British Columbia found lack of shade over a stream due to riparian vegetation being killed by herbicides. This increases water temperature which adversely affects coho. (Holtby 1987)

Herbivorous aquatic insect populations can be reduced when herbicides like atrazone kill aquatic vegetation. In one study with concentrations of atrazine at 20 ug/L, the loss of herbivorous aquatic insects ultimately affected both the food supply and reproductive success of bluegill fish that prey on these kinds of aquatic insects for their food source. (Kettle 1987)

In general, scientists are not very good at predicting the ecological effects a pesticide may have. These ecological impacts could harm a species needing protection, like coho. For example, a Minnesota study designed to test for aquatic ecosystem effects measured the effects of the insecticide chlorpyrifos on aquatic organisms. Based on known LC_{50} values for various aquatic organisms, researchers predicted that nine organisms were likely to be affected by a concentration of 0.5 ug/L of chlorpyrifos. In fact, 19 of the 48 species were adversely affected, a much greater percentage of organisms in the ecosystems. (Voshell 1989)

While indirect effects of pesticides have a great potential to harm coho, current scientific knowledge and prediction for these types of effects are so crude that meaningful evaluation may not be possible.

II. Pesticide Residues are Widespread in Coho Habitat

An alarming number of streams in Pacific coho habitat are regularly contaminated with pesticides that are applied using routine practices. The source of contamination originates with both agricultural and on-agricultural applications of pesticides.

In 1989 and 1990, the Oregon Department of Forestry (ODF), evaluated forest streams for herbicide contamination to determine whether its forest practice chemical rules were effective at protecting aquatic habitat. The study included 52 samples, of which 17.3 percent were contaminated. These monitoring samples were all taken within the first 24 hours of herbicide application. (ODF 1992)

Monitoring results from California indicated a much higher percentage of contamination when samples were taken at times beyond the first 24 hours after application. The California North Coast Regional Water Quality Control Board samples surface water to evaluate the extent of contamination that resulted from aerial forest herbicide spraying. This agency took samples both immediately after application and after any significant storm run off within 30 days of the treatment. Its results show how frequently storm run off transported pesticide residues into surface water. Of 165 samples taken in 1991, 26 percent were contaminated with an herbicide. Of the samples taken within 24 hours after application, eight percent were contaminated, while 38 percent were contaminated after the first significant storm run off, an almost five-fold increase. The agency's report states that these results have been consistent over several years. (Greene 1992)

Samples from the Amazon Creek in Eugene, Oregon were taken in September of 1990 to determine the amount of various pollutants, including pesticides, that contaminate the Amazon Basin. According to the study report, 42 percent of the herbicide and insecticide samples were positive. Of the eight samples taken for 2,4-D, six were positive. Of the eight taken for diazinon, five were positive. (Rinella 1993)

A. Regulatory Agencies May Not Know What Pesticides Are Used in Coho Habitat

A major problem is the lack of information about what pesticides are used in the watersheds that comprise the habitat for coho. With the exception of the State of California, not only is there lack of reporting of pesticide use to public agencies, but throughout coho habitat, users are not necessarily required to even keep complete records of the pesticides they use.

The 1990 Farm Bill required all users of pesticides that are classified as "restricted use" (e.g., those likely to contaminate ground water or having high acute toxicity) to keep use records for a three year period. There is no reporting required, only recordkeeping.

The U.S. Department of Agricultural Statistics Service, Agricultural Statistics Board annually collects on-farm agricultural chemical use information for selected crops in selected states to support the evaluation of water quality and food safety issues. For example, the 1993 field crop survey included pesticide use data for corn, cotton, fall potatoes, soybeans, and winter, durum and spring wheat. The only applicable statistics were those for potatoes and winter wheat. (USDA 1994) USDA's statistics on pesticide use are conducted with quality survey methodology, but they are limited in scope and applicability.

State-generated data on pesticide use information is paltry also. Only the state of California has a comprehensive pesticide use reporting system. In California, the use of all agricultural and commercially-applied pesticides is reported to the county agriculture commissioner. Counties compile this data and report it to the state. Specific information is available statewide by location and by crop for the lion's share of pesticides used. (California Department of Pesticide Regulation 1994)

According to Washington state law, recordkeeping is required of all agricultural pesticide use, but no reporting. Idaho has no state reporting requirements established. Oregon requires commercial applicators to maintain records that are only accessible on demand to the state, but no state reporting is required. Oregon Extension Service has made estimates of pesticide use, the last time in 1987, by surveying extension agents and pesticide dealers. (Rinehold 1989)

The federal government has inventoried 35 commonly-applied agricultural pesticides to assess use patterns in coastal zones of the United States. According to the government, almost 60,000 pounds of the insecticide carbaryl were used in Pacific coastal coho habitat in 1987. In the same year in the Columbia River estuarine drainage area, an estimated over 16,000 pounds of 2,4-D were used. Along the entire Pacific Coast coho habitat, over 150,000 pounds of 2,4-D were applied. Almost 1.3 million pounds of the 35 inventoried pesticides, an average of 0.43 pounds per acre of total crop land, were applied to Pacific Coast estuarine drainage areas inn 1987. (Pait 1992)

There is a great need to establish comprehensive use data through state and/or federal reporting mechanisms. Quality coho protection and restoration plans cannot be developed without this vital information.

B. Residue Levels Detected in Coho Habitat Are Capable of Damage

While monitoring data are scarce, evidence from surface water residue samples shows that damaging pesticide residue levels are present in Pacific coho salmon habitats. These residue levels are capable of harming the physiology and behavior of the coho because either (a) similar levels have caused harm in laboratory experiments or field studies or (b) they have been identified as levels of concern by regulatory agencies.

In the spring of 1991, a Christmas tree plantation in Washington was aerially sprayed with the insecticide Metasystox-R and the fungicide chlorothalonil for pest-control. The Washington Department of Ecology (WDOE) took twenty-six samples from Foster Creek, a stream that traverses across the spray site. Ten of those post-spray samples had concentrations of Metasystrox-R ranging from 2l.4 to 4.1 ug/L. All 26 of the samples had detectable concentrations between 0.01 and 1.72 ug/L of chlorothalonil. The Water Quality Criteria used by WDOE states that levels should not exceed 0.4 ug/L for Metasystox-R and 1.0 ug/L for chlorothalonil. (Rashin 1993)

Water quality criteria concentration level were exceeded for both pesticides. Harm to fish could have resulted. Metasystox-R (common name oxydemeton-methyl) is devastating to aquatic organisms (EPA 1987), and chlorothalonil is highly toxic to fish. (Ernest 1991)

Samples from the previously mentioned 1990 Amazon Creek study in Eugene, Oregon had five positive detections of the eight diazinon samples taken. According to the report's authors, these diazinon concentrations "exceeded the

1972 National Academy of Sciences maximum concentration of 0.009 ug/L recommended for the protection of freshwater aquatic life." (Rinella 1993)

On occasion, streams are mistakenly oversprayed, especially during aerial applications. Several research experiments have been done to determine the consequences these mistakes may have on the ecosystem. In coho habitat, contamination levels were detected that exceeded the Water Quality Criteria used by WDOE as follows:

> "Feng et. al. (1989) found levels up to 162 ug/L of glyphosate in a small oversprayed stream within two hours of application, and levels of 37 ug/L 16 hours post application. The first post spray runoff event resulted in stream levels of 109 ug/L. In a study of the fate of glyphosate in Oregon following forest application, Newton et. al. (1984) found a peak concentration of 270 ug/L in an oversprayed stream." (Rashin, 1993)

The Water Quality Criteria for glyphosate used by Washington Department of Ecology is 65 ug/L (instantaneous concentration). Concentrations in both locations exceeded this level when streams were directly oversprayed.

C. Improper Sampling Methods Are Likely to Miss Pesticide Detections

Adequate and appropriate testing for pesticide residues in coho habitat is not conducted currently. Some water sampling by regulatory agencies is conducted at times and in a manner that fails to document likely residue levels, therefore skewing the evidence. The concentration of pesticides traveling through or across soils into waterways often increases during significant rain storms. Testing for residues must be properly timed.

Sampling from California's monitoring is an excellent example of the need to look for contamination when an agency is most likely to detect residues. As mentioned previously, 26 percent of the 165 samples taken were contaminated with an herbicide. Of the samples taken within 24 hours after application, only eight percent were contaminated. In contrast, 38 percent of the samples taken after the first significant storm run off were contaminated. (Greene 1992)

As mentioned earlier, ODF found pesticides contaminating 17.3 percent of their samples taken within 24 hours of the spray treatment. When compared to the California agency's findings, it is clear the results of ODF's testing could have reached a much higher percentage of positive detections had ODF tested after the first significant storm runoff within 30 days of treatment. Since Oregon's testing for residue levels is conducted at a time that is unlikely to spot the greatest number of contaminated samples, ODF's conclusion is inappropriate that "none ofthe estimated 24-hour mean concentrations measured were at levels where they pose a risk to human health or aquatic life." (ODF 1992)

Conducting accurate tests within appropriate sampling periods is essential for coho protection. Contamination levels of pesticide residues must not reach lethal or sub-lethal levels.

D. Current Pesticide Application Practices Do Not Protect Streams from Contamination

Generally accepted practices of pesticide application have not been effective at keeping pesticides out of surface waters. In Washington for example, best management practices (BMPs) are implemented to keep pesticides out of untargeted places. BMPs include practices like providing buffer zones along streams, maintaining vegetation to intercept pesticides drifting directly into streams, and requiring maximum wind speed and other weather standards. Recent information shows these types of practices are only partially or are not effective at fulfilling the stream protection function.

An evaluation was done by Washington State Department of Ecology to determine the effectiveness of the BMPs. The Department determined that BMPs are only partially effective at meeting the agency's water quality standards (i.e., keeping residues below predetermined levels of contamination). BMPs were <u>not</u> effective at keeping pesticides out of stream protection buffers, and they failed to avoid off-target drift as required by EPA-approved labels. (Rashin 1993)

III. Summary and Recommendations

Coho salmon can be directly and indirectly affected by lethal or sublethal concentrations of pesticide residues in surface water. Pesticide residues are widespread in coho habitat. Some residue concentrations have been detected in Northwest surface waters that are capable of harming coho salmon. With the exception of California, regulatory agencies do not know what pesticides are used throughout the coho salmon range. The public does not know the identities of all the "inert" ingredients in pesticide and adjuvant products. Sampling for residues by regulatory agencies is not always conducted in periods most likely to detect residues and at the highest concentration levels that are likely to appear. Pesticide application practices that are routinely used to protect surface water from contamination are only partially or are not effective at keeping pesticides out of the streams.

Based on these findings, the following recommendations need to be adopted and implemented:

1. Prevent pesticide contamination of coho habitat by reducing or eliminating pesticide use. Alternative pest management approaches that do not depend on pesticide use in agricultural and non-agricultural settings are being successfully implemented throughout the Pacific Northwest and elsewhere. Much can be done to promote a major shift to non-chemical pest control, including training, technical aid, financial incentives and disincentives, pilot and demonstration programs, and informational exchange opportunities. All these methods enable users to reduce or eliminate their use of pesticides. Support for legislation at the federal (e.g., the 1995 Farm Bill) or at the state level can go far to establish innovative and quantitatively-meaningful pesticide use reduction programs. Administration opportunities must also not go ignored.

2. Establish "pesticide-free" zones in critical coho habitat. Adequate coho protection may not be possible in some areas without restricting use of pesticides.

3. Gain comprehensive pesticide use reporting in all states within coho habitat. Borrowing the California pesticide use reporting system as the template, government must establish state-level pesticide use reporting in Oregon, Washington and Idaho. Access to information about what pesticides are used within the coho's range will be instrumental in developing quality protection plans.

4. Take the secrets out of pesticides by requiring that pesticide and adjuvant product labels identify all ingredients in formulations. Public agencies need to request pesticide and adjuvant manufacturers and formulators to identify all ingredients in their products. Better yet, public agencies, pesticide users, and citizens must insist on amendments to the national pesticide law that require disclosure of all ingredients on product labels.

5 Improve sampling and monitoring methodology within coho habitat to increase testing and ensure tests are taken at times most likely to detect pesticide residues. Regulatory agencies must increase the number of samples taken to look for pesticide contamination in the watersheds that comprise coho habitat. In addition, California's sampling clearly shows that pesticide residues are more like to enter surface waters during significant storm runoff, rather than during the period immediately following pesticide treatment. Public agency sampling methodology must make adjustments to ensure that testing is likely to detect contamination.

5 Consider all the uncertainty about the potential effects of pesticides on coho when setting water quality standards. Water quality standards are set by regulatory agencies to permit how much pollution to tolerate. Contamination levels above these standards are deemed unacceptable. Basically, a standard-setting process asks how much pollution to accept, rather than asking how little can be generated. While the value of water quality standards is questionable, some government agencies are setting water quality standards for fish species. It is clear that juvenile fish succumb more easily to toxins in water, that laboratory studies do not mimic the natural life cycle of fish, and that little is known about the ecological damage caused by pesticides that can indirectly affect coho salmon. These factors must be considered in setting standards. In the face of this uncertainty, an emphasis on setting acceptable water quality standards for coho is probably not worth the effort. Much more can be gained by emphasizing how to eliminate the introduction of these toxic substances into the watersheds that comprise coho habitat.

Pacific coho salmon protection presents a unique challenge to the citizens of the Pacific Northwest and the United

States. The impact of pesticides residues on coho is just one aspect of what must be addressed in meeting this challenge. The cooperation of urban and rural dwellers alike will be integral to reversing the trends that have made the region's water so toxic that it threatens Pacific coho salmon. The greatest promise is in stopping the enormous volume of toxic pesticides intentionally and regularly added into the environment by foresters, farmers, homeowners, and government bodies. This must be part of the work ahead.

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NEW - 2/20/97

Return to top of page

ASSOCIATED OREGON LOGGERS, INC
1127 25th Street SE
Salem, OR 97309-0339
(503) 364-1330
FAX (503) 364-0836

November 1, 1996

Jim Martin

Salmon Plan Review
Capitol Building
Salem, OR 97310

Subject: Comment -- Draft Oregon Coastal Salmon Restoration Initiative Plan (CSRI)

Dear Jim:

I am writing to express support of the Governor's *draft* CSRI Plan to restore coastal salmon populations to productive levels and avoid an endangered listing. On behalf of over 800 Oregon logging and allied businesses, I urge the Governor's tenacious support of the draft CSRI, as proposed.

We are convinced that this cooperative, state-derived Plan is a superior option to restore salmon, exceeding recovery that could be expected under the federal listing process. I have followed Plan development closely, participated in the adhoc industry adivsory group for forestry measures, attended a public briefing, and I concur with the forestry measures put forth in the draft.

I am encouraged by the Governor's advocacy of salmon recovery through voluntary state-derived measures, and appalud his defense of Oregon's Forest Practice's Act as suitable basis for stream protection. Although indications are that NMFS may solicit additional forestry encumbrances on the state's draft CRSI, I urge the Governor to resist such attempts to threaten the balance struck in the draft.

We look forward to working together with the Governor's natural resources staff and Department of Forestry in forging a mutually agreeable CRSI that effectively restores productive salmon populations in the least burdensome manner.

Sincerely,

Rex Storm
Forest Policy Analyst

NEW - 2/20/97

Return to top of page

THE PORT OF BROOKINGS HARBOR, OREGON
PO Box 848
Brookings, OR 97415
(541) 469-2218
FAX (541) 469-0672

November 1, 1996

Coastal Salmon Restoration
and Production Task Force
Oregon Coastal Zone Management Assoc.
PO Box 1033
Newport, OR 97465

Dear Task Force:

The Port of Brookings Harbor believes that the success of a watershed council should be measured by the quantity and quality of water and health of the watershed/eco-system. The fish will be the benefactor and should not be used as the measure of success of the restoration program.

I am enclosing examples of appropriate measures for the watershed councils from the Rogue Valley of Government's (RVCOG) Draft Goals from their Draft Restoration Guide Document. RVCOG is assisting the Southwestern Oregon watershed councils in drafting an addendum to the Coastal Salmon Recovery Initiative (CSRI).

The Port of Brookings Harbor concurs with Mr. Martin's comments to the Task Force on hatchery production at the August 1996 Task Force Meeting.

The Port of Brookings Harbor agrees with the Task Force's concerns as outlined in the 10/29/96 memorandum, "Connecting Land Use Practices & Watershed Health", which states that watershed councils should not be placed in a regulatory position.

The Port of Brookings Harbor supports the "Methods to Improve the Implementation of Existing Regulatory System" from the CSRI.

Sincerely,

Russ Crabtree
Port Manager

RC/11

Enclosures

Limiting Factors	Goals	Planning Action
2. Low Stream Flow Vision: Stream flow will be maintained at adequate levels to support coho spawning and rearing	A. Maintain instream flows necessary for coho spawning and rearing.	2.A.1. Increase instream base flows during dry season 2.A.2. Increase dry season groundwater levels 2.A.3. Manage water withdrawals for maximum efficiency and conservation. 2.A.4. Encourage water rights transfers/leases for instream use. 2.A.5. Establish instream water rights

Limiting Factors	Goals	Planning Action
3. Riparian Quality Vision: Riparian zones will be maintained at a size and density to adequately protect and enhance instream conditions (in most cases - 150-300 ft. wide).	A. Maximize riparian size and density	3.A.1. Increase riparian zone size to a minimum size of 150-300 ft. 3.A.2. Increase the vegetation density and diversity of plant species. 3.A.3. Manage riparian vegetation for a multi-layered canopy. 3.A.4. Increase multi-channel stream courses. 3.A.5. Limit development intrusions within riparian zone. 3.A.6. Increase side-channel alcoves and refuges for coho spawning rearing.

Limiting Factors	Goals	Planning Action
1. Water temperature Vision: Water temperature will be ≤58F. throughout region as appropriate.	A. Maximize stream shading	1.A.1. Increase canopy cover 1.A.2. Increase riparian zone size and density 1.A.3. Manage riparian zone for multi-layered canopy
	B. Maximize stream complexity	1.B.1. Increase pool depth and quantity 1.B.2. Increase quantity of off-channel areas 1.B.3. Increase hiding cover
	C. Maintain instream flows at levels which support coho spawning and rearing.	1.C.1. Increase instream base flows during dry season 1.C.2. Increase dry season ground water levels.
	D. Eliminate higher temperature irrigation return flows	1.D.1. Decrease irrigation return flows 1.D.2. Monitor return flows and determine problem areas
	E. Address water temperature as a regional issue.	1.E.1. Monitor and address water temperature through inter-agency and community-wide cooperation.

August 13, 1996

Jim Martin, Governor's Salmon Advisor
Natural Resources, Rm 160
State Capitol
255 Capitol St. NE
Salem, OR 97310-0203

RE: Coastal Salmon Restoration Initiative

Dear Jim:

This letter is to request your consideration for including Oregon ports' involvement in a salmon restoration plan. We believe that Oregon ports have a special position among local governments for helping develop, support, and carry out restoration plan measures. This is because of the wide statutory authority given to these type of special districts in Oregon and the interest ports have in the long-term survival leading to future sustainable salmon fisheries.

Ports have many capabilities to participate in management within their district boundaries and may be uniquely qualified and motivated to be assigned future responsibilities. We would view this as an opportunity to proudly summarize our past participation in enhancement and conservation programs, and our involvement in making the highest and best use of production through harvesting and processing projects.

We envision this to be a brief report that represents all ports. The Oregon Coastal Zone Management Association, the Oregon Public Ports Association, and the Oregon Ports Advisory Committee will be used as coordinating bodies to review and adopt the report. This will assure you an accurate description of ports' past involvement and future potential for assigned responsibilities. It will have a secondary purpose as another avenue for raising local government awareness about the restoration plan.

We are willing to meet your salmon restoration plan submittal deadlines to federal agencies. We look forward to your reply about this opportunity.

Sincerely,

Russ Crabtree, Manager, Port of Brookings Harbor; Chairman, Coastal Ports Maintenance Dredging Committee, Oregon Coastal Zone Management Association

RC:kco

cc. Onno Husing, Executive Director, Oregon Coastal Zone Management Association
Ken Armstrong, Executive Director, Oregon Public Ports Association
Keith Leavitt, Manager, Ports Division, Oregon Economic Development Department

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NEW - 2/20/97

Return to top of page

City of Ashland
Office of the Mayor
Cathy Golden, Mayor
20 E. Main Street Ashland, OR 97520
(541) 482-3211

October 30, 1996

John A. Kitzhaber, M.D.
Governor
Salmon Plan Review
Capitol Building
Salem, OR 97310

Dear Governor Kitzhaber:

In response to your letter of September 11, 1996 with enclosures regarding the Coastal Salmon Restoration Initiative, my opinions are as follows:

First of all, I am impressed that you and your staff are addressing the salmon's declining stock and your efforts to try and solve this problem. I appreciate your need to balance the requirements of commercial fishermen and the coho. The Pacific Coast Federation of Fishermen's Associations themselves have indicated listing the coho would mean even heavier regulations and restrictions, yet they favor the coho to have an immediate and high degree of protection. Without this protection the coho is bound to become extinct. The PCFFA is highly restricted under the Magnuson Act and their feeling is that additional restrictions would not impact them anyway.

I have a high level of respect for the PCFFA, and I feel they are doing all they can to achieve a satisfactory solution to the salmon dilemma. It appears other groups may not be so readily willing to work together and not so motivated to protect the salmon habitat. Thus, I feel a listing of the coho salmon under the Endangered Species Act may be the only way to halt the destruction and regain a satisfactory balance to the coho and its threatened environment.

Thank you for your consideration.

Sincerely,

Catherine Golden
Mayor

NEW - 2/20/97

Return to top of page

Paul Burgess
Governors Natural Resources Office
Salem, Oregon

Dear Paula,

There seems to be some confusion about where the commercial fishing industry stands on the Governor's Coastal Salmon Restoration Initiative. I have been asked by members of the commercial fishing industry to provide you with the industry perspective on the GCSRI. This confusion may be a result of statements made by Glen Spain, a representative of Pacific Coast Federation of Fishermen Associations (PCFFA). This organization does not represent any Oregon commercial fishing associations. Although PCFFA does have environmental groups and sport fishing interests as members, to my knowledge there are no Oregon commercial fishing representatives on the Board of Directors or associations that are members. PCFFA has not been able to establish broad based support in the Oregon commercial fishing industry because of its position on T&E listing of Searun Cutthroat trout in the Umpqua and continued support for salmon and steelhead T&E listings, and most recently their failure to support the GCSRI, even though its offers a far more effective and timely response to declining anadromous fish stocks.

Commercial fishermen support the GCSRI 100% and fear any federal recovery plan would be too little too late, and will not go far enough to return economic viability to the salmon fisheries. The GCSRI identifies viable fisheries, along with other values of healthy salmon stocks as an important part of the recovery. This is one reason we support the plan. The voluntary, cooperative approach to restoring fish populations is another component of the GCSRI that draws commercial fishing industry support. After seeing ineffectual regulations applied to the fishing industry by the federal regulators there is abundant suspicion of federal management. The industry feels that local grass roots efforts will be more effective and easier for the industry to access than federal listing.

Although PCFFA shares common goals with Oregon commercial fishermen, the means to reach these goals are entirely different. We do not support confrontational, court driven solutions to this complicated problem. We want to keep local and state control, and avoid heavy federal regulation. We want a recovery that gets the fleet back on the water, not just a recovery to keep the fish off the Endangered species list. Please understand that the position that Mr. Spain and PCFFA have chosen on the GCSRI, does not represent the position of Oregon commercial fishermen.

Sincerely,

John Wilson for the Oregon Troll Fishing Industry.

NEW - 2/20/97

Return to top of page

COOS COUNTY BOARD OF COMMISSIONERS
Coos County Courthouse
Coquille, OR 97423
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FAX (541) 396-4861
TDD 1-800-735-2900

July 31, 1996

Paula Burgess
Governor's Resource Assistant
254 State Capital
Salem, OR 97310

Dear Paula:

Last night Paul Heikkila, Bob Laport and I attended a meeting in Roseburg where we heard National Marine Fisheries explain their listing of sea run Umpqua cutthroats and their proposal to list steelhead and coho along the Pacific Coast. We were encouraged because of their expressed commitment to work with private landowners, watershed associations and others. This allays our greatest fear that increasing regulations could hamper the cooperative efforts currently existing between watershed associations and landowners. I believe now we must be careful not to over react by increasing State regulations that might do the same. Coos County believes in continuing the cooperative bottoms up approach that has been attractive to national Marine Fisheries and that will accomplish the job in the long run. Please convey this information to the Salmon Strategy Committee this morning.

Thank you very much.

Sincerely,

Gordon Ross

CR/vdh

cc: Garth Griffin, National Marine Fisheries
Gil Riddel, Association of Oregon Counties
Jim Martin, Governor's Office

Return to top of page

Go to Peer Review:

- OSU
- American Fish Society
- Invited
- Federal Agencies
- Conservation/Environmental Group
- Public Comments
- Questionnaries

Go to home page

Modified February 20, 1997
Web Page Construction: Janet Demaris (503) 378-3397 x 234

PEER REVIEW 1996

COASTAL SALMON RESTORATION INITIATIVE

December, 1996

TABLE OF CONTENTS

- 2/20/97

CONSERVATION/ENVIRONMENTAL GROUP

Environmental Defense Fund
Rodney M. Fujita, Ph.D

Oregon Trout

Geoff Pampush, Executive Director

The Nature Conservancy

Dick Vander Schaaf, Public Lands Coordinator

Association of Northwest Steelheaders

Gary Benson, Co-President; Dennis VavRosky, Co-President

WaterWatch

Jeff Curtis, Executive Director

Fish Refuge Working Group

Guido R. Rahr, Asst Dir of Conservation; Shauna M. Whidden, Coordinator, FRWG

Siskiyou Project

Barbara Ullian, Siskiyou Project

Umpqua Watersheds, Inc.

Francis Eatherington

National Wildlife Federation

Peter M.K. Frost, Counsel

The Pacific Rivers Council

David Bayles, Senior Prog Dir; Mary Scurlock, Senior Policy Analyst

Salmon For All

Steve Fick, President

Umpqua Valley Audubon Society

Diana Wales, Vice-President

Pacific Fishery Management Council

Robert C. Fletcher, Chairman

Friends of The Nestucca

Les Helgeson, President

Sierra Club, Oregon Chapter

Jean Shaffer

Port of Gold Beach

Ron Armstrong, Port Manager

The Siuslaw Institute of Watershed Arts and Science, Inc.

Johnny Sundstrom, Coordinator

National Audubon Society

Paul Engelmeyer, NW Policy Analyst

Mid-Coast Watersheds Council

Fran Recht, Chair

Go to home page

NEW - 2/20/97

Jim Martin
Office of the Governor of Oregon
State Capitol Building
Salem, OR 97310

Dear Jim:

I write to transmit comments of the Environmental Defense Fund on the Governor's Coastal Salmon Restoration Initiative. EDF is very supportive of collaborative efforts by industry, environmentalists, and government to accommodate wise economic development with the protection of ecological integrity and biodiversity. We believe that the best approach to do so is to specify stringent, no-compromise ecological and biological goals -- the "biological bottom line" -- that define healthy ecosystems, and allow for flexible strategies to achieve those goals that are responsive to industry's prerogatives and needs.

Industry is good at designing cost-effective strategies to meet goals. Environmental groups and scientists are

good at defining ecological goals and vision. Accordingly, our comments on the CSRI focus on goal definition. We are particularly concerned about harvest escapement goals. Although harvest is not always the most important factor of salmon mortality, it can still have a substantial impact on salmon populations and must therefore be restricted to levels consistent with rebuilding wild salmon populations and ongoing habitat restoration efforts. The history of fisheries is fraught with examples of "jumping the gun" -- harvesting fish stocks before enough was known to ensure sustainable fishing levels, or resuming fishing on stocks before they had rebuilt sufficiently. Jumping the gun is harmful to both wild salmon and the fishing industry itself, because it impairs the restoration of the large, diverse salmon populations that will be necessary for supporting a sustainable fishery.

I will send under separate cover two reports I recently collaborated on that I think may be of interest to you or your colleagues. One describes ecological indicators of ecosystem health or integrity. The other reviews the technical literature on fish habitat restoration.

I hope these comments are useful. Please do not hesitate to contact me if you think I can be of assistance.

Sincerely,

Rodney M. Fujita, Ph.D
Marine Ecologist

COMMENTS OF THE ENVIRONMENTAL DEFENSE FUND
CONCERNING

THE COASTAL SALMON RESTORATION INITIATIVE

Rodney M. Fujita, Ph.D
Environmental Defense Fund, 5655 College Avenue, Oakland CA 94618
Tel: (510)658-8008 FAX: (510)658-0630 Email: rod@edf.org

December 5, 1996

GENERAL COMMENTS

Collaborative efforts by industry, government, and environmentalists will be essential for protecting and restoring wild salmon populations in Oregon. The fact that a large proportion of salmon habitat occurs on private land is one reason. Another is that salmon span very large areas and multiple jurisdictions. Restoration efforts must be vigorous and large scale to be effective; coastal salmon are in very poor shape indeed and have a long way to go toward the large, diverse populations that are needed to support environmental, recreational, quality-of-life, and commercial harvest interests.

The two keys to successful collaboration to protect and restore coastal salmon are: (1) stringent ecological and biological goals; and (2) flexible strategies to achieve those goals. The goals should not accommodate economic interests; they should be set scientifically. Flexible strategies, on the other hand, should be designed to reflect the ingenuity and concerns of industry, development interests, and private property owners. Flexibility puts a premium on defining rigorous, comprehensive ecological and biological goals that protect a full range of ecosystem structure, function, and biodiversity such that ecological integrity is protected and/or restored (see report on ecological indicators sent under separate cover). Goals should include connectivity and the restoration of physical processes that shape and maintain habitats, such as natural flow regimes (see report on aquatic habitat restoration sent under separate cover).

SPECIFIC COMMENTS

One of the most important ecological/biological goals pertinent to the restoration and protection of wild salmon is the harvest escapement goal. This goal directly affects the number of spawners that return each year, and hence, the potential for new recruitment and the recharging of freshwater habitats with ocean-derived nutrients and energy. **Because of the prime importance of escapement goals, they should be rigorously peer-reviewed and set conservatively.**

Current escapement goals are inadequate in two important ways. First, they are too highly aggregated, disguising underescapement by ecologically significant subpopulations.

Disaggregation of the Oregon Coastal Natural coho escapement goal should reflect coastal ESU's and indicator populations that would be subject to intense monitoring for freshwater survival and spawner density. Secondly, current escapement goals are based on achieving maximum sustainable yield, an inappropriate goal for rebuilding depressed populations. Furthermore, MSY is inherently risky - small errors in achieving target harvest rates can result in large depressions of recruitment. **Maximizing recruitment probability is a more appropriate goal for fisheries management of a depressed stock**. The OCN coho escapement goal should probably be around 390,000 instead of the current 200,000 so as to maximize recruitment. Another approach might be to attempt to fully seed available habitat, so as to increase the probability of rebuilding. The escapement required to fully seed the habitat may be on the order of about 405,000.

Escapement goals and harvest rate targets must be set conservatively for a number of reasons. First, there is error due to natural variability (unexplained changes in abundance). Second, there is scientific uncertainty about a number of relevant factors, including the differential effects of harvest on large, especially fecund fish. Third, ecological goals are not reflected in current escapement goals or population models, such as the need to replenish freshwater ecosystems with the ocean-derived nutrients and energy that salmon bring to them each year, or to provide forage for eagles, bears, and other predators. And fourth, it is difficult to accurately estimate actual fishing effort and harvest rates. Therefore, in order to ensure a high probability of achieving a 15% incidental mortality rate to protect OCN coho, managers should probably set an incidental harvest guideline of about 10%.

EDF is very concerned with the abundance levels that would trigger a return to a 35% harvest rate. First of all, it is unclear whether this harvest rate would be appropriate even after full rebuilding of the stock, because ocean productivity and freshwater survival are so variable. Escapement goals must be met every year, even if survival is low, sometimes necessitating a reduction in harvest rates. In any case, harvest rates should not increase until abundance is high enough to support higher harvest rates, given the escapement goals.

We urge you to include conservative escapement goals in the CSRI consistent with a high probability of rebuilding. The OCN coho are in very poor shape, and should be subjected to minimal mortality of any type, including mortality due to entrainment, poor habitat quality, poor water quality, or fishing while populations are rebuilding. To allow such mortality would undercut the goals of the CSRI and the possibility of a sustainable fishery in the future.

NEW - 2/20/97

Return to top of page

OREGON TROUT

To Protect and Restore Native Fish and their Ecosystems
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6 August 1996

Governor John Kitzhaber
Oregon State Capitol
Salem, Oregon 97301
Attn: Roy Hemmingway

Dear John,

Nearly every land owner and manager, plus a diverse array of persons interested in salmon, are eagerly anticipating the draft of your Coastal Salmon Restoration Initiative. It can and must succeed during your tenure as governor, if Oregon is to have a future with viable populations of salmon.

All salmon advocates will agree that the unprecedented level of salmon conservation activity in the region is potent and crucial to fueling political will. However many of us, including NMFS, retain some skepticism about the likelihood of success of locally-based, non-regulatory restoration efforts. While we agree that we must rekindle a dimming memory of salmon filled rivers and provide local communities the tools to understand and be successful in their conservation efforts, we must also provide guidance and oversight coordinated at the state or regional level.

In this spirit we offer the suggestion to **establish a Coastal Salmon Scientific Advisory Committee.** Some additional thoughts about a rationale, governance structure, and specific roles are contained in the attached proposal.

In discussing this notion with a number of individuals on varying sides of the salmon issue, we have found a high degree of receptivity. I would be pleased to give this idea additional definition if you thought it would be helpful.

Best regards,

Geoff Pampush
Executive Director

DRAFT DRAFT DRAFT DRAFT DRAFT (6 August 96)

PROPOSAL TO CHARTER AND CONVENE AND INDEPENDENT

COASTAL SALMON SCIENCE ADVISORY COMMITTEE

Summary: The CSSAC would be comprised of independent eminent scientists from within and outside the region with expertise in salmon. The committee would report to the governors of Oregon, California and Washington. The role of the committee would be to review state-based salmon recovery plans, review state and federal salmon grant programs, assist in critical review and development of ecological parameters for salmon maintenance and restoration, and conduct periodic progress reviews against state (local) based restoration plans.

Rationale: While the region's native fish heritage is slipping away, the affected parties are engaged in endless denial of guilt and reappropriation of blame. However, most parties desire to learn the facts and respond based on a better understanding of the science. While the traditional approach to at-risk species protection, i.e. top-

down, is unpopular at the local level, accumulative local decisions have led to the need to consider federal endangered species listings in the first place. The commission of an independent scientific advisory committee would have the following advantages:

- would result in the highest level scientific consensus on necessary watershed and salmon management outcomes for restoration of the salmon, steelhead and trout economies of the Northwest,
- would substantially reduce the interparty conflicts over "best available science",
- would be broadly acceptable to most of the affected parties, thus reducing legal and administrative challenges to recovery planning and implementation,
- would likely be more acceptable as guides and advisors to the local communities than the National Marine Fisheries Service or US Fish and Wildlife Service.

Governance and authority: The governors of Oregon, Washington and California would sign an MOA and decree by executive order the commission of the CSSAC. The role and authority of the CSSAC would be to:

- advise the governors of the three states,
- review state based salmon protection and restoration efforts for scientific rationale and credibility,
- conduct ongoing review of salmon management coastwide,
- establish biophysical standards and guidelines for salmon productivity and population rebuilding,
- establish monitoring protocols and evaluate state and local restoration plan implementation against restoration benchmarks,
- conduct programmatic review of state and federal grant and financial incentive programs for scientific justification and leveraging financial resources.

Relationship to NMFS: The CSSAC would be independent of NMFS as a publicly chartered body directly reportable to the governors. NMFS would not have supervisory authority and thus would be beneficiaries of the Committee's work as would the general public. Nevertheless, the published and printed reviews and other documents produced by the committee would serve as a scientific peer review of recovery planning and implementation and thus a basis for implementation by NMFS under the federal Endangered Species Act.

Funding: The Committee could be staffed by For Sake of the Salmon with additional necessary funding from federal and state partners. The CSSAC would be independent of 4SOS except that 4SOS staff would provide logistical support to the committee.

NEW - 2/20/97

Return to top of page

The Nature Conservancy of Oregon
821 SE 14th Avenue
Portland, Oregon 97214-2537
503 230-1221

October 29, 1996

Governor John Kitzhaber
Salmon Plan Review
Capitol Building
Salem, Oregon 97310

Dear Governor Kitzhaber:

The Nature Conservancy would like to take this opportunity to comment on the draft Oregon Coastal Salmon Restoration Initiative (OCSRI). As you are aware, the Conservancy is an international non-profit conservation organization dedicated to the preservation of biological diversity. In Oregon we manage 52 preserves covering

over 50,000 acres that provide critical habitat for a number of rare and threatened species including several sites which have spawning grounds for salmon and steelhead. The Conservancy has tracked the anadromous fisheries issues in the Pacific Northwest for many years and we have worked in the arenas where we can be effective, realizing that the threats to these species are very complex and defy any "quick fix" remedies. We are encouraged to see the Governor's office take a lead in restoration efforts in the Oregon Coast region for salmon and we want to work with your office to make the draft Restoration Initiative as effective and efficient as possible in achieving the conservation measures that are required.

Our comments on the draft document revolve around the fact that the OCSRI is narrowly focused on coastal coho salmon and coastal anadromous fisheries. In reality the Initiative should be more broadly focused on the restoration of the coastal ecosystems which the species are dependent on. This coupled with improved hatchery management and manageable fishing quotas will then result in recovery of the threatened salmon stocks as well as aiding in the recovery of other threatened species which occupy these same ecosystems. To this end the OCSRI needs to be depicted not as a single species restoration effort but rather as an ecosystem restoration effort that will have benefits across a broad base of issues and species.

The habitat restoration component of the OCSRI points out how coho salmon are tied to many parts of the ecosystem, including natural communities that may be quite some distance from the actual streams and rivers in which the fish are found. The OCSRI fails to note, however, what specific natural communities coho are directly or indirectly dependent on except in the most general of terms such as estuaries, rivers, small tributary streams and selected coastal lakes. The document also fails to note if there are other species at risk, federally listed or otherwise, which are also dependent upon these same natural communities. Much work has been done on threatened species in Oregon that should be incorporated into this Initiative in order to ensure that conservation efforts targeting coho are complementary to efforts or needs for other species and natural communities that are threatened as well. The OCSRI will be vastly more effective if it recognizes other at-risk-species and threatened habitats that stand to benefit from actions promoted by the Initiative.

The U.S. Fish & Wildlife Service is beginning to develop recovery plans for suites of listed species that have similar or overlapping habitats. Habitat Conservation Plans, which anticipate conservation needs of entire ecosystems, are now being put into place to move conservation and development efforts forward in a comprehensive manner in order to avoid the gridlock created when species become federally listed. And finally, the federal land management agencies (BLM and Forest Service) are involved in ecosystem-based planning and management in the Pacific Northwest in order to put their activities into more of an ecosystem context. The OCSRI needs to utilize similar strategies by being not just a coho salmon plan but rather by becoming a coastal ecosystem plan and recognizing all species which share similar or overlapping habitats and focusing on coordinated conservation actions.

It was somewhat surprising to the Conservancy that we did not see the words ecosystem management or biodiversity displayed very prominently in the OCSRI. We think this oversight is indicative of what is missing in the Initiative. One of the overarching goals of the Initiative should be the maintenance of all biodiversity in the coastal salmon habitats and the restoration of these habitats in order to benefit all aspects of biodiversity. It is now common knowledge that all of society benefits from the protection of biodiversity and that we can no longer think in terms of single species recovery but rather we must use our limited resources efficiently in the practice of conservation.

The Conservancy is ready and willing to work with the Governor's office in re-drafting the OCSRI. The need is obvious for such an Initiative and there is much to gain by such action.

Sincerely,

Dick Vander Schaaf
Public Lands Coordinator

Return to top of page

Association of Northwest Steelheaders
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(503) 653-4176 FAX (503) 653-8769

October 31, 1996

Governor John Kitzhaber
State Capital
Salem, OR 97310

Dear Governor Kitzhaber:

The Association of Northwest Steelheaders applauds your efforts on behalf of Northwest salmon and steelhead recovery. While not a perfect plan, we support your Oregon Coastal Salmon Restoration Initiative and believe this bottom up, grass roots approach is preferable to an ESA listing and the resultant federal control.

We believe the National Marine Fisheries Service was correct in granting Oregon a six-month extension in order to strengthen the recovery plan. Specifically, the plan needs:

- improved monitoring
- funding
- adequate enforcement of existing laws

The Association pledges its support in the effort to secure adequate funding for this plan during the next Oregon legislative session.

Within the plan, and during the plan presentation you and your spokesmen have stressed that this plan is preliminary and evolutionary. This is as it should be. We don't have all the answers yet. This does not imply that we are fully comfortable with the plan content, nor do we feel that you expect us to be. We should like to call particular attention to two areas typical of our concerns.

First, two of the key elements of the plan call for 1.) voluntary participation and 2.) enforcement of existing laws and regulations.

These are both highly desirable qualities to achieve the goals of full salmon recovery that the Association fully supports. However, as the plan itself points out, voluntary participation in the past has meant that the application of and adherence to existing laws and regulations was also voluntary. In particular, the response of the Department of Agriculture to their role in enforcement must be brought into question. "In general, the department prefers to handle enforcement issues internally to maintain credibility with stakeholders and peace of mind within the agricultural community." We feel that it is essential that voluntary participation be limited to those activities that a private entity may do under existing legal constraints, and not be extended to permit breaches of law simply to avoid disturbing the "peace of mind" of the constituent.

Second, one other element of monitoring and enforcement is brought to your attention. This is the massive imbalance between Full Time Equivalent manpower (FTEs) required for monitoring and enforcement and FTEs requested budget. The ODFW staff indicates the need for an additional 14 FTEs from OSP to perform the tasks in the salmon plan. ODFW budget calls for a reduction in FTEs of 18. That is a net shortfall of 32

FTEs in the OSP. If this matrix were worked to its full extent, the bottom line across all agencies affected by salmon recovery would be frightening. This is an area where the Association may be able to lend assistance, by educating the public and legislators in the need for, and the desirability of, ensuring availability of full funding for needed enforcement staff.

Sincerely,

Association of Northwest Steelheaders

Gary A. Benson, Co-President; Dennis VavRosky, Co-President

GAB/amm

c: President Bill Clinton
Will Stelle, NMFS
Roy Hemmingway
Jim Martin
The Editor, THE OREGONIAN

NEW - 2/20/97

Return to top of page

WaterWatch
213 Southwest Ash, Suite 208 Phone: (503) 295-4039
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November 15, 1996

Governor John Kitzhaber
c/o Salmon Plan Review
Capitol Building
Salem, Oregon 97310

Re: Draft Oregon Coastal Salmon Restoration Initiative Plan

Dear Governor Kitzhaber:

The following constitutes WaterWatch's comments on the Governor's August, 1996 Draft Oregon Coastal Salmon Restoration Initiative Plan (OCSRI). WaterWatch is a non-profit organization dedicated to promoting water policies for Oregon that provide the quality and quantity of water necessary to support fish, wildlife, recreation, biological diversity, ecological values, public health and a sound economy. Our work focuses in part on ensuring that actions taken by Oregon's Water Resources Commission and its Department will protect and restore streamflows. WaterWatch's review of the OCSRI plan is limited to the elements of the plan relating to streamflows and actions of the Water Resources Department.

Clearly, restoring streamflows is a critical element in restoring coho salmon. In fact, when the Oregon legislature commissioned a study to determine the causes of the decline of coastal salmon populations, the scientists found that adult salmon returns were most strongly related to minimum streamflows. More water when the fish were spawning and the juveniles were rearing meant more fish returning as adults three or four years later.[8] Study director Daniel Botkin said that the clear lesson "is do everything you can to raise minimum flows."

8.

Status and Future of Salmon of Western Oregon and Northern California, Daniel Botkin et al, The Center for the Study of the Environment, Santa Barbara, CA, 1994.

WaterWatch is supportive of your efforts to craft a plan for restoring coastal salmon based on state authorities. There are numerous concepts in the Water Resources Department's section of the plan that we support. Unfortunately, for the reasons stated below, we do not believe the plan goes far enough or is specific enough to achieve the goal of coho restoration.

At the outset, we would like to make four general comments about the plan. First, the plan stresses voluntary over a regulatory approach to salmon restoration. While voluntary approaches can be beneficial, it has been our experience that the number of "volunteers" increases dramatically when there is the threat of regulation or enforcement. In addition, it is virtually impossible to establish scientific benchmarks for programs that are purely voluntary.

Second, while there have been some actions taken to prevent the further depletion of streamflows needed by salmon, the fact is that salmon are going extinct under current conditions. Streamflow restoration, not just streamflow maintenance, is needed for recovery of coho.

Third, there is little that is quantifiable in WRD's section of the plan and few objective criteria that can be used to measure the Department's performance. For example, WRD 15 states that the department will "consider designation of serious water management problem areas." While this designation, which requires existing water users to measure and report their water use, could be very beneficial in terms of restricting illegal uses of water, the department can carry out this measure by merely thinking about designating the areas and actually doing nothing. While we are, as always, impressed by the cognitive capabilities of the Water Resources Department, thinking alone will not bring back the coho. This measure, and many others, should have specific performance criteria.

Fourth, strongly support the WRD's proposal to increase enforcement staff. However, there is no clear statement of exactly what the existing and new enforcement staff will be doing to protect and restore streamflows. The department should specifically outline enforcement priorities and how information gathered will be used to protect and enhance streamflows. For example, will enforcement occur in areas where there are no instream water rights, but flows are needed for fish? What will be the priorities for enforcement? Traditionally the agency has relied upon water user complaints to direct its efforts. Even the development of the 1993 enforcement policy which recognizes the need to regulate to protect public values, it is our understanding that little has changed and the watermasters still respond largely to user complaints. Also, in addition to the traditional kinds of enforcement against use without a permit, use above the rate and duty allowed in a permit and out-of-season use, will the watermasters be documenting and regulating against wasteful uses of water?

Finally, we are disappointed with the summary on page III-6 of the authority and role the Oregon Water Resources Department (WRD) has in protecting and restoring salmon. This section states that the WRD is responsible for managing allocation of water in Oregon and as part of that responsibility it monitors streamflows. The section concludes by stating that the "department is evaluating its policies, practices and procedures to ensure their activities are conducted consistent with salmon protection and restoration." This statement ignores the fact that the agency has an affirmative duty to protect and restore streamflows. The department's existing statutory authority and rules make it clear that its mission includes protecting and restoring streamflows needed for public instream uses of water. The Department is not a mere manager of rights, it holds instream water rights in trust for the public. ORS 537.341. The following statutory and regulatory mandates should be reflected in this document:

> ORS 537.110 -- "All water within the state from all sources of water supply belongs to the public." Thus the agency manages the water for the benefit of the public."
>
> ORS 537.455 - 537.500 -- which sets as a policy of the State of Oregon to "aggressively promote

conservation" and provides that conservation projects must allocate a percentage of the water conserved to support instream flow purposes.

ORS 536.235 -- "It is the policy of the State of Oregon that establishment of minimum perennial stream flows is a high priority of the Water Resources Commission and the Water Resources Department."

OAR 690-410-030 -- Department's statewide Instream Flow Protection Policy which states that "[p]rotecting streamflows which are needed to support public uses is a high priority for the state" and sets as a long term goal the establishment of "an instream water right on every stream, river and lake which can provide significant public benefits." The policy also states that [w]here streamflows have been depleted to the point that public uses have been impaired, methods to restore the flows are to be developed and implemented." (emphasis added).

The Commission's 1993 "enforcement policy" which includes as factors to consider in setting enforcement priorities whether the illegal use in interfering with "quantified public interest values" such as listed species or "other" public values such as sensitive species or damage to the resource.

The statutes are clear and WRD has recognized in the past that is has a duty to actively pursue streamflow restoration and protection. Unfortunately this is not reflected in this document.

The following are our comments on the specific measures in the WRD section of the plan:

WRD1a -- ***Assist in the Removal of Push-Up Dams that Interfere with Fish Passage --*** There is nothing in this action that is measurable. The Department should state how many push-up dams that it intends to remove. We suggest targeting the removal of all push-up dams that impede fish passage in core habitat areas within 2 years with a goal of eliminating all push up dams in coho habitat within 5 years.

WRD2 -- ***Pending Water Rights Review --*** It should be noted that the elimination of the backlog of out-of-stream rights does nothing to protect or restore streamflows. While we understand that the permits proposed for issuance contain some "resource protection" conditions, WRD does not have adequate staff to ensure that those conditions are met. In addition, WaterWatch remains concerned that the conditions proposed by WRD do not go far enough to protect the quality and quantity of instream flows, especially in areas where there are no instream water right applications or certificates.

WRD3 -- ***Public Interest Review of Water Use Applications --*** These rules provide assurances against further depletion of streamflows. However, they do nothing to restore streamflow.

WRD4 -- ***Instream Water Rights --*** We have supported the establishment of these instream water rights and commend the department for processing them before the October 31 deadline. Once established, these instream rights will result in streamflow protection and will provide targets for streamflow restoration. However, administrative appeals have been filed on a number of these applications and it is unclear how those appeals will be resolved.

WRD5 -- ***Re-examine Appropriate Instream Flow --*** It is unclear what exactly this measure involves. Does this mean questioning flows that have been established under existing instream water rights? Does this mean gathering data on instream flow needs in areas where these needs have not been quantified? This measure needs more definition.

WRD6a -- ***Install Staff Gauges --*** We strongly support this measure. It is one of the few measures that is quantifiable. However, there is no description of how often readings will be taken and what will be done with the information. This measure should be expanded to include use of the information gathered as part of

enforcement of instream water rights and monitoring of instream flow needs.

WRD7 -- ***Screening and By-Pass Flows on HB 2153 Ponds --*** We support this measure.

WRD8a -- ***Inventory Diversions --*** We hope that this means that, in addition to inventorying diversions, there will be enforcement against illegal diversions.

WRD9 -- ***Instream Transfers and Leases --*** We support this measure. We would point out, however, that to date this mechanism has put very little water back instream.

WRD10 -- ***Digitize Water Rights --*** We support this measure but as written it does not translate directly into instream flow protection or restoration. How will these maps be used? Also, will the public have access to these maps?

WRD11 -- ***Public information and Outreach --*** We generally support, although the information should also include ways for citizens to obtain protection of instream flows.

WRD12a -- ***Groundwater Studies --*** While the concept behind this study is commendable, the situation in the New River reflects the problem with the WRD's current way of allocating water - while the study is being created the agency is issuing water use permits into perpetuity. Studies documenting ground/surface water interference need to be done before allocation decisions are made.

WRD13 -- ***Increased Compliance Monitoring --*** While we commend the concept, this measure lacks specific goals. We suggest that the Department work with the Oregon Department of Fish and Wildlife to determine specific areas where increased streamflow would be most beneficial in terms of salmon recovery and establish a "zero tolerance" approach to violations of rate and duty of water diversions in those areas. If this seems extreme, it should be noted that there is already a zero tolerance standard for commercial and recreational fishermen who violate fishing regulations.

WRD14 -- ***Revise Basin Programs --*** This "action" could end up being a "nonaction". Under this measure the agency will "evaluate appropriateness of revising basin programs and water use classifications to increase protection for salmon." The agency has spent the past several years "evaluating" its basin program. In addition to closing streams to further appropriation, the agency, through the basin planning process can provide critical information to the public about the availability of water, areas where water use efficiencies can be improved, and guidance, though planning, about the need for restoration efforts. The time has come for the agency to utilize this important tool - rather than continue "evaluating."

WRD15 -- ***Declare Serious Water Management Problem Areas --*** As previously stated, this "action" is only to "consider" designation of such areas. Designation of serious water management areas is an important tool for salmon recovery because it allows the agency to require water users to measure and report water use. This in turn aids in enforcement efforts (which help with streamflow protection and restoration) and will help to document inefficient uses of water (which will help with streamflow restoration efforts). Measurement and reporting of all water use, throughout the coastal streams is and will continue to be critical not only for salmon recovery efforts, but also for protection of existing and future rights. This action item should be changed to set a goal for the number of areas that will actually be designated in the upcoming year, and give targets for subsequent years.

WRD16 -- ***Community Water Conservation Plans - -*** This action items does not explain how submission of water conservation plans will directly result in streamflow benefits. Under the agencies current program for "community" conservation plans, communities submitting plans do not have to submit them pursuant to the Conserved Water Act, which mandates that a percentage of water conserved is protected instream. Thus, there

is no guarantee that WRD's actions under this measure will result in water being placed instream. In addition, we are unclear as to why this measure is limited to "community" plans. This provision should be rewritten to include irrigation and other water users and should specify how development of these plans will guarantee water instream. This can be done by requiring those submitting plans to submit them pursuant to the Conserved Water Act.

WRD17a -- ***Global Positioning Systems* --** We support this measure, but note that the installation of this system will not, but itself, result in increased streamflows.

WRD18 -- ***Savage Rapids Dam Task Force* --** The department should continue to support the removal of Savage Rapids Dam, the most cost effective method of solving the fish passage problem.

WRD19 -- ***Fill and Removal Area Closure* --** We support this concept but note that it lacks a measurable objective.

The Phase 2 Actions are, for the most part, continuation of the Phase 1 measures, with the exception of WRD22, which relates to cost-sharing for offstream storage. We strongly object to this measure. While we are not categorically opposed to offstream storage, we believe that it should only be considered as a last resort. The first step in any basin should be enforcement of existing rights. We believe that significant amounts of water can be restored by simply eliminating illegal uses. The second step should combine enforcement against waste with incentives for conservation. In some basins, eliminating wasteful uses of water could put enormous amounts of water instream. Only in basins where water is being used legally and efficiently should consideration be given to using public funds for additional storage.

WRD VI-I4 -- ***CSRI Outreach and Education*** While this outreach program is a good start it fails to include educational materials on some the few existing WRD programs that can actually provide direct benefits for fish. For example, it apparently fails to include educational materials on Oregon's Conserved Water Statute - a way that existing users can meet the twin policy goals of eliminating waste and restoring and protecting instream flows. There is also no mention about any educational materials that promote transfers of water instream. In addition, any outreach program should include dissemination of information about the status of the water resource - areas of over allocation, areas of water availability, areas of water use inefficiency. There should also be educational flyers that encourage people to measure their water use which should include alternative ways to measure use.

Habitat Management VII-A-9 -- **Major Changes in Management Related to Risk Factors** This section states that "Instream flows, especially in *Core Production Areas*, that are critical to conservation of salmonids, will be improved through: a) the purchase, lease, or donation of water right; b) improved administration and enforcement of water rights laws; c) monitoring; and d) voluntary efforts." This section leaves out a critical component of streamflow restoration and protection - water conservation.

Thank you for the opportunity to comment.

Sincerely,

Jeff Curtis
Executive Director

cc: Will Stelle, Regional Director, NMFS
Martha Pagel, Director, Water Resources Department
Jim Myron, Oregon Trout

Glen Spain, PCFFA
Liz Hamilton, NFIA
Diane Valentine, ONRC
Jill Zarnoqitz, ODFW
Marcia Anderson, SOS

NEW - 2/20/97

Return to top of page

Fish ReFuge Working Group
117 Southwest Front Avenue
Portland, OR 97204
503-222-9091

November 14, 1996

Jim Martin
Salmon Technical Advisor
Salmon Plan Review
Capital Building
Salem, Oregon 97310

BY FAX AND MAIL

Dear Jim,

We want to thank the Governor's office for providing us with this opportunity to comment on the Coastal Salmon Restoration Initiative (CSRI). These comments are being presented by the Fish Refuge Working Group (Working Group) which is an ad hoc association of experts in natural resource science and policy that was formed by Oregon Trout in 1995. As you may already know, Oregon Trout's mission is to protect and restore native fish and the ecosystems upon which they depend. The goal of the Fish Refuge Working Group is to develop and implement strategies to protect key habitats throughout Oregon that contain the best remaining assemblages of native fish.

As a result of this more specific habitat orientation, we have limited our review of the Plan to first, its underlying principles; and second, to how these principles, as applied through the proposed action, enforcement, and monitoring components of the Plan, provide substantive protection to the habitat and ecosystem functions upon which native salmon depend. There are whole sections of the Plan relating to predator control, hatchery management, and fisheries regulation, that while we have reviewed them and feel that they are essential to the Plan, will not be critqued here.

We recognize that the State of Oregon, in creating the salmon recovery plan is attempting to assume or retain control over the process of protecting, and restoring Oregon's plummeting coastal salmon populations. We support and encourage the state's courageous endeavor. The Plan displays the state's commitment to becoming actively involved in the salmon recovery process. It also displays, for the first time, a new level of interagency communication, and the potential for the interagency coordination that is essential if Oregon truly intends to lead the recovery effort.

We look, however, at this initial draft plan as a preliminary document that in some ways should be judged at this point more for the process that it establishes and the intent that it displays than for its substantive contents. We have spent several weeks reviewing the plan and have found that the substantive components of the plan are not sufficiently defined to be capable of being binding, enforceable, or in many instances, implemented by the applicable parties involved.

We feel that the current draft of the OCSRI will not succeed in restoring coho and other salmonid species. However, we believe it could succeed with substantial changes. Therefore we offer this critique and

recommendations. As the Plan is subjected to peer review and future iterations it will undoubtedly become a planning document that contains clearly defined, enforceable measures that provide substantive long-term relief to coastal salmon. We hope to remain actively involved in this process.

Towards this end, we have divided our review of the Plan into two separate parts. The first part of the review is provided in this document and addresses the concerns listed above. The second part of the review provides a more detailed technical analysis of the Core Area component of the Plan and the Core Area Maps. This review is being conducted by an independent scientists, Dr. Chris Freissell of the University of Montana, and will be submitted later this month.

The remainder of this document is divided into four parts. The first part provides a general introduction to our comments. The second section provides specific recommendations on how to improve the habitat conservation components of the plan. The third section reviews our concerns regarding the underlying principles of the Plan, and the final section provides comments on specific elements of the Plan.

Please call if you have any questions or need further information.

Sincerely,

Guido R. Rahr
Assistant Director of Conservation

Shauna M. Whidden
Coordinator, FRWG

Enc: FRWG CSRI Comments
Healthy Stocks Memo
Huntington Report

cc: Will Stelle, NMFS
Tudy Rosen, ODFW
Jay Nicholas, ODFW
Jim Brown, ODF
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COMMENTS ON THE OREGON COASTAL
SALMON RESTORATION INITIATIVE

I. INTRODUCTION

"*Provide some refuge for salmon, and provide it quickly,*
before complications arise which make it
impracticable, or at least very difficult.
Now is the time."
Livingston Stone
1892[9]

It has been over one hundred years since Livingston Stone tried to rally the nation's attention to what appeared to be the imminent demise of the Pacific Northwest's great salmon populations. He called for the creation of

sanctuaries for salmon. His recommendations went unheeded and today we face the unheralded opportunity and the daunting task of pulling these magnificent creates back from the brink of extinction.

9. Livingston Stone, A National Salmon Park, Transactions of the American Fisheries Society, at 149-162 (1892).

While scientists, theorists, policy analysts and a host of others have been working to craft creative salmon recovery solutions, a new ecological paradigm has been slowing emerging. This paradigm shifts the emphasis of salmon recovery measures away from traditional remedies such as hatchery production and harvest management and towards a new emphasis on the importance of protecting and improving the riverine and riparian ecosystems and biophysical processes upon which salmon depend.(10)

10. U.S. Department of Agriculture, U.S. Department of the Interior, U.S. Department of Commerce, Environmental Protection Agency, Forest Ecosystem Management: An Ecological, Economic, and Social Assessment: Report of the Forest Ecosystem Management Assessment Team, at V-46 (1993); Independent Science Group, Return to the River: Restoration of Salmonid Fishes in the Columbia River Ecosystem, at 164 (1996); National Research Council, Upstream: Salmon and Society in the Pacific Northwest, at 312 (1995) [hereinafter ISG Report].

In addition, an ecological network is essential that provides a continuum of interconnected habitat conditions and processes that support salmon survival and productivity throughout their range and over time.(11) Within this network, key areas must be identified and protected that already contribute to high levels of aquatic diversity and salmon productivity or alternatively that provide refuge to struggling stocks.(12) Today, with the collapse of our coastal salmon populations we have the opportunity to not only provide sanctuaries for our beleaguered salmon, as urged by Livingston Stone, but also to begin protecting and restoring the health of salmon populations and the habitats upon which they depend, using these new ecological principles.

11. See NATIONAL MARINE FISHERIES SERV., U.S. Dept. of Commerce, Coastal Salmon Conservation: Working Guidance for Comprehensive Salmon Restoration Initiatives of the Pacific Coast, at 3 (1996) [hereinafter NMFS Guidance].

12. ISG Report, supra note 2, at 512.

II. SPECIFIC RECOMMENDATIONS

"*...the most fundamental goal of species and ecosystem protection is to preserve those habitats that retain a high degree of ecological integrity*"(13)

13. NMFS Guidance, supra note 3, at 13.

The protection of habitat is the cornerstone of fish and wildlife conservation. Currently, between fifty and ninety percent of Oregon's coho habitat could be in serious decline.(14) Although habitat protection is expensive and sometimes controversial, it remains the most effective long-term investment towards insuring a future with wild salmon and steelhead.

14. William Stelle, letter to Gov. Kitzhaber, November 5, 1996, at 4.

The CSRI proposes useful reforms of fish hatchery production, increases of in-stream habitat restoration, and a range of other important activities, however there are no substantive proposals for habitat protection. This omission has been noted by NMFS. In a letter from Will Stelle to Governor Kitzhaber offering comments from NMFS on the CSRI, Stelle emphasizes the need for "a conservation/protection strategy for all core areas." We strongly agree with NMFS recommendations and would like to offer the following four-point plan to improve the habitat protection elements of the Plan.

1. Institutionalize core area inventory, monitoring, and protection

The Fish Refuge Working Group supports the idea that the most productive fish habitats in a watershed must be identified and protected first. Although the first draft of the core areas maps will need to be "ground truthed" and revised periodically, we are confident that they will continue to improve and help the state, watershed councils, and other groups focus habitat protection efforts.

a. The Fish Refuge Working Group suggests that the process of fish habitat inventory, monitoring and protection be institutionalized within state and local government. The core area maps should be included in the next and subsequent biennial reports on the status of wild fish, published by the ODFW, and should be incorporated into local counties natural resource inventories under applicable Statewide Planning Goals.
b. The State should fund a second draft of the core area maps, refine core area criteria, and utilize extensive ground truthing of core area maps in each coastal basin, to be completed early in 1997.
c. The protection of core areas should be integrated into watershed and basin level salmon recovery strategies.

4. Recommend to Forest Service, BLM and other federal agencies to expand Key Watershed designations on all Federal Lands and recommend land swaps to consolidate federal ownership of Key Watersheds.

The FEMAT Aquatic Conservation Strategy provides a solid scientific framework for salmonid habitat protection. The process of designating Key Watersheds and riparian buffers offers a high level of protection to salmonid fish. However, the level of salmonid protection on federal lands must be improved by:

a. Increasing the number of Key Watersheds using core area maps and other data sources.
b. Consolidating federal and state ownership of key watersheds and other priority habitats for fish, focusing on core areas first.
c. Improving implementation through strengthening of existing rules and regulations.
d. Identify and protect watersheds or sub-watersheds in each basin that serve as designated refugia for native fish.
e. Adopt rules that protect the habitat values and ecosystem functions within native fish refugia.

6. Adopt a Key Watershed/refugia based conservation strategy on state lands.

State lands are as important to salmonid recovery as federal lands, but lack adequate riparian buffers and other measures necessary to prevent the degradation of fish habitat (Botkin et al. 1995). To balance timber and other commodity production with fish conservation and recovery, a FEMAT-style Aquatic Conservation Strategy needs to be expanded to encompass state lands.

a. Identify Key Watersheds on all lands, using core area maps and other data sources.
b. Adopt Riparian Conservation Strategy Rules on state lands.
c. Identify and protect watersheds or sub-watersheds in each basin that serve as designated refugia for native fish.
d. Adopt rules that protect the habitat values and ecosystem functions within native fish refugia.

5. Increase the capacity for voluntary salmon habitat protection in private lands.

Almost half of all salmon and steelhead habitat lies on private lands, including most of the floodplain rearing habitat for coho, and spawning habitats for fall chinook and chum salmon. The region's human population is projected to double within the next 40 years, and the pressure to degrade and fragment these lands will continue to increase. Habitat improvement projects, such as in-stream structures have been popular recently among watershed councils and private groups, and these will benefit many fish species, but this approach is temporary. The best permanent investment in fish conservation will be the protection of fish habitat. While this may be expensive and at times controversial, it is extremely

important to initiate this process and allow it to grow, watershed by watershed, over the long term. Its benefits may take years to accrue, but will provide a lasting investment in wild fish conservation.

The FRWG recommends the following actions, to be implemented in 1997:

a. Require watershed councils to develop work plans for habitat protection that are consistent with state determined standards and with basin-level salmon recovery efforts.
b. Provide financial and technical support to increase the capacity of watershed councils to identify and protect salmonid habitat through voluntary activities such as habitat acquisition, easements, and land swaps.
c. Establish watershed level "salmon land and water trusts" so local communities can protect and manage land and water for fish production.

III. GENERAL COMMENTS

I. The basic underlying principles of the plan must be more carefully articulated and consistently applied throughout the document.

- What is the conceptual foundation of the Plan and is it based upon sound scientific and ecological principles?

  Problem: While it is clear that the State has made a tremendous effort to create a salmon recovery plan, there does not appear to be a conceptual foundation that supports true salmon recovery. The basic underlying principles that govern the plan and its components are unclear.

  Suggestion: "adopt an explicitly defined conceptual foundation that is based on ecological principles."[15] The Plan tentatively embraces the ecological objectives that were suggested in the National Marine Fisheries Service's guidance as being central to salmon conservation.[16] Interestingly, the Plan calls these objectives, "basic concepts" yet these concepts are not integrated into the substantive components of the plan. The Plan therefore lacks a strong conceptual foundation upon which to base the salmon recovery effort. The Plan should adopt the "basic concepts" as explicit policy goals that are linked to plan objectives.

  [15] ISG Report, supra note 2, at 510 (this was the advise that the Independent Scientific Group provided to the Northwest Power Planning Council when reviewing their Fish and Wildlife Program.)

  [16] NMFS Guidance, supra note 3, at 12.

- What is the salmon recovery goal that the state plan hopes to achieve?

  Problem: there are a number of different salmon recovery goal statements throughout the Plan.[17] This indicates that there may not have been consensus among the drafters as to what the real salmon recovery objectives of the Plan are. A clearly articulated salmon recovery goal is essential if the Plan components are to collectively achieve that goal.

  [17] Examples: 2) The Preface contains one statement (v); 2) the Introduction contains two statements (vi, x); 3) Chapter VII contains another statement (VII-I).

  Suggestion: come to an agreement on what the salmon recovery goal is and see that all elements of the Plan are consistently applied towards achieving that goal. A useful benchmark is found in the Huntington criteria for stock health that could be applied within each watershed. (Huntington, et al, 1996, attached.)

- What role does the State want to play in its proposed leadership of the coastal salmon recovery process?

  Problem: The answer to this question is not carefully articulated in the plan. It appears that the state has chosen, perhaps by default, a "cheerleader" type role in which it encourages in-state activities that are conducive to salmon recovery, and provides support for these activities through funding and technical assistance funneled through state agencies. If this is the extent of the state's role in achieving the salmon recovery objectives of the Plan, this should be clearly articulated so that the expectations of the parties involved in the salmon recovery process can be adjusted accordingly. We understand the constraints upon the Governor to be able to fully implement the components of the Plan without assistance from the legislature. However, in addition to this clear limitation, the Plan provides no firm institutional mechanism for long-term enforcement and maintenance of its provisions.

  Suggestion: Oregon must assume continue to assert the strong leadership role that it has begun with this Plan and make firm commitments towards its implementation. In addition to providing leadership for the state's long-term salmon recovery strategy, we would also encourage the state to play a central role in the development of policy that protects Oregon's salmon throughout their range. The salmon crisis in Oregon cannot be viewed in isolation. The State's role in leading the effort to recover native Oregon salmon populations should necessarily include participation in a larger collaborative effort with other states, including Alaska; the federal government; the tribal governments; and Canada.

  The more time, funds, and effort that citizens of Oregon invest in addressing and trying to remedy the causes of salmon decline in Oregon, the more critical will be Oregon's ability to negotiate within the larger policy arena to see that this investment is protected and that the salmon recovery effort is successful.

IV. SPECIFIC COMMENTS

In the preceding section we expressed our concern that the underlying principles of the plan have not been clearly articulated or consistently applied throughout the plan. Further, we encouraged the state to adopt an explicitly defined conceptual foundation that is based on sound scientific and ecological principles, to articulate clear objectives based on those principles, and to take a strong leadership role in seeing that those objectives are achieved.

We are limiting the remainder of our critique to the nine elements of the plan. It is our belief that these elements are the theoretical underpinning of the state's salmon recovery strategy. It is therefore critical that these elements embody that strategy and that they illustrate with some degree of certainty that upon application, they will provide substantive protection to salmonids.

Comments on the "Essential Elements of a Conservation Plan"

I. Identify the major factors that have contributed to the decline of the ESUs:

Critique: The state appears to be overwhelmed by the variety of factors that have collectively contributed to the decline of the ESUs. This is understandable, yet the purpose of the identification process is not to determine where to assess blame, but rather to determine how to constructively modify those factors over which we have control so that the natural resiliency of the salmon populations can be restored and higher survival levels can be ensured throughout their life cycle.

Suggestion:

1. Focus the identification process on the factors that are within human control such as:

   (1) Habitat modification and destruction
   (2) Harvest practices
   (3) Hatchery practices
   (4) Introduction of non-native species

2. When using watershed councils to provide watershed level analysis of factors for decline, be certain that the analysis is scientifically defensible, performed according to scientifically-based standards, and subject to peer review.

3. Provide oversight and coordination at the state level to be certain that factors for decline are identified at more than just the watershed level, but also at the larger geographical scales relevant to that watershed.

IV. Establish Priorities for Action

Critique: The priorities identified by the Plan should be selected to halt any further declines of listed or at-risk species. These priorities should be listed as specific geographical and biological units that will receive the most immediate or comprehensive protection in the short term. We support the identification of core areas as an initial method for establishing short-term priorities for immediate protection, however, we also want to encourage the state to be certain that these areas are not protected in isolation. The core areas currently represent mostly spawning and rearing areas that yield high concentrations of fish, and may not include important migratory corridors, cold water refugia, other biological hot spots, or areas amendable to restoration.

Suggestions: We support and encourage the state to use the Bradbury Prioritization Process as endorsed by NMFS, as well as the environmental matrix developed by NMFS. In addition, we support the identification of key coastal basins suggested by NMFS, as a means of prioritizing and consolidating conservation measures.[18]

18. NMFS Guidance, supra note 3, at I-2.

V. Establish Objectives and timelines for recovering populations.

Critique: We believe that this is a central element of the Plan. The state must establish clear objectives relating to:

   (1) population characteristics
   (2) habitat
   (3) hatchery practices
   (4) harvest
   (5) control of non-native species

The state has not articulated clear objectives, particularly for the habitat component. While it has embraced what it terms to be "basic concepts," these are not objectives and they are not found in the action, enforcement or monitoring section of the plan.

Suggestion: Adopt the five "basic concepts" as Plan objectives, with a particular emphasis on number three and four:

(1) Conserve and restore natural watershed processes that create habitat characteristics favorable to salmonids, addressing management of contiguous landscapes;

(2) Conserve habitats required by salmonids during all life stages from embryos and alevins through adults;

(3) Conserve a well-dispersed network of high quality refugia to serve as centers of population expansion;

(4) Conserve connectivity between high-quality habitats to allow for reinvasion and population expansion;

(5) Conserve genetic structures and diversity within and among populations, gene conservation groups, and ESUs.

VI. Establish criteria and standards to measure progress towards objectives.

Critique: This is also a critical element. We recommend the state on its proposal to establish a comprehensive monitoring program. However, the purpose of this element is not to define the technique by which progress towards the objectives is monitored. The purpose of this element is rather to establish the criteria and standards that will be used by the monitoring program to determine how well the measures are achieving Plan objectives. These quantifiable standards are noticeably missing.

Suggestion: Determine for each of the objectives, what substantive criteria or standards can be used to determine if progress is being made. For our purposes, this is particularly important for the five conservation objectives that we discuss under element three. The monitoring program, and even the benchmarks and interim indicators will be largely ineffectual if there are not clear scientifically based criteria.

The following categories or pathways are suggested by NMFS as requiring ecological or habitat criteria in order to determine the effects of proposed measures on habitat quality:[19]

[19] For each of the pathways, NMFS has developed indicators that help to evaluate the condition of the pathway. This matrix is described in detail in Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale, National Marine Fisheries Serv., Environmental and Technical Services Division, Habitat Conservation Branch, at 10 (1996).

1. Water quality
2. Habitat access
3. Habitat elements/characteristics
4. Channel conditions and dynamics
5. Flow and Hydrology
6. Watershed conditions

VII. Adopt measures (actions) needed to achieve explicit objectives.

Critique: Because the plan objective are not clearly defined, this element is necessarily incomplete. The measures submitted by individual state agencies provide a relatively clear vision of what actions would occur with adequate funding and staff resources under existing agency authorities. However, these

measures are not enough in and of themselves to achieve salmon recovery, particularly since adequate funding and staff resources have not been secured as needed by most of the agencies involved.

Suggestion: Our attached memo provides recommendations on measures that the state can take to achieve the explicit objectives of the Plan.

VIII. Establish a comprehensive monitoring plan.

Critique: While we are supportive of the state's initiative to create a comprehensive monitoring program we are somewhat confused on how this will be achieved. Is it a "program" or a "process"? We don't have a copy of the Science Team attachment so we are at somewhat of a disadvantage. The plan calls for "the establishment of an overall structure to manage dispersed monitoring elements" and for the creation of an "overall monitoring coordinator." How will this structure be created, funded, and secured over time?

Suggestion: The specific parts of the monitoring program need to be worked out, including what type of structure it will have, how it will be staffed and funded, and what authorities it will have.

We have the following comments on the list of interim indicators:

1. The annual report of the monitoring system that tracks the interim indicators should be published or at least available for public review.
2. The specific data provided by each agency should indicate how agency goals have been met for that year in relation to longer term goals.

   For example: ODFW would provide data that shows the cumulative miles of stream for which stream habitat surveys have been completed *and the miles of stream for which surveys have not yet been completed, but will be completed in the following year, etc.*

3. It would be helpful if the Governor's Watershed Enhancement Board could produce an annual map that displays some of the indicators mentioned; for example, an outline of the priority basins; the areas that are covered by state recognized watershed councils; the areas that have completed state approved watershed analysis; those areas for which there are coordinated agreements, and stream miles of protected and restored habitat.

IV. Provide high levels of certainty that actions will be implemented.

Critique: We find that there is no certainty that the actions will be implemented. We are particularly concerned that there is no institutionalized program that will oversee the implementation of the plan in the long term, and that the source of funding for the plan is as yet largely unsecured.

Suggestion: We defer to, and incorporate by reference, Will Stelle's recent comments to Governor Kitzhaber in the letter dated November 4, 1996.

V. Integrate activities and projects to recover salmon populations and their habitat.

Critique: This is actually a critical element of the Plan, yet it is not adequately addressed. Watershed councils, while they may provide much needed assistance at the watershed, or sub-basin level, are simply not able to address the coordination needed at larger scales. The state must embrace the responsibility to provide this higher level of coordination.

Suggestion: We would recommend that the state look closely at the levels of coordination that are suggested by NMFS in their guidance document to be certain that the plan addresses the collaborative efforts that are necessary at each scale level.[20] Additionally it is critical that the state improve interagency coordination, particularly with regards to individual agency programs that independently impact salmon survival. Further, we suggest that if the watershed councils are to receive greater responsibility at the sub-basin level for salmon recovery, that they must conform to state created standards for their organizational structure, quality of their watershed assessments, and completeness of their watershed management plans. Adherence to these sideboards should be prerequisites for receipt of state or federal funds and technical assistance.

20. NFMS Guidance, supra note 3, at 10.

VI. Utilize adaptive management in the recovery process.

Critique: Again we defer to, and incorporate by reference, Will Stelle's comments in the November 4, 1996 letter to Governor Kitzhaber.

NEW - 2/20/97

Return to top of page

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November 1, 1996

Salmon Plan Review
Capitol Building
Salem, OR 97310

RE: Oregon Coastal Salmon Restoration Initiative - Draft 8/26/96

Dear Planning Team:

These comments represent the concerns of the Siskiyou Regional Education Project and the Siskiyou Audubon Society. In 1992 these organizations co-petitioned the National Marine Fisheries Services (NMFS) to list Illinois Basin Winter Steelhead under the Endangered Species Act. This petition eventually led to the proposed listing of West Coast steelhead by the NMFS. In July of 1993 Siskiyou Project co-petitioned the NMFS to list five or more Evolutionary Significant Units (ESUs) of naturally spawning coho in Oregon under the ESA and both organizations were co-petitioners for West Coast coho in October of 1993.

Before and after these petitions were filed and the NMFS proposed to list coho salmon and steelhead trout under the ESA, our organization have been actively seeking protection for the these fish and their habitat. We participated on the citizens advisory committee for ODFW's Rogue Basin Plan. We participate in land management planning on public lands and Siskiyou Audubon volunteers began a water quality monitoring program in the Illinois Basin.

We have, to the best of our ability, participated in several local watershed councils and the Illinois Basin Interest Group. A Siskiyou Audubon member was on the Middle Rogue Watershed Council. This council is currently no longer in existence despite the fact that it is listed in the CSRI. The Siskiyou Audubon representative has attempted to re-start the Middle Rogue Council but his efforts have been ignored by the Josephine County Commissioners who hold approval authority for watershed councils in the county.

We have recently submitted comments on the renewal of DEQ's general permits 600 and 700-J for mining operations in Riparian Reserves and commented on the Army Corps' Nation Wide Permits concerning wetlands. We further have participated in the development of DEQ's 303(d) List for water quality limited waterbodies.

Our organizations have been intensively engaged in local issues surrounding declining salmon populations, degradation of salmon habitat and water quality and quantity and watershed health. We have seen an enormous generation of documents - plans, assessments, analysis. New bureaucracies have been formed. The rhetoric has been profuse. Millions of dollars has been spent. Despite all of this, real change in the factors that effect salmon and their habitat in southwest Oregon, except for the Northwest Forest Plan,[21] have been minimal. Gravel mining occurred directly adjacent to the wetted channel of the East Fork Illinois this year. The Governor's Coastal Salmon Restoration Initiative does not provide substantive assurance that activities that degraded salmon habitat in the past will change.

21. The effectiveness of the Aquatic Conservation Strategy to protect Pacific salmon and their habitat is still open to debate. The Federal land managing agency's policy is that they cannot deny mining operations in Riparian Reserves and the Forest Service has amended the standard and guideline for mining in Riparian Reserves, essentially returning to a pre-Northwest Forest Plan management regime. While mining in riparian reserves may not affect some streams in Oregon, the Siskiyou National Forest has over 5,000 active mining claims and receives approximately 200 to 150 mining notices of indent or plans of operation each year. Siskiyou National Forest mining operations are further concentrated in the Illinois Basin were approximately 70% of Forests mining occurs. Most mining on the SNF are placer operations in Riparian Reserves. Additionally, logging is still occurring in Riparian Reserves on the Siskiyou National Forest (e.g., Bucking Horse and Waters Thin Timber Sale).

Our comments on the CSRI are brief. Partly, because the August '96 draft fails to substantively incorporate the suggestions of the National Marine Fisheries Service on a previous draft and comments from the environmental community, partly because some issues are better addressed through independent scientific review (which we hope is occurring) and finally, because time has been so limited.

The CSRI is Provincial

The CSRI's essential purpose appears to be to head off listings of Pacific salmon under the ESA in service of retaining the state's control over resources (CSRI, p. iv). The Governor's plan even if it was sufficient to protect salmon and salmon habitat on private land (which we don't believe it currently is) would have little authority over how salmon and salmon habitat are managed and protected on public lands.

The ESA requires that the Federal land managing agencies consult with the NMFS on activities that may adversely affect listed salmon and their habitat. If coho and steelhead are not listed under the ESA, NMFS has no authority to protect and/or oversee activities on public lands. Therefore, because the CSRI does not address the management of public lands, as a preemptive recovery plan it is incomplete and listing Pacific salmon

populations under the ESA is warranted.

The State does have authority over the waters on public lands in Oregon but the CSRI proposes little change in a hundred or more years of neglect and mismanagement. The State manages fish and wildlife populations but again the CSRI calls for little substantive change in ODFW policies that have lead to the current crisis.

The cooperation and efforts of the Governor and State agencies are critical to the recovery of Pacific salmon and the protection of their habitat but you are only part of the equation. Federal land managers also need to be held accountable for their actions and decisions and ESA listing is the only vehicle available that brings together both jurisdictions. Additionally, the fish and the rivers are a matter of public trust. They do not just belong to the state of Oregon or to local watershed councils or the Forest Service or BLM. They belong to the American public - both current and future generations - like Yellowstone, the Grand Canyon and the Washington Monument.

Watershed Councils

There has been a watershed council, in one form or another, in existence in the upper Illinois basin since 1992 when the Illinois River winter steelhead were petitioned for listing under the ESA. The process has been rife with discrimination, inequitable representation and political control (attachment C). While the process of the present council has become more open and inclusive, the key issues of water withdrawal and consumption, logging, urbanization, mining of flood plain development in the Basin have not been addressed by the council (see attachments A & B).

Over 80% of the Illinois Basin is public lands. The Illinois River below the Illinois Valley is a National Wild and Scenic River and an Oregon State Scenic Waterway. The fish populations of the Illinois are an outstanding value of the River and as such are subject to provisions of the Wild and Scenic Rivers Act - ie. to be protected and enhanced. As a National Wild and Scenic River, the Illinois meets the Clean Water Act's definition of an "outstanding national resource waters". And as such the Illinois is subject to the Clean Water Act's Antidegradation Policy.

The CSRI would establish the Illinois Valley watershed council as a decision making body (CSRI, p. VI-C-1 & 6) whose action or lack thereof will likely affect the Illinois's water quality and fisheries. Illinois River water quality and fisheries are under the jurisdiction of the federal government as mandated by federal laws not a local watershed council. Neither the state of Oregon nor the federal government has the authority to delegate decision making or responsibility to a local watershed council for the Illinois' water quality and fisheries. These are matters of the public trust. It is not, therefore, appropriate that their fate be subject to a local watershed council's decisions.

Additionally, while each watershed may differ in geologic and climatic conditions requiring varying recovery measures, so will the politics and demographics of watersheds differ. These latter factors will affect potential for the success and effectiveness of individual watershed councils charged with the responsibility of developing and implementing a recovery plan. The CSRI makes no provisions for these differences in the effectiveness of watershed councils. Under the CSRI, the fate of the salmon in a watershed rests with the local politics and human values, which have led to the salmons decline in the first place, despite their value and benefits to the wider public, future generations and the environment.

We agree that there needs to be a way of engaging the public and private land owners in salmon recovery and habitat protection but local watershed councils as now structured are not the answer.

Mining Oregon's Rivers

The Department of Environmental Quality recently provided an example of the CSRI's failure to provide needed protection for salmon habitat. DEQ has proposed to renew General Permit WPCF 600 and General Permit NPDES 700-J for placer mining. The two general permits are for activities on public lands that will directly impact the freshwater habitat, Riparian Reserves, of the species which the Governor's CSRI is purporting to protect.

According to the National Marine Fisheries Service the "[o]ne of the most important substantive protective measures implemented through the [Northwest Forest] Plan are Riparian Reserves" (NMFS, 1996, "Steelhead Conservation Efforts", p. 4). Riparian Reserves are a key component of the Aquatic Conservation Strategy which "was developed primarily to protect salmon and steelhead" (Final Supplemental Environmental Impact Statement for the Northwest Forest Plan (SFEIS), p. 2-28).

Additionally, the mining activities under the DEQ General Permits occur in Key Watersheds, Roadless Areas, Wilderness and Late-Successional Reserves. These land allocations are also essential components of the Aquatic Conservation Strategy.

Despite the acknowledged importance of Riparian Reserves, the DEQ renewed General Permits will allow placer mining operations that process up to 10,000 cubic yards and build sediment ponds up to 20,000 square feet, to occur in Riparian Reserves without benefit of site specific review. This general permit for activities in critical salmon and steelhead habitat is antithetical to the ACS, the CSRI and the beneficial uses of Oregon streams.

A provision of General Permit 600 is that it does not apply to Oregon State Scenic Waterways presumably because Scenic Waterways are important waterbodies that should receive increased protection from the impacts of placer mining and site specific review of placer mining operations. That General Permit 600 does apply to much of the best remaining salmon refugia on public lands (supposedly protected from degradation by the ACS) and that the State of Oregon has overlooked this obvious fact, is symptomatic of the failure of existing state regulatory mechanisms and processes. (There remains an even larger questions, should any placer mining activities be permitted in Riparian Reserves?)

Similarly, General Permit 700-J applies to suction dredge mining that occurs in the same critical land allocations on public lands as General Permit 600. While 700-J's proposed 10 horsepower limit for suction dredges provides better protection to streams and aquatic life than the previous general permit, it still applies to suction dredge mining in Riparian Reserves. Not of the mining disturbance occurs in the most productive areas of the streams, the low gradient depositional reaches that are prime spawning and rearing habitat. The key question is, should any suction dredge operations be discharging into some of the most important and sensitive freshwater habitat in the State under a general permit.

In order to prevent further degradation of water quality limited streams, General Permit 700-J does not apply to streams on DEQ's 303 (d) List for toxic substances and sediment. While we agree no further degradation should occur on streams water quality limited for these parameters, additionally 700-J should not apply to streams water quality limited for parameters such as temperature and habitat degradation and most importantly, the General Permit should not apply to the best remaining habitat - ie. those streams <u>not</u> water quality limited. The FEMAT in discussing the Aquatic Conservation Strategy states that, "[w]atersheds currently containing the best habitat or with the greatest potential for recovery shall receive increased protection" (p. V-29). General Permit 700-J leaves the best remaining habitat subject to <u>less</u> protection.

Additionally the Division of State land recently issued temporary regulations relaxing requirements for permitting suction dredge mining in essential salmon habitat and the Oregon State legislature amended Oregon State Scenic Waterway rules to again allow motorized suction dredge mining. While, DEQ's General Permits and DSL's relaxed regulations may reduce agency paper work and promote placer mining in Oregon's streams and rivers, they do not benefit salmon or their habitat.

Building Prisons Not Subject to CSRI?

The Illinois Valley has been selected as a finalist in the State Corrections Department's medium security prison site selection process. Construction of a medium-security prison in the Illinois Valley would increase water consumption both directly and indirectly through increased population growth and development. Water in the Illinois Basin is already over appropriated. Minimum summer stream flows are currently inadequate to support the beneficial uses of basin streams. Additionally, the prison would increase point source and on-point source pollution which combined with increased water consumption would impact the outstanding values of water quality and fisheries of the National Wild and Scenic Illinois River and the threatened salmon and steelhead populations that the CSRI is claiming to protect.

Stream flow availability and water quality in the Illinois basin has been declining for years. The state of Oregon has failed to take corrective action. In 1991 Siskiyou National Forest Supervisor, Mike Lunn wrote to Bill Fugii, Water Resources Department, stating that:

> The minimum flows [of the Illinois River] listed for fish are too low . . . The consumptive uses in both Illinois Valley and Deer Creek have severely reduced instream flows and elevated water temperatures, leading to our current salmonid fish survival problems. (letter dated September 6, 1991 in response to Scenic Waterways flow assessment).

In some recent years even the inadequate minimum stream flow for the Illinois was not met. During these low flow periods, the streams in the Illinois Valley are dewatered, leaving juvenile coho and steelhead to die in shrinking pools. Additionally the Illinois River and many of its tributaries are now water quality limited (1996 DEQ 303 (d) List).

The community of Cave Junction is being further polarized over the prison siting issue and fighting over water that should be allocated to fishery recovery (attachment D). The CSRI does not address prison siting issues and the State Corrections Department seems not to be concerned about the implications of its prison location on threatened coho and steelhead.

Conclusion

We urge governor to support the listing of coho salmon and west coast steelhead under the ESA and to implement strong regulatory reform, based on the best available science, for how the state manages salmon and salmon habitat. Recovery should be based on perpetuating self sustaining naturally spawning populations and not on hatchery programs dependent on the capture of wild salmon from their native habitat. The recovery efforts of state and federal agencies should be coordinated by the National Marine Fisheries Service and should be subject to public review and process.

Thank you for the opportunity to comment on the CSRI, the openness of the process and the courtesy of the staff in the Natural Resources Office. We will continue to work toward the protection of salmon and salmon habitat for current and future generations.

Respectfully,

Barbara Ullian
Siskiyou Project
PO Box 220
Cave Junction, OR 97523

Siskiyou Audubon
PO Box 1047
Grants Pass, OR 97526

Attachments

cc National Marine Fisheries Service

NEW - 2/20/97

Return to top of page

Salmon Plan Review
Capitol Building
Salem, OR 97310

October 26, 1996

RE: Governor's Oregon Coastal Salmon Restoration Initiative.

I am disappointed that you have encouraged the NMFS to withhold protection for the Coastal Salmon for six months. The fish have endured years of delays in the necessary protection status, and you have again postponed it. Politics should not play a factor in protecting this important public resource. Scientific data is what is needed in this crisis.

The CSRI does not present a scientific salmon recovery plan, and proposed measures are not based on scientific recovery plans from other sources. Additionally, the CSRI is primarily a voluntary plan without guarantees of implementation, enforcement, or effectiveness.

It is my hope that by protecting the Coastal Salmon under the ESA, Douglas County can be assisted in changing to less destructive logging practices, while still maintaining a productive commercial wood products industry.

The protection of the Salmon under the ESA would hopefully bring about changes in the State Forest Practices Act governing private lands, and well as better interpretation of, and enforcement of, the ACS of the presidents NWFP governing Federal Lands.

I would like to present some examples of the problems that currently exist.

Private timber lands: State Forest Practices Act:

The State Forest Practices Act (SFPA), even when strictly complied with by the timber industry, can result in extensive fish bearing stream damage.

Enclosed with these comments are the referenced pictures. Picture 1 is of two large landslides that occurred on steep unstable soils that were clearcut by Lone Rock Timber in 1995 under the guidelines of current laws. This unit adjoins a large fish bearing stream, Brush Creek. If current laws restricted the harvest method of clearcutting on unstable soils, this could have been prevented.

Picture 2 is a close up of the bottom of the north, or right side land slide. This is a permanently wet, sometimes flowing intermittent stream. If the State Forest Practices Act required some buffers on intermittent streams, the sediment flow, and perhaps the landslide itself, could have been prevented.

This slide contributed a large amount of sediment directly into Brush creek, via the culvert under the road that is between the unit and Brush Creek. Picture 3 is some of the sediment still left, months after the initial

landslide took place. Even though the edge of the unit is separated from the creek by a road, it is within 100 feet - within the required riparian area. Because of variances and riparian basal area credits allowed by the SFPA, this riparian buffer, seen in picture 2, was totally denuded of all trees. The credits and variances loophole of the State Forest Practices Act needs to be monitored, and modified, so as to prevent future landslides devastating important anadromous fish bearing streams, such as Brush Creek.

Federal Timber Lands: The Northwest Forest Plan:

The NW forest plan is also not adequate criteria to use for protecting fish habitat. For instance, the "fostering and encouragement" of mining activities, in Riparian Reserves, as is done in the Umpqua National Forest, is a direct threat to the continuing existence of our fish.

Additionally, the NWFP can be changed on a whim. For instance, congress passed the "salvage" logging rider in 1995, which mandated the logging of old sales previously held up because of their extreme environmental damage (section 318 and post 318 sales). This caused clearcutting, in addition to the current harvests, of 135 mmbf of green healthy old-growth forests in Douglas County. Over 82 mmbf of this was from the NWFP designated Late Successional Reserves (LSR), land that had been set aside for the preservation of old-growth dependent species, including fish.

These sales were in violation of most current environmental laws. They had no buffers on intermittent streams and inadequate buffers on fish bearing streams. Picture 4 is the BLM Pond View timber sale, cut in the early spring of 1996, showing a muddy stream, unnaturally damned up into the muddy pond view. Some of these rider cuts were on steep unstable slopes without any retention trees. Picture 5 is of the Summit Creek timber sale, cut in early October of 1996. The picture shows recently harvested trees yet to be drug out of, and through, the intermittent stream with no riparian buffer.

Even on the new, supposedly "option 9" cuts, the interpretation by the agencies of the NWFP has consistently been in favor of increased timber extraction, with questionable compliance with the ACS. This interpretation has had to go unchallenged because the salvage logging rider also prohibited any citizen appeals even on these new sales.

For instance, the Roseburg BLM Four Gates timber sale has only 50% of the NWFP required buffer widths on most of its intermittent streams: only 90' instead of 180'. BLM decided this without a fisheries biologist or a hydrologist on the ID team, and without any site specific scientific analysis, as required by the NWFP.

The Broken Buck timber sale will log on soils BLM's soils scientist classified as so steep and unstable, they should be reserved out of the units.

Kernel John timber sale will clearcut units right next to units that have not, and possible will not recover from past logging. This in violation of BLM's own Resource Management Plan. The Kernel John timber sale is even in a Tier 1 key watershed.

Many other BLM timber sales are in violation of the ACS, some of which are the Buck Creek, Black Hole, and Cobble Creek, and their massive spraying of over 2 million pounds of fertilizers this year, some within riparian reserves.

The salvage logging rider has prevented citizen overview, and the opportunity to argue our interpretation of the NWFP's ACS. Even though this segment of the rider expires on December 31 of this year, it is not inconceivable that more riders will be lobbied for by the timber industry, as they have successfully done so twice in just the last 6 years (including the 318 rider in 1990). The effects of these riders seriously undermines current environmental laws protecting fish species, and will effect Douglas County's environment

for centuries to come. The governors plan for "voluntary" protection is ridiculous in the face of such congressional power.

I encourage the governor to allow the protection, under the ESA, of any fish species in decline, including the Coastal Salmon, with the hope that our current environmental laws on federal timber lands and private industry timber land will be improved so s to prevent further environmental degradation of public resources, such as fish. Governor, what will you tell your grandchildren if any more fish species expire under your administration? Please do not play politics with our delicate, endangered environment.

Thank you for the opportunity to comment.

Francis Eatherington
for Umpqua Watersheds, Inc.

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(541) 673-7649 francis@teleport.com

INSERT 6 PICTURES DISPLAYED ON TWO PAGES

NEW - 2/20/97

Return to top of page

NATIONAL WILDLIFE FEDERATION
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503-222-1429
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VIA FACSIMILE
ORIGINAL MAILED

November 1, 1996

Salmon Plan Review
Capitol Building
Salem, OR 97310

Dear Sir:

Thank you for the chance to submit comments on this draft plan. We have reviewed the draft plan with an eye primarily toward resolving the extraordinary damage to salmon habitat caused by mining activities. In that respect, we appreciate the draft plan's plain acknowledgement that mining activities are among the factors that have contributed to the decline of coho. Our specific comments for certain agencies follow.

Department of Environmental Quality ("DEQ"):

1. DEQ is under an existing legal obligation to comply with Phase 1 actions DEQ1 and DEQ2, which concern water quality limited bodies and the promulgation of total maximum daily loads. The plan should state another requirement that, pending the development of TMDLs, DEQ will not issue a permit for any new source of pollution in streams that support coho and other salmonids, unless and until EEQ first determines that the pollutant is unrelated either directly or indirectly to the parameter(s) causing the stream to be designated as

water quality limited. OAR 340-41-026(3) (a) (C).

2. Because section 401 certification under the federal Clean Water Act is optional, DEQ5 is meaningless unless the State of Oregon in this plan affirmatively binds itself to certifying or denying certification to new sources of pollution in streams that support salmonids. Further, the Legislature must significantly increase DEQ's budget to give the agency the staffing necessary to perform meaningful certification review.

3. The plan must specify the provisions by which DEQ would aggressively assert its section 401 certification authority. In the context of mining, the Forest Service and Bureau of Land Management have uniformly failed to await certification before authorizing mining activities to commence in navigable waters. We discovered an egregious example last year, where the Forest Service had authorized a gold miner to excavate up to 500 cubic yards annually from the bed of the Chetco River within the Kalmiopsis Wilderness, even though the miner had never obtained requisite federal or state dredge permits or state certification for the activity. (The mining was stopped, however, not because DEQ took any administrative action, but because DSL inspected the operation and took action.)

4. DEQ has proposed to issue a new general discharge permit for suction dredge placer mining operations. The permit would allow a discharge of sediment from what DEQ has estimated as 1,632 mining operations into many streams that support salmonids and are water quality limited. The general permit has two serious flaws. First, it would illegally allow new discharges into streams that are water quality limited for temperature, habitat modification, intergravel dissolved oxygen, and impairment of beneficial uses. Second, it would allow a suction dredge with an intake hose of up to eight inches, which is twice the diameter of the "intake" that the Legislature prescribed when it defined recreational suction dredge mining operations. ORS 340.835(17)(b). The State of Oregon through this plan or other processes should ensure that any new general discharge permit for this type of mining (1) does not apply to additional water quality limited streams, and (2) properly limits the size of the intake to four inches.

Division of State Lands ("DSL"):

1. DSL should have jurisdiction over instream activities that is based on biology, not politics. However, the Oregon Legislature codified a statutory limit on the percentage of a stream that can be designated "essential salmonid habitat": ORS 196.810(1)(e)(A). The State of Oregon must eliminate this arbitrary and capricious limit, so that all essential salmonid habitat may be designated to sufficiently protect salmonids.

2. Miners have a legal right to mine only valid claims. One simple and appropriate new requirements that DSL should make of any miner who applies to obtain a state dredge and fill permit is that he prove that he has a valid claim.

3. DSL1 is based on incorrect premises. Although it is true that in 1993 the Army Corps of Engineers "exercised jurisdiction" over excavation activities such as mining in streams that support salmon, the Corps has not since issued a single individual permit for any mining operations, even though the mining has occurred. In fact, in April, 1996, the Corps issued a "special public notice" stating that it would not require a permit for mining under certain parameters. If the State of Oregon wants to assume the 404 permit program, it should know that we will not countenance any unregulated discharges.

Oregon Department of Fish and Wildlife ("ODFW"):

1. ODFW has established "instream work guidelines" that set the timing for instream work, ostensibly to protect coho and other salmonids. In turn, DSL. DEQ, and the Corps of Engineers all incorporate the guidelines as specific conditions of the permits and authorizations that the agencies may issue to allow instream work to commence. Last spring, we commented on the draft CSRI, urging ODFW to establish timing guidelines that are (1) more uniform and (2), more strict, i.e., would decrease the period during which

instream work should occur, so that coho and other salmonids would be better protected.

ODFW's response was that "ODFW's role in mining and gravel removal is advisory only . . . it is not within our jurisdiction to change the procedures."

That is wrong, and misses the point. ODFW has the jurisdiction to procedurally establish instream work guidelines: in fact, it has already done so, and it has recently announced its intention to revise the guidelines. More important, the "guidelines" are in fact adopted as specific conditions of the permits and authorizations that other agencies must issue for instream work to commence. Therefore, whether ODFW's role is "advisory" or not is irrelevant. The guidelines are enforceable conditions of the permits that are necessary to conduct instream work.

We iterate our earlier comments: the current timing dates inappropriately allow instream work at times in which ODFW knows that salmon eggs or alevins may be present. For example, the Forest Service recently examined authorizing mining from the bed of Silver Creek, one of the most important tributaries of the Illinois River in terms of salmon habitat. The federal agency's preferred alternative for the mining would not allow it to begin until July 1st because, in the Forest Service's view, the ODFW timing guideline of June 15th for Silver Creek is too lenient and would risk destroying steelhead embryos in spawning gravels or newly-emergent fry.

Moreover, as we commented earlier, the current staggered opening dates are confusing, because specific stream reaches within even the same river basin may have different opening dates. The result is that miners and others are often not sure when they can begin mining and, as a result, often simply ignore the guidelines.

2. ODFWIVA4 is a good idea. We support the State of Oregon's efforts to pursue all state options to close streambeds from entry or location for mining and other activities. However, state agencies' ability to assert jurisdiction over streambeds is at this time limited by the Oregon Legislature, which has prevented agencies from asserting any ownership claims pending the completion of further studies. ORS 274.400 to 274.412. The State of Oregon should bind itself to removing that limit.

Further, an action item that should be added to the plan is that the State of Oregon will apply to the Secretary of the Interior to withdraw from entry and location the streambeds and adjacent riparian lands in or near essential salmonid habitat that are under the jurisdiction of the federal government. Such a withdrawal allows valid existing claims to be mined, but it prohibits new claims. Further, the State would avoid any battles about navigability if it were to make such a petition. And it's important to note that the Secretary of Interior has responded favorably to withdrawal petitions based on the needs of salmon: he recently approved the withdrawal of 4,921 acres of Elk Wild and Scenic River corridor to protect its resources. 61 Fed. Reg. 5719 (Feb. 14, 1996).

Thank you for your attempt to write a comprehensive plan to restore and protect coho salmon. The National Wildlife Federation nonetheless continues to support the listing of coho under the federal Endangered Species Act. The State of Oregon's efforts in the CSRI are meaningful, however, because the plan may help establish a proper habitat conservation plan for federally-listed coho salmon.

Sincerely,

Peter M.K. Frost
Counsel

NEW - 2/20/97

Return to top of page

THE PACIFIC RIVERS COUNCIL
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TO: Salmon Plan Review
Capitol Building
Salem Oregon 97310

FR: Pacific Rivers Council
DA: November 1, 1996
RE: Oregon Coastal Salmon Restoration Initiative

Please accept these as our preliminary comments.

This letter has two parts, one that addresses the concepts that are essential to a conservation plan generally, and one that addresses Clean Water Act obligations in some detail.

Part One: the Essential Concepts in the OCSRI

In summary, we support and applaud the direction and intent of the Oregon Coastal Salmon Restoration Initiative. We think that community involvement through watershed councils will be an important mechanism for focussing the involvement of many interests on coastal recovery. In addition, we think the core concepts of basing recovery on protection and expansion of the best remaining habitats is sound, and essential if recovery is to occur. However, because the plan limits itself to actions that are available under existing law, regulation and practice, it does not cast a broad enough net. A new vision, based on what should be done rather than what can be done under existing laws is essential if the fundamental changes needed are to start. Even the best intentioned implementation of the existing system will not be sufficient to reverse a coast wide downtrend that has been in place for decades. Fundamental changes in streamside and watershed conservation will be required across the coho landscape to reverse the downtrend, and begin the uptrend.

Specific Comments on selected "Essential Elements of a Conservation Plan" pp I, 5-8:

Element One -- Identify Limiting Factors. . . .

We do not agree that "limiting factors" is an appropriate (or even technically possible) approach for coastal salmon recovery. A "limiting factor" -- even one described at a watershed level -- is still a single species, not an ecosystem approach. For an alternative to the use of single species approaches, see the discussion of watershed restoration in FEMAT, 1994 or in Henjum, et al, 1995.

We concur with the concept of prioritizng the protection of recovery of the best remaining habitats, and of tiering restoration efforts to relinking and expanding those areas. However, without explicit management direction for the "core areas", it is difficult to see how this sound concept will translate to land management prescriptions on the ground. In addition, the "core areas" can only be the cornerstone of a recovery plan if an explicit attempt is made to assess the sufficiency of those areas as refuges. An analysis should be done as to the robustness of the number of core areas and their spatial distribution, with particular attention to the concept of

a metapopulation network of locally adapted breeding populations. In layman's terms, the questions are: are there enough refuges, and are they close enough together to conserve the species.

Element Three: Establish explicit objectives and timelines for correcting factors...

We concur with the basic concepts enumerated under this element, but are deeply concerned that for some of the most critical concepts -- "conserve a well-dispersed network of high quality refugia to serve as centers of population expansion" -- the plan is effectively silent, so that the mechanism for conserving the network is not apparent. This is a very serious matter. For high quality refugia that are on private lands, realistic measures to acquire or otherwise secure conservation management will be required. On federal lands, the situation is not much better, because, although coho habitats are nominally protected by the Presidents Forest Plan, in practice, Congressional action (e.g. the salvage rider) or agency reluctance to embrace a vigorous program of protection and restoration has resulted in an on-going decline in habitat conditions.

Element Five: Adopt Measures needed to achieve the explicit objectives

The suite of measures submitted by the agencies are a good faith attempt to provide useful actions for coho salmon under existing law. However existing law and practice were never conceived with the goal of salmon or watershed recovery, indeed, at best they were conceived to prevent substantial and adverse degradation from the then existing conditions.

Existing measures helped create the problem. While many new initiatives are under way the science team was unable to conclude whether the new proposals were sufficient to reverse the downtrend. In addition, many of the factors that contribute to salmon decline are still proceeding relentlessly -- including roadbuilding in salmon watersheds, and riparian grazing and timber harvest.

These measures paint a picture of what we can readily do -- what is missing is the picture of what we should do. It would be useful for the **ideal** suite of recovery measures to be described in detail, so that the gap between existing and ideal practice may be fully appreciated.

Part Two: The Clean Water Act

In addition to these conceptual level we comments, we strongly recommend that this Initiative seize the opportunity to revamp the water quality standards program.

Recommendations for State Programs Under the Clean Water Act

The current status of coho and other salmonids has profound implications for Oregon's water quality standards program. In our estimation, this status constitutes a clear indictment of current approaches to implementation of the Clean Water Act both in this state and nationwide.

It is our hope that Oregon will continue its renowned tradition of breaking new ground in good government by using the coastal fisheries crisis to re-invent its entire water quality standards approach. Clean Water Act programs need to continue their evolution from their chemical constituent-based roots into the new paradigm of overall watershed-based measures of aquatic ecosystem health. There is a vast and growing scientific basis for this approach.

Specifically, we believe that the water quality standards program need to cement their nexus with endangered species conservation duties by explicitly integrating a FEMAT-style "Aquatic Conservation Strategy" approach

into its water quality standards. Such a framework can and should include each element of a landscape-level, spatially-explicit, strategic approach: identification and protection of aquatic refugia, riparian protection, watershed analysis, watershed restoration and monitoring.

Within this strategic framework, water quality criteria should be revised to more accurately reflect the health of aquatic systems. These revisions are necessary to move toward meeting the intent of the Clean Water Act to protect and restore biological integrity. (Section 101(a)). We suggest that this revised program should build on the matrix of pathways and indicators developed by NMFS and others to use in a watershed-based approach to consultations on individual and grouped actions. (NMFS, Environmental and Technical Services Division, Habitat Branch, August 1996, with contributions from USFS and others).

303(d) Compliance. This may also be an opportunity for Oregon to create an alternative framework and approach to meeting state obligations toward impaired water bodies through TMDLs under Section 303 of the Clean Water Act. The watershed planning and implementation mechanisms strengthened and revised in pursuit of coastal salmon recovery could provide an alternative water quality standards compliance mechanism if is appropriately designed and integrated into the water quality standards programs. Opportunities for creating compliance mechanisms through Section 10 consultation under the ESA and Section 4(d) rules should be explored.

Triennial Review. The state, with the oversight of the Environmental Protection Agency, has a duty to ensure that Oregon's water quality standards program fully protects all beneficial uses, including anadromous and resident salmonids. This duty is independent of, and may be more stringent than, the species conservation and recovery duties derived from the ESA. The adequacy of these water quality standards to protect and restore these species must be fully evaluated as part of the upcoming triennial review process. Further more, should a listing occur, any decision by EPA to approve water quality standards will constitute a federal action subject to consultation with the National Marine Fisheries Service. This matrix is a credible attempt to enunciate a suite of ecological indicators (criteria and standards) relevant to the attainment of ecological goals and objectives within the range of anadromous salmonids.

Antidegradation

An aquatic conservation strategy which includes criteria and standards relevant to the protection of refugia for native aquatic species is fully consistent with, and arguably required by, the antidegradation goals of the Clean Water Act. Meaningful implementation of an antidegradation policy must give priority to the protection of the few remaining areas of high chemical, physical and biological integrity. According to accepted principles of conservation biology, protection of functional watersheds is the only option to preserve any real hope of stopping of slowing (much less reversing) the current slide toward extinction of our aquatic species.

Specific Recommendations Relevant to DEQ Actions on OCRSI

- This plan's commitment to the expanded use of Section 401 certification would have greater impact if the discretion of the state to waive certification authority were narrowed. We suggest that at least for certain categories of action which may adversely affect coastal salmonids (such as those affecting core areas, for example), the state should promulgate rules which require that it exercise its certification authority.
- It would be appropriate for the state to commit to denial of certification for activities on 303(d) listed salmonid streams which contribute to the exacerbation of the problems which caused the stream to be listed as impaired.
- We strongly support the prioritization of remedial actions on 303(d) listed streams according to ecological priorities.

Respectfully submitted,

David Bayles	Mary Scurlock
Senior Program Director	Senior Policy Analyst

cc: Will Stelle, NMFS
Mike Spear, FWS
Chuck Clarke, EPA, Region 10
Bob Perciasepe, EPA, National Headquarters
Langdon Marsh, DEQ

NEW - 2/20/97

Return to top of page

Oregon Salmon Planning Task Force
Salmon Plan Review
Capitol Building
Salem, OR 97310

Re: Oregon Salmon Recovery Plan

Thank you for the opportunity to comment on the Recovery Plan. Salmon For All is very aware of the tremendous challenge of recovering Oregon Coastal Wild Coho. The preliminary recovery plan addresses key issues to salmon and habitat. Salmon for All also has concerns in the following areas:

1. Escapement requirements and the difficulty of evaluating and monitoring needed escapement. Understanding how much habitat is available and how many Coho these systems can sustain.

2. The source(s) of funding to continue the plan.

3. Unifying the tremendous amount of voluntary effort from private and corporate land owners.

4. Developing recovery strategies and building consensus between the many people involved in the recovery process. It will be difficult to coordinate the 32 separate watersheds.

5. To maintain public support for recovery, improvements need to be seen in a few years. (less than 6 or 7)

6. These improvements hopefully will prevent the Federal Government from listing the Coastal Coho as an endangered species.

After studying the plan, Salmon for All offers these recommendations to assist the Plan in achieving its goals. (they are not listed necessarily in order of preference)

1. Continue with the watershed councils. They are made up of people from particular watersheds and are in the best position to make intelligent decisions.

2. Do not fin clip hatchery fish being released from Columbia River waters. These finclipping operations are very expensive and have a high mortality rate. Fish returning can be harvested without fin clipping.

3. Some watersheds have healthy stocks of Coho -- leave them alone to concentrate on streams that are really

in trouble.

4. Use hatchery funding from the South Coast to raise salmon to Columbia River Terminal Fisheries.

5. Have logging operations mitigate streams by repairing those watersheds they have logged.

6. Return district biologists to the Coast. They will provide the technical knowledge for the watershed councils.

7. Change land use laws to be more friendly to watersheds.

8. Continue to study ocean conditions. In our opinion, this is a key component to recovery.

9. The escapement levels expected are low and would severely impact commercial and sport harvest. This ia difficult decision but it would be better for the Task Force to make it rather than the Federal Government.

10. **Education for All**, especially the youth. They will soon be a participating group. Tell them and they forget; Show them and they may remember; Let them and they forget; Show them and they may remember; Let them participate and they will understand.

11. The Coastal Recovery Plan should be enacted on a voluntary basis. If there is a lack of voluntary activity, then mandate streamside and riparian laws will need to be enforced.

Salmon for All hopes that the plan succeeds in keeping the Coastal Coho from being listed as an ESA as we believe that would cripple the entire sport and commercial fisheries. We offer our comments and suggestions to assist the Task Force as they refine the Salmon Recovery Plan. Thank you for the opportunity to participate.

Salmon for All

Steve Fick, President

NEW - 2/20/97

Return to top of page

UMPQUA VALLEY AUDUBON SOCIETY
PO Box 381
Roseburg, OR 97470

Salmon Plan Review
Capitol Building
Salem, OR 97310

RE: Oregon Coastal Salmon Restoration Initiative (CSRI)

Dear Personnel:

The following constitute Umpqua Valley Audubon Society's comments on the Coastal Salmon Restoration Initiative. It is, without question, an unprecedented effort and offers promise as the framework for what we hope will be a more substantive product after revision.

The CSRI Executive Summary identifies the following goals:

- preserving and restoring native coastal salmon populations; and
- preventing the need for a federal threatened or endangered listing of coho salmon under the ESA.

The listing has now been deferred for six-months, which gives the State an opportunity to develop a real protection and restoration plan. The recently published Coastal Salmon Conservation: Working Guidance for Comprehensive Salmon Restoration Initiatives on the Pacific Coast (NOAA/NMFS, September 15, 1996) identifies the "three overarching components of a successful restoration strategy" as:

a. it's substantive protection and conservation elements;

b. a high level of certainty that the strategy will be reliably implemented, including necessary authorities, commitments, funding, staffing, and enforcement measures; and

c. a comprehensive monitoring program." (NOAA, page 1)

Unfortunately, the CSRI fails in all three components, primarily because of the unrealistic determination to limit the plan to existing laws and voluntary activities. Enforcing existing laws and volunteerism are both laudable, but have proven inadequate to prevent the rapid decline of coastal salmon species.

The patchwork of existing state laws and enforcing agencies needs a complete overhaul in the interest of a coherent scientific framework for coordinating and prioritizing salmon recovery efforts. That clearly does not now exist. Additionally, the plan fails to address the land-use practices that are continuing to damage salmon habitat.

Similarly, the total reliance on volunteerism is naive. Voluntary efforts alone will not be able to resolve problems that voluntary efforts failed to prevent in the first place. The kind of "carrot and stick" approach that has worked so well nationally to improve air and water quality is needed in this case.

Finally, there is absolutely no reason to believe that new funding will be forthcoming from Oregon's legislature. For that reason, if for no other, the State should look again at its opposition to the proposed federal listing of coho and steelhead. Only with those listings will a Federal/State partnership be forged that will be necessary to put together a real, comprehensive recovery strategy.

We therefore urge you to look to the NOAA/NMFS guidance document in revising the CSRI. In doing so, it would be wise to keep in mind that no one has ever "restored" a salmon population, so "preservation" is far more prudent.

Thank you for this opportunity to comment.

Sincerely,

Diana Wales
Vice-President

cc: Creta Bennet, UVAS Pres.
Karma Clarke-Jung, UVAS Cons. Chr.

Return to top of page

PACIFIC FISHERY MANAGEMENT COUNCIL
2130 SW Fifth Avenue, Suite 224
Portland, OR 97201
(503) 326-6352

October 30, 1996

Governor John A. Kitzhaber
Salmon Plan Review
Capitol Building
Salem, OR 97310

Dear Governor Kitzhaber:

The Pacific Fishery Management Council (Council) would like to provide some brief comments on the draft *Oregon Coastal Salmon Restoration Initiative (CSRI).*

We first would like to recognize and endorse the considerable effort that you and your administration have put forth in committing to rebuilding Oregon's coastal salmon stocks. The CSRI draft plan reflects your strong commitment to healthy sustainable fish populations upon which fishing communities depend.

Our comments on the draft CSRI are as follows:

1. The CSRI needs additional impetus to assure habitat protection and restoration.

   We agree that voluntary approaches to solving the salmon crisis are preferable to additional regulatory burdens on Oregon's citizens and natural resource industries. However, in the past several years, the Council has imposed severe restrictions on ocean coho salmon fisheries along the entire West Coast. These closures have been at great cost to salmon dependent communities. The purpose of the closures has been to return more spawners to the streams. If adults return to natal streams that are of poor quality for spawning and rearing, then the inordinate sacrifice of our fishing community is diminished.

   The Council believes that fisheries restrictions which result in economic hardship on the recreational and commercial fishing industries and dependent coastal communities, must be accompanied by concomitant measures which address the serious habitat problems faced by anadromous fishes. In addition, the burdens (and benefits) of natural resource management must be shared by all the citizenry.

   Therefore, the CSRI should emphasize enforcement and monitoring of the existing habitat regulations on state and private lands and recommend stronger rules where needed. Specifically, forest practice regulations protecting small fish bearing streams on state and private lands may be inadequate to ensure full protection of anadromous resources. Also, management of Oregon's range and crop lands needs to reflect a commitment to reducing negative impacts on water quality.

2. Long-term commitment, funding and monitoring is essential.

   Recovery of anadromous salmon stocks will require years if not decades. We hope that the final plan

will be constructed so that it is shielded from the inevitable fiscal and political changes in years to come. We anticipate that a challenge to the CSRI's success will be the securing of sufficient long-term, stable funding. This funding will be especially vital in monitoring the success of the program. Without proper monitoring, the long term vision of your program may be lost on future administrations, state legislators, industry and taxpayers, who will undoubtedly ask for fiscal accountability.

3. Emphasis is needed on protecting habitat outside the core areas.

   We agree that the CSRI's identification and protection of "core areas," is an important building block in our salmon recovery efforts. However, in some instances, core area management may be compromised by events that occur miles away from those areas. For example, lower gradient sections of coastal streams provide important coho winter habitat. If the benefits of productive (health or core area) upstream spawning and summer habitats are to be realized, then properly functioning winter habitat must be available to realize gains further upstream.

In closing, we are excited about the prospects presented by the CSRI. We are grateful for your leadership and look forward to participating in this process.

Sincerely,

Robert C. Fletcher
Chairman

SP:hmm
c. Rudy Rosen
Habitat Committee
Will Stelle
Hilda Diaz-Soltero

NEW - 2/20/97

Return to top of page

FRIENDS OF THE NESTUCCA
40805 Upper Nestucca River Road
Beaver, Oregon 97108
(503) 398-5965

October 23, 1996

Salmon Plan Review
Capitol Building
Salem, OR 97310

Ladies and Gentlemen,

I recently attended a communication briefing on the Governor's Coastal Salmon Restoration Initiative held in Tillamook, OR on September 24, 1996. I have elected to submit our comments as a separate document in lieu of completing the Draft Plan Comment form.

In general, the restoration team has done an excellent job of identifying issues and problems confronting our

fisheries resource. We agree that a sustained cooperative effort will be the only solution to preventing the outright extinction of our local indigenous salmonid populations. Perhaps the most significant part of the plan in our view is the recommendation that the Oregon Department of Fish and Wildlife (ODFW) use wild fish as broodstock for their hatchery programs. It is not just coincidence that nations who have managed their fisheries in such a manner for some time now have particularly healthy fisheries resources. The additional proposed management measures identified in the plan will help provide a comprehensive approach to salmon restoration and hopefully, fisheries management in the future.

A major disappointment about the plan is the apparent intent to more or less exclude the federal government from the recovery effort. While the plan identifies cooperation with state agencies and local governments, etc. there appears to be no provision for integrating recovery efforts with federal agencies which manage approximately 65% of the Nestucca Watershed. As a group of private landowners and residents we are of course concerned about the potential ramifications of an Endangered Species Act (ESA) listing for coho salmon (and other species) but at the same time we realize that local involvement will require federal participation, as well.

Despite the President's Forest Plan, the enclosed photo demonstrates that federal land management agencies and the Bureau of Land Management in particular, are simply conducting "business as usual". The photo was taken on August 6, 1996 during a week long project which involved the repair of the Bible Creek Access Road on the Upper Nestucca River. With the rubber stamp approval of state agencies, the US Government appears content to suspend the provisions of the Clean Water Act whenever it deems it desirable or convenient to do so. Unfortunately, this is not an isolated incident but reflects annual water quality problems promulgated by federal agencies for a wide variety of projects. I have witnessed these events since 1985 with some "restoration" projects severely impacting water quality for as long as three weeks.

An issue of particular concern arises from that fact that ODFW is also conducting itself in an independent manner. Staff recently recommended to the ODRW Commission that it repeal most conservation regulations which had been adopted over the past 10 years for the sake of angling regulation "simplification". Clearly, angling opportunity is far outweighing the Department's conservation mission despite the Governor's Restoration Initiative. In addition, the introduced summer steelhead program continues to be the "flagship" of ODFW's hatchery program on the Nestucca River. Conservation regulations with overwhelming public support have been rejected solely because of the potential impact on angling opportunity for this introduced and cross-bred product of antiquated government policy which have now deemed to be inconsistent with the Initiative.

Another matter of concern is the continuation of Phase II of the Federal Highway Administration's Blaine Road Project. At a July 25, 1996 meeting of state and federal fish biologists both US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) personnel expressed concerns about the project as proposed. Yet the ODFW representative present remarked that "as long as dairies are present and causing problems along the lower river ODFW could find no reason to object to a relatively short term government project". Apparently the concept of cumulative effects has little or no meaning to ODFW.

In conclusion, we would like to support the Governor's Plan as the basis for a recovery plan for coho salmon and as a blueprint for future natural resource management policies. But what is most needed is a policy that involves, state, local *and* federal agencies, etc. in this effort. To this extent we feel that a listing of coho salmon under the ESA is warranted given that both state and federal agencies, despite the President's Forest Plan and the Governor's Coastal Salmon Restoration Initiative, are doing very little beyond espousing rhetoric about recovery and change. Only when government sees fit to set an example by its own actions will others be willing to cooperate enthusiastically on a volunteer basis.

Thank you for the opportunity to provide these comments.

Sincerely,

Les Helgeson

President, Friends of the Nestucca

cc: Mr. William Stelle, Regional Director-NMFS
Ms. Louise Bilheimer, Governor's Watershed Policy Advisor
Mr. Tim Josi, State Representative
Ms. Gina Mulford, Tillamook County commissioner
Mr. Bruce Apple, Coordinator-Nestucca Watershed Council

NEW - 2/20/97

Return to top of page

SIERRA CLUB
Oregon Chapter
1413 SE Hawthorne Blvd
Portland, OR 97214-3640
VOICE/FAX: (503)238-0442

Jean Shaffer
Fish Issues Coordinator
Sierra Club, Oregon Chapter
25107 Maxfield Creek Road
Monmouth, OR 97361

August 26, 1996

Mr. Jim Martin
Salmon Technical Advisor
State Capitol
Salem, OR 97310-0370

Dear Jim,

Many thanks for taking the time to fill me in on the activities of the CSRI. From the tenor of the meeting summaries, there seems to be a good amount of spirit among the members of the team. Long may it last.

The summary of the items necessary for the success of the initiative, as you sketched it out on June 6, covered a lot of important territory. I greatly fear, however, that the entire initiative is a few years late. Heroic efforts may be necessary to conserve cutthroat trout, and coho populations may take a painfully long time to recovery. Given time and a decent opportunity, steelhead runs in coastal Oregon might come back pretty well, although their future in California appears tenuous.

I'm sure none of this is news to you, but the general public may not yet have a feeling for the fishes' true conditions and what it will take to recover the populations at risk. Might postponing federal ESA listing of coho and steelhead send an erroneous message to the public that the runs are not really endangered and to expect business as usual? Or is the message that we really don't care?

Should the state really assume full responsibility for restoring the runs at this late date? I could have whole heartedly supported that action three or four years ago, before the fish populations were so depleted. They could certainly have been restored more readily then and with far less public "trauma" than now. At this time, I don't think that delaying federal listing would benefit either the fish or the state in the long run but could make the task even more difficult.

The real goal is to restore and maintain viable wild fish populations for their intrinsic value and for the benefit of future generations of Oregonians. My sense of the situation is that we should proceed by using every means available, including federal action if necessary, to reverse the depletion of wild fish stocks. To that end, I wish you, the CSRI, and the fish, good luck.

Sincerely,

Jean Shaffer

NEW - 2/20/97

Return to top of page

PORT OF GOLD BEACH
29891 Harbor Way
PO Box 1126
Gold Beach, OR 97444
541-247-6269
FAX: 247-6268

September 24, 1996

Jim Martin, Governor's Salmon Advisor
Oregon Governor's Office of Natural Resources
Room 160
255 Capitol Street NE
Salem, OR 97310-0203

RE: Oregon's Coastal Salmon Recovery Strategic Plan

Dear Jim:

This letter is to assure you that the Port of Gold Beach is very supportive of the Governor's coastal salmon recovery plan. If it is possible for us to participate in future actions by the Governor to support the plan, just let us know.

The Port of Gold Beach is committed to salmon recovery. For example, we recently learned of a planned land exchange between the John Hancock Insurance Company and the Bureau of Land Management. Eventually, 627 acres of land along the Rogue River could have been turned over to the Confederated Tribes of Siletz Indians for their management and control.

The land exchange includes Rogue River access property at Ferry Hole Bar, Orchard Bar, Race Track Hill and Huntly Park. This became a matter of concern by this port's commission when the tribe questioned the water rights of the City of Gold Beach on the Rogue River. This is the source of the city's water supply. The proposed tribal management also raised questions about gill netting on the Rogue River and the use of Huntly Park, located next to the Rogue River, as a casino site.

The City of Gold Beach planned to lend the money to the port for the land purchase out of the city's water treatment plant fund surplus, but was told by counsel that they could not do so. The next alternative to financing the purchase is a bond issue. The port will be asking the voters in November to approve a $590,000 bond issue to purchase this property. Our ultimate objectives are recovery of coastal salmonids, especially coho salmon, and ensuring public access to the river for future generations.

Please let us know if we can be of additional assistance in your efforts to avoid ESA listings of coho and other anadromous fish species.

Sincerely,

Ron Armstrong
Port Manager

cc: Onno Husing, Executive Director, OCZMA
Ken Armstrong, Executive Director, OPPA
Keith Levitt, Manager, Ports Division, OEDD
Russ Crabtree, Manager, Port of Brookings

NEW - 2/20/97

Return to top of page

THE SIUSLAW INSTITUTE OF WATERSHED ARTS AND SCIENCE, INC
93246 Bassonett Rd.
Deadwood, OR 97430
(541)964-5031

October 2, 1996

Mr. Jay Nicholas
Governor's Salmon Restoration Team
Capitol Building
Salem, OR 97310

Dear Jay,

I was pleased to meet you and your wife the other night in Newport. As I mentioned in my short talk, and as you have emphasized in the preface to the draft Plan, this entire effort will not succeed without an extensive transformation of socio-cultural values regarding conservation, resources and the human role in Nature's affairs.

As you put it, this process "has no clear endpoint." Or as Dr. Kai Lee has said about sustainability, it "is not a goal, not a condition likely to be attained on earth as we know it. Rather, it is more like freedom or justice, a direction in which we strive..." So, this all becomes much more than a resource management strategy, it becomes an evolutionary test of the survivability of values. I know you understand this, and I was gratified to sense the underlying recognition of the need for Vision in your words and in your work. I hope and assume that the Governor also shares this awareness.

This all leads me to discuss some of the ramifications of our short conversation concerning Public Awareness, Education, Outreach, and of course Funding. I believe that these elements of the Plan are all inter-related, although as yet, not significantly activated. I have developed some strategic measures which I would like to present in skeletal fashion here, but in more depth soon if your interest warrants a follow-up.

1) Individual Contributions: Although we live in a time of tax-reductions, limitations, budget-cutting, etc., the State is still the largest and most effective financing institution we have. The money collecting ability of the State revenue apparatus has been used before to operate a check-off conribution process in conjunction with tax-returns. I propose the creation of an **OREGON RESTORATION** fund to which individuals can contribute by checking the appropriate boxes on their tax return (a voluntary "green" tax). The Fund would initially be utilized in the Salmon recovery effort, but should be seen as an ongoing measure for financing other elements of our resource restoration effort, such as clean streams, reforestation, etc. (S. of S. Kiesling's trust fund ideas could potentially be linked here). This fund would relate tothe people of Oregon as its shareholders and the annual report from the Governor would include an account of every penny raised and spent, as well as a prospectus for the next year's estimated income and priorities.

2) Public Awareness: To generate enthusiasm for and awareness of both the Fund and its projects, a series of TV/media spots would be produced and distributed as widely as possible, using public service space on commercial outlets, conributions from corporate media interests, public broadcasting, etc. These "informercials" would feature such spokespeople as Ted Strong, (Inter-tribal Fish Commission), Glenn Spain (Fishermen's Rep), the Governor, Watershed workers and coordinators, Historians, Biologists and so forth. Education and fund-raising would be combined in a creative appeal for people to participate in a new movement for our society, both financially as contributors, and conscientiously as consumers and producers.

3) Corporate Participation: Oregon is recovering from its resource-dependent economy with a growth swing on many of its commercial fronts. Much of this activity has at its root the much heralded, positive, "quality of life" attributes that cause both companies and skilled workers to relocate here. There are also homegrown enterprises whose market shares are enhanced by their association with the Oregon lifestyle, etc. It should not be hard to link these advantages with an obligation to give back something to the environment which is being traded on, in order to both preserve and enhance it. Corporate contribution can occur through outright donations, of course, but more importantly, corporations can be granted access to sponsorship of certain projects or types of activities, and they can be stimulated to develop conservation-friendly products, processes and identities which utilize the natural connection in exchange for contributing something back to the source.

(I have enclosed our Nike/Coho proposal as an example of what I mean. Mr. and Mrs. Bill Bowerman [Nike co-founders] are enthusiastic supports of the concept, but told me that Nike Inc. is just into making money. So, maybe we can utilize their money-making ability to help restore the balance... Bridgeport Brewery in Portland has a "Coho Pacific" brand of beer. Other opportunities are out there, many more could be developed. Am I talking about franchising the salmon to pay for its own survival?)

4) Native/Gaming Shares: As I understand it, discussions are currently underway regarding the possibility of the State acquiring some rights to a portion of the receipts being generated by Indian Gaming operations within Oregon. It would be logical, and even exemplary, if the State and the Tribes (especially the Coastal groups) were to find a way to share resources, expertise and outreach in mutually beneficial ways. For historical reasons, this issue would have to be handled with extreme sensitivity and there could be no inference of tribal responsibility for the current state of salmon populations, rather the emphasis would have to be placed on the oppotunity at hand, particularly in the area of fulfilling the Tribes' stated goals of utilizing gaming income for purposes of economic diversification and development. In exchange for their contribution, the State would have to enter into a compact assuring the Tribes reaty and/or priority rights to any eventual harvest and other uses of the resource. I have had some 25 years of experience with many aspects of Native culture and would be able to provide some assistance in the communications involved in such a relationship.

5) The Govenor's Pulpit: The only person and position in the State with the visibility and clout to initiate and maintain the movement toward sustainability is the Governor. Paradoxically, we cannot have sustainabale resources without sustainable policy and Governors must come and go. Therefore, it is essential tha the paradigm shift from natural resource extraction to renewal be led from both the top and from the grassroots, and that every effort be made to so firmly entrench this restoration culture in our social agenda that it cannot and will not be sidetracked or stymied by obsolete consciousness or irreversible decisions based on ignorance or greed.

Our society is headed for a precipice and we can't just go backwards to whatever once was. Instead, we must make a sharp turn and turn aside from our wastefulness to head in a new direction which both acknowledges the past and accepts the responsibilities of the future. Only in this way will we, the anadromous fish, and other species be able to, as you say, "discover how people and salmon can coexist in the future." The Governor and your team have begun this process, the President's Forest Plan is another aspect, but long-term success will take consistent and visionary leadership expanding this initiative to all aspects of our relationship to our only Habitat.

In conclusion, let me reiterate my support for the Plan, its challenges and its potential. I want to contribute in any way that I can. Let me also re-emphasize the demand side of the equation. To re-supply society with fish, forest and water resources without a fundamental transformation of values and expectations would be futile. To attempt to inspire and energize society to alter its basic assumptions and habits might also be futile. But

what other choice do we have? Conscience and pragmatism must unite in responding to this great challenge: the opportunity and the necessity for the sustainable improvement of both community and habitat, conservation and development, and resource production and protection.

Best wishes to you and the Team in these days of maximum effort. I would appreciate the opportunity to continue to work with you and to further expand on these concepts and strategies in the immediate future. I will be addressing the statewide GWEB conference in November, and hope to further refine many of these ideas for that presentation.

Sincerely,

Johnny Sundstrom
Coordinator

p.s. I am also enclosing a copy of my article,
"Sustainable Rural Communities: Elements of a Recovery Plan"

new e-mail: siwash@pioneer.net

The

NIKE/COHO

Proposal

Presented by

THE SIUSLAW INSTITUTE

THE SIUSLAW INSTITUTE OF WATERSHED ARTS AND SCIENCE, INC
93246 Bassonett Rd.
Deadwood, OR 97430
Phone (541)964-5031

To: **NIKE, Inc.**

re: **Coho Salmon and Corporate Opportunity**

CONCEPT: The NIKE company, as a corporate citizen of Oregon and the great Pacific Northwest, is perfectly positioned to participate in one of the most comprehensive species recovery efforts in the history of human/natural resource relationships. The concept is this: NIKE would develop and promote a new line of outdoor footwear invoking and honoring the spirit of the COHO Salmon. A percentage of the revenues from this product line would go directly into on-the-ground (In-the-stream) habitat restoration projects located on private lands within the freshwater range of this threatened species. Both fish and communities would benefit from these improvements, and NIKE would be significantly compensated by the goodwill and promotional advantages generated by a program demonstrating both its corporate responsibility and its commitment to the balance between society and nature.

CONTEXT: The wild COHO Salmon has just been officially proposed for listing as a threatened species under the Endangered Species Act (See accompanying news clips). This action affects all stocks and their freshwater habitat from Northern Calif. to the Columbia River, with Washington State's runs being classified as "candidate" populations, subject to monitoring and further review. The effect of this and other attendant

policy changes will have far greater impact on the region than the spotted owl ever had, both in extent of geographic area and changes in resource management practices.

The near extinction of the COHO and other species of salmon is a warning of grave consequences for our society and for each one of us -- their water, forests and ocean are ours as well, and there is ultimately only one habitat for all of us.

Above and beyond the economic and ecologic importance of this species for our region, this Fish assumes a mythical role as the primary symbol of life and all of its cycles here in this very special corner of the world. From birth in the creeks to life in the ocean, and in its return to breed and die in the very pools where it was born, the salmon exemplifies the great NW both to its residents and to the world. The existence of this species as both economy and symbol has the power to unite our peoples as no other phenomenon can.

The Salmon, and the COHO in particular, is the spiritual link between what is recent and what is ancient in this land. If we respond quickly and well, it will also become the bearer of our region's hopes and dreams for the restoration of its natural heritage, wealth and beauty.

STRATEGY: The threats to the continued existence of this species for both natural values and human sustenance are many: ocean conditions (El Niño, etc.), foreign deep-sea fishing fleets, predators who are themselves protected (seals, sea lions, etc.), as well as freshwater spawning and rearing habitat degradation. Most of these factors are beyond immediate correction, but the crucial one that can be dealt with immediately is the restoration of vast areas of public and privately held waterways and streambanks in a manner which benefits the fish and society without penalizing the owner/managers of these areas. This will require unprecedented coordination, good faith and long-term funding. But it can be done, and is, in fact, already being done in many places on a limited scale.

NIKE's participation in this great effort would serve at least two very significant functions. The first of these would be in the area of inspiration and leadership. People and organizations throughout the affected area would be energized by the demonstration of corporate concern that this program would put forth. Other corporations and citizens would be moved by example to get involved, to participate and to contribute. Secondly, the funding that this proposal envisions would open up many other sources through match-financing and co-sponsorships, supplementing the government's limited aid. The prestige of the NIKE name would give credibility to this effort and its need for sustained support. In addition, the use of the COHO name and product line would be a tremendous tool for public education and involvement.

All in all, benefits for the parties participating in this grand endeavor cannot be precisely calculated or projected, but they can be counted on with certainty and confidence. This winning combination of service to society and solutions for our environment has no parallel in its opportunity for success and measurable results in the immediate future of our region and its importance to world affairs.

PROMOTION: Upstream Outdoor Footwear--for work, recreation, and competition.

The life-cycle and attributes of the COHO are ready-made for eliciting responses geared to super achievement, infinite endurance, and overcoming great hardship and distances. Against the current. The COHO can leap obstacles as high as our great pole vaulters, survive ocean depths and shallow creeks, climb rock faces and waterfalls, and find its way home again when the time is right to "just do it."

The NIKE Swoosh can easily be adapted to the shape of this great fish or the fish image can carry the Swoosh on its side. NW Native imagery would be ideal.

A major part of this effort would be the creation of NIKE Restoration Watershed Projects with appropriate

signs and literature available both on-site and at central locations. Tours and promotional ventures in conjunction with other agencies and organizations would be an obvious extension, and a monitoring program with frequent progress reports would help keep up the interest level.

Specific ad campaigns and partnerships would evolve in response to success, both on the ground and on the foot.

OUR ROLE: The SIUSLAW INSTITUTE is a locally based organization operating in the Siuslaw Watershed and dedicated to the sustainable improvement of both community and habitat. We have coordinated design and planning projects utilizing University students and staff working with townspeople and agency personnel. Other projects have included habitat restoration planning and implementation, educational programs with the local schools, and economic development and natural resource planning and coordination efforts.

Our founder and coordinator, Johnny Sundstrom, was also coordinator of a Track and Field replacement project for the Mapleton School District. This project was funded entirely through private donations including a large matching grant from Bill and Barbara Bowerman. Bill, Bob Newland and Johnny worked closely on this project and each one of them has expressed a high degree of satisfaction with both the process and the result. The Bowermans have been involved in the formulation of this NIKE/COHO proposal and have given it their enthusiastic encouragement.

We see our role in this proposed endeavor as one of both consultation and execution. We have or can gather together the expertise needed to target specific practices, organizations and opportunities for the restoration work envisioned here. We are also in the business of aiding in the formation of small watershed coordinated resource management groups who would be the best recipients of project funding. And, of course, we would be eager to utilize this program to turn our own watershed into a demonstration project for the region.

We would like to meet with NIKE representatives to further explain or describe this proposal's potential and the possibilities which is encompasses. We are convinced that the opportunities embodied in this proposal are unparalleled in the history of corporate commitment and compensation, and that the cause is free of the taint of narrow and subjective controversy. We also believe that the future will be determined more and more by those who can see the benefits inherent both in "green marketing" and in nature's recovery.

Sincerely,

Johnny Sundstrom, Coordinator
For the Board of Directors

THE CHANGING NORTHWEST
Newsletter of the Northwest Policy Center

University of Washington Graduate School of Public Affairs

Volume 7, Issue 2
September 1995

Linking Wood Processors, Training and Technology (Paul Sommers, NPC Executive Director)

Secondary processing of solid wood products is an expanding industry in the Northwest. Domestic and international markets are growing for housing components, engineered wood systems, musical instruments, furniture and other products.

Sophisticated technology and related training are often required to compete in these higher value markets and to accommodate changes in the quality of wood available for secondary manufacturing.

Consider two Northwest examples. The first, a diversified secondary products manufacturer, plans to replace their obsolete mill. The new mill will have more advanced equipment, and will require workers to operate computerized control systems.

The other, a manufacturer of musical instrument components, has patented a promising new design that could increase its production and market share. Production of the new model relies on sophisticated equipment including an advanced scanning/optimizing system. To operate the new plant, the company's workforce will need retraining.

Where will these and other secondary wood products manufacturers go to get assistance with retraining or advice on what new equipment they need and how best to use it?

A recent study tour of secondary wood products plants and colleges in Germany and Switzerland may suggest some answers. In Europe, firms facing modernization challenges have several options for assistance.

Steinbeis Centers--which operate at German universities with private support, assist firms with changing technology by helping design new or upgrade existing plants, and providing up to date information on new equipment and products.

Apprenticeship programs in both countries turn out such highly skilled workers that retraining is less often required, but if it is necessary, union programs and targeted training enterprises are available to provide it.

The Fachhochschule, or specialized engineering colleges, in Germany and the Swiss School of Engineering for the Timber Industry maintain close ties with the industry. They provide training for advanced workers as well as technology support for small and medium-sized firms. Faculty from these specialized engineering colleges act as consultants to the industry, advising them on product development.

Such models are not going unnoticed in the Northwest. Both Oregon and British Columbia have committed to upgrading education and training for secondary wood products workers.

In Oregon, WPCC, Inc., a statewide secondary wood products association, offers a basic woodworking course to improve the skills of new industry workers. It is also developing, in partnership with three community colleges and with state and matching industry funds, a community college program for advanced training in secondary wood products manufacturing.

B.C.'s program is even more ambitious. The British Columbia Institute of Technology (BCIT) has worked with faculty at Germany's Rosenheim Fachhochschule to tailor a program for the province. Rosenheim students have served internships in B.C. firms to help prepare the firms for optimal use of highly skilled workers.

Three high school districts are establishing tech prep programs to feed students into BCIT, and graduates of the Institute's two year program in wood products manufacturing will be able to transfer to four year engineering programs at the University of British Columbia. Students can choose to go to work in woodworking firms either after high school, upon completion of the BCIT program, or after graduating from UBC.

Such innovative programs are needed in all the states of the Northwest. State, federal, industry and labor leaders must coordinate to:

- build ad hoc training and education efforts into the formal education system;
- create effective apprenticeship and tech prep programs at the high school level; and
- fund technology centers to assist firms as they modernize or develop new plants to further penetrate high value markets.

The region has an outstanding resource base, a strong environmental ethic that provides market advantages, and a growing secondary processing industry that is adding more value to primary products. Improved education and training systems, as well as technology assistance for managers, would provide critically needed support to aid the industry in mastering the competitive challenges it faces.

Two Year Colleges and Industrial Modernization (Bob Watrus)

How can community and technical colleges help small and medium-sized enterprises modernize?

A study conducted by Regional Technology Strategies under a grant from the Ford Foundation was reported in *New Technologies and New Skills: Two-Year Colleges at the Vanguard of Modernization*. The study identifies eight functions community and technical colleges can serve:

- as industry hubs and service centers, providing industry-specific information and services;
- as technology centers and teaching factories, providing access to advanced technologies;
- as incubators and catalysts, helping to promote modernization;
- as outreach offices and extension services, working with firms to assess and address their modernization needs;
- as educators and gateways to work, providing certificates and associate degrees in manufacturing technologies;
- as customized and certified trainers, offering training in new work organization practices, production processes, and technologies;
- as brokers and facilitators, helping to develop networks between firms and agencies, as well as among firms; and
- as partners with the hosts for other modernizers.

Among the challenges facing two-year colleges and their modernization efforts are attracting and training under-represented populations, overcoming a preoccupation with equipment and hard technologies, increasing visibility and access among small and medium-sized enterprises, developing true partnerships with industry, building a staff with industry experience and teaching expertise, coping with limited resources and traditional funding formulas, reducing turfism within and among organizations, maintaining continuity of innovative efforts, and generating interest among young people in manufacturing.

The RTS study is based on a nationwide survey of two-year colleges and case studies of 10 selected institutions, including two from the Northwest--the Oregon Advanced Technology Consortium and Boise State University's College of Technology.

Entrepreneurship Training in Clallam County (Kirk Johnson)

Last fall, while her husband, Bryan, rebuilt an old boom boat used to maneuver logs, Barbara Bukovnik polished up her marketing, bookkeeping, and general office skills. Now, she uses those skills to help manage the Bukovnik's boom boat and mail-order fishing tackle businesses.

Bukovnik honed her skills in an entrepreneurial training program offered through the Clallam County

Economic Development Council, on Washington's Olympic Peninsula. Those skills have helped the Bukovniks launch their own boom boat business after the company where Bryan worked 15 years recently folded. They have also helped the couple's fishing tackle business weather catch reductions in Washington by improving the marketing of their products to Alaska and California.

"There was no part of a day when I wasn't learning something new about legal issues, taxes, or running a business," says Barbara. "A lot of what I learned reinforced what we'd been making up as we went along. But we gained some new ideas as well, such as making our catalogue easier to read and learning about some direct marketing techniques."

In recognition for her efforts in helping students like Barbara Bukovnik, program director Emma Watson was recently honored as one of the nation's top ten leading entrepreneurship trainers.

The Clallam County entrepreneurship training program was one of seven such efforts launched in Washington's rural areas in 1992, with funding from the state Employment Security department and other sources. The programs sought to develop new economic opportunities for workers displaced from the timber and fishing industries and other related sectors. Funding for the seven programs expired in June of this year, but additional support for entrepreneurship training may be available from the state in the future.

Clallam County was logical place for the effort. Employment in the traditional timber and fishing industries--long mainstays of the local economy--has declined due to a variety of economic, environmental, and public policy factors. At the same time, new opportunities are arising in such areas as manufacturing of value added forest products, sustainable management of natural resources, recreation and recreational equipment manufacturing, and services.

For a tiny program, the effort has built an impressive track record. In all, 145 students completed the course over a three year period. Fifty-four of those students started full-time or part-time businesses--many of which are still operating-- compared to the state's projected ten percent start-up rate for the program. Business opportunities reflect the growing diversity of the Peninsula's economy: from construction contracting, to forest management, fishing and hunting guide services, and arts and crafts. One graduate has become a personal fitness trainer.

Students in the courses ranged widely in age, interests, ethnic background, education, and experience. Some already ran businesses, while others were considering starting one for the first time. Some had advanced degrees, while others read at a second grade level.

"The program's statistics are phenomenal, in terms of the percentage of students who went on to start businesses," says Maury Forman, training coordinator for the state Department of Community, Trade, and Economic Development, which helped fund the program. "This is especially true given that many of the students were woods workers who were facing tremendous changes."

The program's effects can be measured in less tangible ways as well.

"People tell me the course has often been life-transforming," says program director Watson. "They use the skills they learn for better job interviewing, settling family conflicts, and choosing to return to formal education programs."

"They report setting their sights higher and achieving more. They also say they fell a new sense of confidence and self-esteem--they fell more optimistic."

Because of these results, both quantifiable and non-quantifiable, Watson recently was named one of the top ten Entrepreneurship Educators of the Year by Inc. magazine and the Ewing Marion Kauffman Foundation's Center for Entrepreneurial Leadership. For that honor, she receive a $2,500 stipend and a recent trip to an awards ceremony in Kansas City, Missouri, where she met fellow trainers and entrepreneurs.

A profile of the ten programs honored will be available in an upcoming handbook published by the Center for Entrepreneurial Leadership.

Watson believes the program's rural focus helped it gain attention in the national competition, as most other entrepreneurship programs target urban areas. The program also took a particularly hands-on, creative, and comprehensive approach to teaching business development, according to students and others familiar with the program.

"Entrepreneurship is not just about preparing a business plan, although this is what many courses focus on," says Watson. "It is the process of creating a business."

The program promoted three key themes. First is understanding business theory and practice, evaluating management models, and developing a business plan.

A second element is linking prospective business owners with on-going sources of technical assistance and support. Because of the community-based nature of the program, and the strong community ties that still knit Clallam County residents together many business owners and other professionals provided free or low-cost services to students.

Third, and perhaps most importantly, is nurturing students' own creativity and critical thinking, helping them view the world in a new way.

"I try to teach people to think creatively, past the limitations they impose on themselves," Watson says. "This community is changing rapidly. Instead of lamenting, wishing that it weren't, I try to help students see that with change comes opportunity."

NORTHWEST REGION WATCH

SUSTAINABLE RURAL COMMUNITIES: ELEMENTS OF A RECOVERY PLAN

By: Johnny Sundstrom

In 1806, Lewis and Clark visited the native village near the mouth of the Siuslaw River in Oregon and reported a population of "about 900 souls." By 1895, nearly all of these original inhabitants and their descendants were gone. The town of Florence had been established along the river's lower reaches and settlement of the upper watershed was rapidly expanding.

In 1900, Florence's fish cannery processed 69,000 coho salmon, approximately 30 percent of an estimated 250,000 return to spawn in this river during those years. Primary logging efforts were occurring in the bottomland and floodplain, along the main stem of the river as land was cleared for farming. The gigantic old growth were felled, maneuvered to the river and floated to down-stream milling operations.

This is a typical history for Pacific Northwest coastal river towns, and the emergency of the upriver logging

community of Mapleton, at the turn of the century, was not unique.

Today, Mapleton and the surrounding area are ranked sixth out of the forty-one most severely impacted timber-dependent communities in the northern spotted owl region of Oregon. The area's five mills are shut down or rare single-shifts. The coho salmon have reached their lowest numbers in history. In fact, the recovery goal for this species for the entire northwest coast is 250,000--about the same as the number that used to come up this one river annually.

What happened during the 100 years from 1895 to 1995?

What happened was the largest single volume of resource extraction in the history of the world for an area of this size. Between 1960 and 1990, over 2 billion board feet were taken off Forest Service land in the Mapleton Ranger District. This is enough wood to build a ten foot wide, two inch thick board-walk from Mapleton to the Moon.

Confronted with a seemingly infinite supply of natural resources, our society seized the easy opportunity for apparently unlimited wealth. Today, we who are left are facing many hard choices.

Our communities are now endangered just as much as the native species of wildlife and fish. The wealth which flowed from this area, is gone. But we haven't given in or given up. Those who have stayed in our community, who have relatives in the cemeteries and children in the school, those whose roots, desires, and commitment have kept them here through the worst of times, these people are taking up the challenge. We know that to survive here we must make a stand. We must begin to work harder than ever before for the sustainable improvement of both our community and our habitat.

A Recovery Plan

How do we do this? There are two phases in the Endangered Species Act, the listing of the species and the development of a recovery plan. What constitutes a valid recovery plan for an endangered community? In Mapleton we are developing some key principles.

First, we must have local autonomy for local issues--local knowledge and experience are the foundation of social health. In the final decision-making process, those who do the work and live with the consequences must be given the power to determine the policies and processes which will shape their potential for change and for success. This concept, as it relates to natural resource issues, is best called *stewardship*. One of my favorite mottos is, "Everything that is must be in balance, and that takes practice." Stewardship is the practice of finding the balance between conservation and development, between the necessities of now and the needs of the future. At the local level.

The second principle is a commitment to the politics of inclusion. Every concentration of community energy must start with as broad a base as possible. We invite all of the stakeholders in the situation to participate, and start by defining our common objectives. Once we have reached some kind of consensus as to goals, we move to a definition of the problems involved, and then to what we can do together to solve the problems that stand in our way. I have yet to find a situation where there wasn't something, no matter how small, that the parties involved couldn't do together, and this becomes the key that unlocks further communication and cooperation.

The third principle is the need to seek out partnerships within and outside the community. For every plan and project that a community might define for itself, there is likely someone or some organization that can provide support, information, technical assistance, funding, whatever. As long as local autonomy and unity are not sacrificed, there is nothing wrong with seeking this help. As a matter of fact, this aspect of the recovery plan is essential for all of us because our communities have been so depleted of resources and wealth that we cannot

repair ourselves without help.

These are some of the elements of a theory for organizing communities for sustainable improvement. Now I would like to turn to what I see as the most important component of our recovery as a region and as communities. This has to do with cultural values an changing consciousness--with fundamental social redefinition of ourselves as communities and s individuals.

At Home in a Place

It starts with a vision and a mission; the mission is to become a people at home in a place. To do this, whether in one community, a region, or even the world, we must learn from what is around us and grow new roots in the places where we live and work.

What can we learn from our natural environment, our surroundings here in this Cascadia, this Pacific Northwest rain forest? We can learn that this place has as great a diversity of life as anywhere in the world. Our emerging culture will do well to use this model to both fit in and to endure. We must diversify our economy without a sacrificing our identity as a people whose lives are based on our natural resources and in our natural habitat. Recreation, restoration, wood products, agriculture, and crafts all are needed and much, much more. The key to this transformation from a single-source economy will be people who can move beyond a one word job description, people who can diversify their own personal economies; do recreation work in the summer and reforestation in the winter as well as raise a garden, for instance. Most of us will have to become more well-rounded, more experimental, and more accessible to opportunity.

At the same time, we're a forest town, a river town, and we need to protect our history and build on it as a foundation for our future. We are a natural resource based people, and while we must diversify and expand our possibilities, we don't want to bring in changes that drive out the people and experience that make our community what it is.

Another aspect of the social/cultural matrix concerns the push for retraining. Rather than train people for jobs that exist elsewhere, we need to be training people for opportunities which strengthen our communities and help keep them intact. As an example, I would put forward the need for more logger-biologists. Most woods-workers know more about their workplaces in the forest than does anyone else, yet our agencies and corporations continue to import "experts."

We also have to face up to the need for sustainable policy and develop the patience required to accompany it. Our potential for renewal, whether of the resource base or the social fabric, depends on our ability to function on two very different time-scales. On one hand we have bureaucratic time constraints, and on the other, the great expanse of biological time-frames. Somehow we must balance these often competing and demanding rates of change and opportunity with creative juggling and prioritizing.

But what is the life-cycle of a policy? It takes three generations of returning salmon, or twelve years, to even begin to have an indication if what we are doing is helping. Twelve years covers three presidential elections, two Senate races, or six terms in the House of Representatives. How many times can policy change in three generations of salmon? In one generation of 250 year old growth? We must, as local officials, workers, scientists, and residents, participate in and demand policy which, while flexible enough to incorporate new knowledge, is long-term enough to make a real difference.

The final point I wish to make is the most important. Culturally, socially, we are going to have to go through the most profound change we have ever experienced in the short time we have been on this continent. We hear a lot about appropriate technology, but I think that before we can decide what that is, we have to develop an appropriate society, and that won't be easy.

Most of what we hear these days concerning our relationship to the earth and its resources deals with the supply-side of the equation. But, even if we restore fish runs and the forest, cleanup the air and water, and the rest of is, then what? Will we be sustainable? I say no. I say that restoration is not enough, and that nothing will be enough until we deal with the demand-side of the equation.

Fulfillment of our material desires without restraint, harvesting resources until they run out, and quick-fix solutions that create long-term problems is the record of our occupation of this place, this oh-so-recently pristine continent. Now, to simply restore the resource base without radically changing our basic expectations and lifestyles would, in the end, put it right back in the same kind of crisis. So how must we change? We must demand more from ourselves and more value from our resources. We must not simply recycle, but truly respect, both the sources of our wealth and the privileges of our survival.

Sustainable rural communities can and must lead the way into a new era of value and values for our natural world and its resources. We must work together, change the way we use our only habitat, and change the way we see ourselves. We must put forth a vision that incorporates immediate help for our people, long-term prospects for our ecosystems, and a new sense of balance between what we take for ourselves and what we leave for the future.

NEW - 2/20/97

Return to top of page

NATIONAL AUDUBON SOCIETY
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Salmon Review Team
Attn: Jay Nicholas
State Capitol Building
Salem, OR 97310

December 3, 1996

RE: Comments on Draft Oregon Coastal Salmon Restoration Initiative

Dear Jay:

We appreciate the opportunity to comment on the proposed Oregon Coastal Salmon Restoration Initiative (OCSRI). There are a number of issues and concerns that I would like to draw attention to. First, we are very concerned that comments submitted by the fishing organizations, the conservation community and the National Marine Fisheries Service (NMFS) pertaining to the 1st draft of the OCSRI failed to make significant changes in this iteration. Understanding that the initiative is a work in progress or rather a process, we hope that our comments will assist the State in improving the plan. Recovery of our coastal salmon populations is a responsibility that cannot be ignored any longer.

My comments will focus on a number issues and then refer you to the numerous documents available that heretofore have been absent in the development of policy and rule amendments relating to any regional salmon recovery effort.

HABITAT MEASURES

Department of Land and Conservation and Development

- Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces; Utilize and strengthen this goal in relation to aquatic protection on urban, agricultural, as well as forested lands.
- Goal 16: Esturine Resources: Review and strengthen in order to improve protection and restoration strategies for Oregon esturine habitats.

Oregon Department of Forestry

- Present rules lack of adequate protection of unstable soils, intermittent streams, and fails to take into an account issues pertaining to road densities and cumulative effects. The results of the Flood of '96 could be viewed an excellent example of management strategies that must be challenged. An overall view of coast range forests detected 1786 landslides, 42% of the slides were associated with roads and 36% were associated with clear-cut timber harvest and 23% were detected in-forest, not associated with roads or timber harvest. With almost 80% of the landslides documented being related to roads and timber management it becomes quite clear that ODF must acknowledge their responsibility to truly protect the Oregon's water quality. Unstable soil areas must be set off-limits to road construction and timber management. Since it is possible to identify these unstable soils it is the responsibility of the Environmental Protection Agency (EPA) to consider these soils as a point source pollution site under the Clean Water Act.
- A recent report, "Recent Paleolimnological Analysis of Tenmile Lake and North Tenmile Lake, Coos County, Oregon." by Eiders et al on sediments in Tenmile and North Tenmile lakes indicates that heavy erosion occurred during periods of logging in the surrounding area. The report indicates, significant increases in the rates of sediment accumulation in this century (maximum rate of increase was about 10 fold), compared to the rate prior to 1900, considered background level. This is just one more example why it is essential that Oregon Department of Forestry (DF) incorporate a cumulative impacts analysis and mitigation measures into their forestry rules.
- A recently released Department of Environmental Quality (DEQ) study on water quality in the Willamette River shows significant fish deformities and sediment contamination throughout the basin. Clearly, existing rules and regulations must scrutinized. The Dec. '94 report, "Toxic Waters, A Report on the Adverse Effects of Pesticides on Pacific coho Salmon and the Prevalence of Pesticides in Coho Habitat," must be utilized when reviewing rules and Best Management Practices for agricultural and forest lands.
- The ODF model used for predicting the recruitment of Large Woody Debris (LWD) as well as the existing riparian protection strategy especially for smaller streams must be reviewed by an independent peer review team.
- Alder conversion as a riparian management strategy must be reexamined in regards to temperature. Over 800 streams are already on DEQ's 303d list and increasing the risk to the recovery of the ecological processes is unacceptable. When dealing with a 20-40 year recovery process for temperature limited streams a conservative approach must be implemented.
- State owned lands must play a significant role in North and Central Coast salmon recovery efforts. There appears to be no direction concerning this role. ODF and an independent peer review team should look into a strategy and make recommendations to the State as to the development of improved riparian rules, aquatic conservation strategies, and a cumulative effects analysis. Stream productivity, unstable soils, clear-cut management strategies and timber rotation lengths should be included in the analysis.
- Agricultural lands must be included in the development of salmon recovery strategies. In particular, stronger protection measures for; riparian protection, pesticide use, and an aggressive water quality monitoring strategy must be developed and implemented.

Watershed Council process:

- Cooperative voluntary measures must be considered as but one component to establishing state-wide salmon recovery strategy, as opposed to being the backbone of the initiative. Within this voluntary process it is critical that committed funded and technical assistance be included if we are to expect any significant level of change in ecological watershed processes state-wide.
- There is a need for the development of standards and guidelines for receiving state and/or federal dollars to do watershed restoration work. A prioritization as well as a protection strategy needs to be included in any basin work plan.

Oregon Department of Fish and Wildlife
While I agree with much of the harvest rate management strategy there are a number of issues that must be clarified.

- The Initiative gives the Watershed council process a dominant role in developing salmon recovery efforts, a bottom up approach. Sounds good. Why is it then that ODFW has developed and just recently proposed "Interim spawning escapement goals" for each of the four subunits with no input from any of the Oregon's coastal watershed council technical teams?
- We are very pleased that the Department has moved forward in dissaggregating the Oregon Coastal Natural (OCN) coho stock. There needs to be discussion concerning the rationale for creating the four subunits that do not correspond to the previously identified Gene Conservation Groups. And how was the proposed spawner escapement targets established by sub-unit?
- A next step should include spawner escapement goals by basin. By establishing basin escapement goals the Department would know when, "a basin within the sub-aggregate is identified to have a severe conservation problem." Doesn't the proposed escapement goals by subunit create disproportionate spawners? Why?
- The document needs to clarify not only what constitutes a severe conservation problem in the proposed interim escapement goal strategy, but what size basin would restrict the next tier of additional harvest. How is the Department going to identify and monitor basins with substantial conservation problems?
- Upon review the proposed interim escapement goals or harvest rate triggers, we come to conclusion that, the second tier objective is in fact still in the "severe conservation problem" category. Please review historic production and spawning escapements estimates and compare to harvest rate triggers. (see enclosure)
- In relation to assumed harvest impacts of <15%, please review data on per cent of OCN river systems (Figure 2) achieving spawner replacement by brood year. We contend a target of <10% with a confidence interval is more appropriate target.
- Upon review of draft ODFW Basin Planning documents there appears to be a significant difference between the Basin Planning spawner goals and the OCSRI's new proposal. For example, the North-Central Subunit (Salmon to Siuslaw Rivers) has an interim spawner goal of 16,300 and a Tier 2 goal of 24,300 which equates to approximately 14 fish/per mile and 22 fish/per mile respectively. When one compares that with the (draft) Alsea, Siuslaw, and Siletz River Basin Planning recommendations of 40 fish/per mile, one can see the Initiative's recovery strategy includes resuming fishing effort to 35% when population estimates are at about 50% of Basin Planning spawner abundance recommendations. These public ODFW Basin Planning Teams met for more than a year, made recommendations and are now being ignored.
- Results of recent spawning ground surveys within the Oregon Coast Evolutionary Significant Unit (ESU) have shown that many potential spawning areas within the ESU currently lack coho spawners. ODFW (1995) recently summarized the results of the stratified random sampling (SRS) coho surveys in three basins in the central portion of the ESU: the Siletz, Yaquina, and Alsea, (a portion of the North-Central Subunit). From 1990 through 1994, almost 40% of the surveys found no spawners and over 60% had 3 spawners or less per mile per year. Table 3 illustrates a similar lack of spawners escapement in recent years (in locations suitable for use by spawners), which is most severe in the Tillamook and Umpqua districts. These data suggest that spawning populations in many of the Oregon Coast streams are fragmented. If all survey locations are included, which includes locations deemed presently unsuitable for spawning is even higher (Table 3).

Given the importance of retaining genetic integrity of coho salmon populations in individual streams and coastal basins, any escapement goal should incorporate the shortcomings in recent years at maintaining these populations and develop a plan that would fully saturate the full range of existing habitat.

- By fully seeding the coastal basins not only would restoration efforts be rewarded and complimented but habitat based models and the relationship between the SRS and Standard Index data sets be realized. Fish would occupy expanded areas of suitable habitat, and streams with extinct populations would receive stray spawners, potentially returning streams to production. It is for these reasons that increasing fishing effort or impact rate to 35% when basins are in the initial phase of rebuilding the numerous depressed populations appears to be counterproductive to salmon recovery.
- A few measures of success when discussing restoring coastal salmon populations include: 1) broad distribution of naturally spawned fish within each ESU; 2) populations maintaining their genetic diversity in a pattern and at levels consistent with natural evolutionary processes, both within and among ESUs (NMFS, Comprehensive Salmon Restoration Initiative, Sept. '96).
- We believe it essential that any salmon recovery initiative establish spawning escapement goals and a rebuilding schedule. When establishing escapement goals it is critical that, "...information about the

composition of spawning populations, the maintenance of connection between salmon demes, the role of carcasses as nutrient sources for freshwater ecosystems, intraspecific competition in reproduction, mate selection, and gene flow, must be included" (Natural Research Council, Upstream Report, 1995). Clearly, by setting an impact rate of 35% on populations that are in the initial stage of recovery fails to take into account the issues identified in the Upstream document.

- This strategy also totally ignores historic abundance information. (Table 1) Initiating an increase of harvest rate impacts when populations reach between 3 and 5% historic abundance is a harvest strategy that almost assures that production goals will not be met. One could also expect local restoration partnerships to be challenged when fishing effort increases at the initial stage of recovery.
- The Initiative's interim escapement goal and harvest strategy makes no statement concerning the development of an accountability component. There is no question that a clear line of accountability must be established. If we review past performance concerning meeting spawning escapement goals as well adhering to ODFW's 1982's coho salmon rebuilding schedule it is quite clear a performance accountability was non-existent.
- The report, "Building the Bridge" by the Fisheries Resource Conservation Council (FRCC) to the Minister of Fisheries and Oceans, Oct. '96, develops a strategy that needs to incorporated into the salmon harvest component of the OCSRI. The document develops guidelines on the "Precautionary Approach" to capture fisheries and species introductions. "The FRCC has referred of to the idea of "erring on the side of caution", both in its own efforts to provide conservation advice, and its recommendations about the regular operation of the fishery as a whole. The FRCC supports fishery conservation approaches that are "prudent" and holds that it shouldn't be necessary to "prove" the need for conservation measures. It should be enough that, on the balance of the evidence, it makes sense to take conservation action, always in the best way possible; that is the Precautionary Approach."
- Incidental mortality in non-retention fishery management must be reviewed. A standard methodology with confidence intervals for the expected impact rate must be established and implemented regionally. A few of the assumptions that must be analyzed should include: ocean distribution patterns, encounter rates, fishing techniques (trolling and mooching) as well as any adjustments to impacts rates from targeting chinook, or credits for the use of 4-spread in the troll fishery.
- Why does the OCSRI wait until populations or Gene Conservation Units collapse to 1-2 fish per mile before initiating the Emergency Measures V-11? We propose these are just a few of the actions that should be mandated immediately in order to increase the chances of implementing a successful salmon recovery plan.
- There are many questions pertaining to predator impacts and management that must be answered. It is essential that any predator management approach used whether it hazing or scare devices be tied to a comprehensive assessment of factors involved. ODFW and the initiative fails to discuss eliminating non-native warm water species in the state's lakes and rivers as one component of a recovery strategy. Please review data on the recorded declines in coho salmon runs entering Tenmile Lake in relation to the times when non-native fish species were introduced there. (E&S Environmental Chemistry, Inc. 1996)

Core areas

Understanding that this is the first iteration concerning the development of the core area concept there are a number of concerns and questions that must be addressed.

- There is significant concern over the quality of data used to establish the core areas. Was any watershed council technical teams or local input utilized in the development of the concept and areas?
- Is this strategy going to be a multi-species strategy? Does the ODFW staff consider this a watershed approach? This strategy should include measurable goals, and a protection and enforcement strategy.
- There appears to be significant omissions in the designated core areas. Where is the discussion concerning; the esturine habitat, main stem or issues pertaining to the fragmentation of existing populations, and the need for connectivity and corridors within the watershed.
- It appears that the initiative identifies streams and is not addressing the issue of salmon recovery when viewed in relation to scale, both temporal and geographical. How does this core concept fit into regional conservation efforts?

Peer Review Process

- In light of the fact that the OCSRI document is considered a work in progress, state agencies, OSU Departments reviewing the Initiative, the peer review team and the public have an excellent opportunity to influence the final outcome. While this process may appear to be an adequate strategy, we are very concerned that it in fact fails to meet standards for a properly structured peer review process.
- Has the existing process given the peer review team adequate time to analyze and comment on the

initiative? Shouldn't the peer review team meet to discuss issues and/or ground truth the initiative's strengths and weaknesses with other team members? How are the various comments from the peer review team, the public, state agencies and NMFS going to be incorporated into the final document? How does this process compare with a standard structured peer review process?

Role of Enforcement in the OCSRI

- There are a number of issues that must be addressed in relation to enforcement: 1) How are we going to determine whether agencies are actually fulfilling their commitment to enforce existing laws? 2) Are existing rules, regulations, or Best Management Practices adequate to protect, water quality, quantity and essential habitats critical to the recovery of our at risk salmon populations?

Acknowledge that there is a regional salmon crisis is but one step in the long road to salmon recovery. Institutional change and challenging the status quo are essential if we are to truly reverse the trend lines in water quality, habitat conditions, and salmon population estimates all of which are so well established.

Voluntary efforts are admirable, but if we expect to be successful in the development and the implementation of any salmon recovery strategy there must be fundamental change in the way our communities, industries, and agencies treat the landscape.

The region should not be afraid to go into a partnership strategy with the federal government on the development and implementation of a regional salmon recovery strategy. Issues surrounding the shared ESU and the need for a commitment to the salmon from all state and federal agencies in Oregon and California, that heretofore has been lacking, leads the National Audubon Society to support a federal listing under the ESA. The OCSRI should be considered a significant step toward the development of the State's recovery plan, but, at this point a coastwide listing will provide the highest likelihood of a successful regional salmon recovery strategy.

We envision a partnership approach that would include; local communities, industry, environmentalists, watershed councils, the state agencies and the federal government. We see the need for committed funding and coordination at the regional scale if we are going to be successful in restoring a national treasure, the salmon.

There are a number of reports and documents that we recommend be incorporated into the next iteration of the Initiative including:

1) The NRC report, "Upstream, Salmon and Society in the Northwest"

2) "Toxic Water, A Report on the Adverse Effects of Pesticides on Pacific Coho Salmon and the Prevalence of Pesticides in Coho Habitat," Grier et al, Dec. '94

3) "Healing the Watershed," Pacific Rivers Council, Sept. '96

4) The ISG report, "Return to the River," Sept. '96

5) Forest Ecosystem Management: An Ecological Resources Committee, Oregon Business Council, Oct. '96

6) "A New Vision for Pacific Salmon," Natural Resources Committee, Oregon Business Council, Oct. '96

7) "Building the Bridge," Report to the Minister of Fisheries and Oceans, Fisheries Resource Conservation Council, Oct. '96

We look forward to working with you on strengthening the OCSRI as well as implementing a regional recovery strategy. If we can be of any further assistance do not hesitate to call.

Sincerely,

Paul Engelmeyer
NW Policy Analyst

cc William Stelle, NMFS
Bill Robinson, NMFS

INSERT MAP "SIUSLAW NATIONAL FOREST - LANDSLIDES ASSOCIATED WITH THE WINTER OF 95/96"

INSERT FIGURE 2 CHART "PERCENT OF OCN RIVER SYSTEMS"

INSERT "SALMON DECLINE IN TENMILE LAKE" CHART

INSERT ONE PAGE CONTAINING THREE CHARTS: "COLUMBIA RIVER COHO," "COASTAL COHO NORTH OF CAPE BLANCO," "COASTAL COHO SOUTH OF THE CAPE BLANCO"

INSERT TABLE 1: "ABUNDANCE OF WILD COHO SALMON IN BASINS WITH THE OREGON COAST ESU...."

INSERT TABLE 2: "ESTIMATES OF ADULT COHO SPAWNING...."

INSERT TABLE 3: "PERCENT OF STRATIFIED-RANDOM SURVEY LOCATIONS WITHIN ...."

INSERT TABLE: "ESTIMATES OF OCN ADULT SPAWNER ESCAPEMENT"

NEW - 2/20/97

Return to top of page

Coastal Salmon Restoration Iniative
Salmon Review Team, Attn: Jay Nicholas
State Capitol Building
Salem, OR 97310

December 12, 1996

Dear Mr. Nicholas:

The Mid-Coast Watersheds Council hopes to open up a dialogue with you concerning the Oregon Coastal Salmon Restoration Initiative (OCSRI) and its proposed new spawner escapement goals and fishery management.

As the State moves forward with the development and implementing of the OCSRI and monitoring strategies it is critical that not only watershed council's be given clear direction from the Science Strategy Team but that issues and concerns of the councils be addressed.

We have enclosed a 3 page document dated December 4, 1996 that has resulted from review by our Technical Team of the section of the OCSRI that regards the Proposed Spawner Escapement Goals and Fishery Management Regime for Oregon Coastal Natural Coho Salmon.

We have asked our Technical Team's representatives from Oregon Department of Fish and Wildlife for clarification on some ofthe procedural and technical questions that came up (see Item #1-#3 on the page 3), so that we do not burden you unnecessarily with those questions, if they are able to be researched from here. However, there were a number of questions which we felt needed to be forwarded on to your Salem Review Team. These are found on pages one and two and regard interim spawner objectives in our area, basins with severe conservation problems, and the need to determine full recovery goals.

We look forward to your response to our questions.

Sincerely,

Fran Recht
Chair, Mid-Coast Watersheds Council
c/o Lincoln Soil and Water Conservation District
344 SW 7th, Suite A
Newport, OR 97365

DRAFT

December 4, 1996

Subject: Mid Coast Watershed Council Technical Team initial review of "Coastal Salmon Restoration Initiative".

Mid-Coast Watershed Council technical team (MCWCTT) recently had the opportunity to review the Governor's Coastal Salmonid Restoration Initiative. At our November 22 meeting we addressed the "Proposed New Spawner Escapement Goals and Fishery Management Regime for Oregon Coastal Natural Coho Salmon". This specific proposal was the fourth draft on the subject which was released by the Oregon Department of Fish and Wildlife (ODFW) on October 25, 1996.

Meeting attendees included:	Lana Brodziak	SWCD
	Jack Sleeper	USFS
	Bob Metzger	USFS
	Travis Hunt	Boise Cascade
	Kevin Roberts	Georgia-Pacific
	Paul Engelmeyer	Audubon Society
	Bob Buckman	ODFW
	Tony Stein	ODFW
	Carrie Phillips	USFWS
	Mark Stone	Hire the Fisher
	Bill Lapham	Hire the Fisher

After considerable discussion including input from ODFW representatives Bob Buckman and Tony Stein, the MCWCTT had several areas of uncertainty, and other areas of concern. It was decided these issues would be divided into those of a procedural and technical nature that could be addressed by researching the issue, and those that required clarification of intent or questions on the contents of the proposal. The procedural/ technical questions will be investigated by ODFW staff in Newport with results reported at the next MCWCTT meeting on December 19, 1996. Response to these questions may alleviate concerns, or provide the basis for additional future comments.

Concerns over the content or intent of the proposal are as follows:

Item #1 Interim spawner objective for north-central aggregate

The value (16,200 total or 14 adults per mile) seems very low when considered in light of the many basins in the area with good potential for coho recovery and a historic record of high wild coho abundance. Fishery impacts could potentially increase at a time when wild coho production is near an all time low. There is also concern about the method selected to derive this value.

1. Why was the interim escapement objective developed based on the SRS equivalent of 42 adults in standard spawning area surveys rather than a more direct method based on habitat or a simple increase relative to existing levels?
2. Is there any particular biological significance to the north-central coast interim escapement objective value of 16,200 total or 14 adults per mile?
3. Would a higher interim objective be appropriate as a trigger to increase fishery impacts on the north-central aggregate?

Item 2 Single basin with a "severe conservation problem"

This is particularly pertinent to the mid-coast area because of the wide disparity in coho abundance observed in different basins.

1. What are the criteria for a severe conservation problem in a quantifiable sense?
2. If criteria are not in place, is there any process identified to establish these criteria?
3. Which basins could restrict moving to the next tier of increasing fishery impacts? All basins? Large basins only?
4. How is coho status going to be monitored to identify single basins with a severe conservation problem? If monitoring is not definitive, what assumptions will be made and what action will be taken?

Item #3 Full recovery escapement goal

The document only provides interim goals that function as a basis to adjust fishing related mortality. Long-term goals that correspond to full habitat utilization and/or recovery of the populations are not identified. These long-term goals however seem very important as a criteria for success and a basis to determine habitat management and restoration that is necessary.

1. What would the best approximation of a full recovery goal for each mid-coast basin.
2. If these full recovery goals are in place, are there plans to develop them as part of the CSRI?

These are concerns that developed in the MCWCTT initial appraisal of the spawner objective-harvest regime proposal. We would appreciate feedback on these items. We also offer our combined resources to assist in developing and refining this proposal particularly for mid coast basins.

Procedural/technical questions

Item #1; Projections of marine survival

The matrix table titled "Allowable Total Impact from Fisheries" projects future harvest rate based on parental spawners and projected marine survival. In regard to the marine survival component, several questions were identified.

1. How is the projection made? Are freshwater factors such as droughts, floods or habitat restoration projects considered?
2. What is the track record for projecting wild coho abundance?
3. Will projections be made for individual basins, sub aggregates or the entire Oregon Coast aggregate only?

Item #2; Calculation of fishery impacts (table 1)

This table shows that historic fishing impacts have been much higher than those projected with this new proposal. This should be very beneficial for wild coho recovery, however there is a concern over consistency of the estimates because the type of fishery impact has changed from direct harvest to estimates of by-catch

mortality. Three related questions;

1. What are the sources of fishery mortality that would likely be included in an overall 10%, 15%, 20% and 30% impact? How much mortality would likely be attributed to in-basin chinook fisheries, Oregon ocean chinook fisheries, fin clipped coho fisheries, and fisheries off other states or Canada?
2. How are these estimates derived?
3. Is there any sense of the reliability of the estimates of by-catch mortality?

Item #3; Matrix table fishery impact rates

The matrix table projects a fishing mortality rate of 15% or less under the least favorable circumstances (lower left hand box).

1. How does this compare to actual fishing mortality rates the last two or three years?

Return to top of page

Go to Peer Review:

- OSU
- American Fish Society
- Invited
- Federal Agencies
- Industry
- Public Comments
- Questionnaries

Go to home page

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PEER REVIEW 1996

COASTAL SALMON RESTORATION INITIATIVE

December, 1996

TABLE OF CONTENTS

- 2/20/97

PUBLIC COMMENTS

Return to home page

PUBLIC COMMENT

October 27, 1996

John Kitzhaber
Honorable Governor, State of Oregon
State Capitol Bldg.
Salem, OR

Dear Governor Kitzhaber:

Thank you for your effort to keep some of the people in our State from shutting everything down. I see where they want to put the Coho Salmon on the Endangered list. They would be far better advised if they were to take the Seals and Sea Lions that are in the rivers off the Endangered List and hire Biologist that are interested in propagating the fish that we have. I have friends that have raised Salmon for 15 years. This year, they are empty because the Biologist from Roseburg apparently wants the fish there and no place else. They tried to get the license and assistance from the Biologist from Roseburg to raise Bull Trout or better known as Sea Run Trout. Instead they put them on the Endangered list. Something is badly wrong and it appears from where I sit as a real Oregonian that they don't know what they are doing.

There are lots of hatcheries sitting dormant. This one I am referring to specifically, has been raising fish for the State for nothing for ever 15 years free gratis. They could raise 60,000 Chinook or 75,000 Coho or over 100,000 Bull Trout. There is something wrong somewhere and I believe the people should know the license money is not going in the right place to keep fish in our rivers. I can't fish anymore but it has to be changed and get people in the right place to go to work and do a proper job.

They allowed crabbers to take females two years ago. Now there are very few crabs. Thank you for your best efforts.

Sincerely,

PUBLIC COMMENT

Return to top of page

Governor's Coastal Salmon
Recovery Initiative

Dear Members,

I recently drove along Oregon State Highway 38 where it borders the lower Umpqua River near the Loon Lake junction and the confluence of Mill Creek. The shrubs and trees growing along the highway slope from a guardrail right down to the edge of the Umpqua River have been cut.

Now, this may have been a permitted project by a government agency, but why? The searun cutthroat is listed at endangered, or was about to be, at that time. The wild coho stocks there are protected also. Even though the river at that point is influenced by tide and there is no spawning of the salmonid species there, cannot the trout and coho avoid predators under overhanging riparian vegetation? Also, under the State Forest Practices regulations would such action not be unlawful and subject to criminal penalty?

Again, I do not know why the riparian vegetation on this section of the Umpqua River was removed, or by whom and I am not seeking a reprimand to those responsible. I do believe a problem such as I have outlined is irresponsible and hypocritical and something that your task force should take into consideration with future partnerships in government agencies as salmon recovery is addressed.

Thank You,

PUBLIC COMMENT

Return to top of page

Governor's Coastal Salmon Recovery Initiative

Dear Members,

I have read through some of the draft of the Salmon Recovery Initiative. You have a lot of work ahead. I know funding will probably be one of your primary concerns in this matter. hopefully, with your experience and expertise, funding will be found to drive this immense and very important undertaking. One concern of funding is my reason for this letter.

The closure of the Florence office of the Oregon Department of Fish and Wildlife, with corresponding transfer or job elimination for fishery biologists does not seem to make sense when so much work lies ahead in the task you have been given. The Siuslaw River system is large and unquestionably important to any maintenance or recovery of salmonids, especially coho salmon and searun cutthroat trout. I cannot help but wonder if operating costs and job efficiency for biologists working out of Newport or Corvallis will not be a good deal more than having them located on the Siuslaw system. Additionally, there is a large amount of seasonal work done in fisheries stream surveys and habitat improvement through the Florence office. I have to question if the program could function as efficiently as it does now without timely and immediate supervision of these part-time positions.

Will you please consider my thoughts about retaining the Florence office of the Oregon Department of Fish and Wildlife in any future planning.

Sincerely,

PUBLIC COMMENT

Return to top of page

Jim Martin-Governor Kitzhaber's Salmon Advisor
Jay Nicholas-ODFW
Salmon Plan Review
Capitol Building
Salem, OR 97310

Scientific Review or Oregon's Coastal Salmon Restoration Initiative, 10/27/96

A major problem with the OCSRI is a failure to propose measures that will restore and maintain natural ecological processes and natural watershed processes. Instead, the restoration measures described in the OCSRI will merely adjust and mitigate some of the more obvious activities that directly affect fish and streams. Numerous scientific studies have shown that this approach results in haphazard and piecemeal restoration efforts that are rarely effective, and sometimes create unanticipated new problems. To fill critical gaps in the OCSRI, unspecified future measures are promised, based on undescribed methods for watershed assessment and project prioritization.

The OCSRI acknowledges that essential conservation measures are lacking, but proposes a "Watershed Council" process instead of the necessary conservation measures. Watershed Councils, cooperative groups comprised of local citizens and local agency staff, are expected to assess watersheds and design scientifically credible restoration programs. Thus, the scientific credibility of the OCSRI is critically dependent on the scientific credibility of the work of Watershed Councils.

> "The premise of the OCSRI is that limiting factors will be identified in a basin context and that solutions to addressing those limiting factors will be implemented through a Watershed Council context involving all management entities and stakeholders." OCSRI draft, 8/27/96.

Despite the dominant role of Watershed Councils, the OCSRI fails to present clear guidance, such as assessment protocols and guidance for prioritizing projects. Thus, any expectation of scientifically credible restoration is speculative at best. Even with strong faith in the Watershed Council process and agency cooperation, it would be difficult to accept the OCSRI as an adequate coho salmon recovery plan. There is simply no assurance that the OCSRI, as implemented by Watershed Councils, will ever produce scientifically credible conservation measures.

An examination of recent Watershed Council restoration efforts raises serious doubt about the premise of the OCSRI. Many Watershed Council projects lack scientific credibility, and virtually none are following the premise of the OCSRI as outlined above. Typical problems include a neglect of limiting factors, lack of watershed-scale integration, and a failure to heed scientific guidance. Assessments and action plans routinely ignore politically controversial issues, even where problems have been clearly identified by scientific studies. The efforts of Watershed Councils often appear to be compromised by undue haste that leads to mistakes, unbalanced membership favoring resource users, and a failure to utilize technical teams. Thus, most Watershed Councils have not yet demonstrated a strong commitment to scientifically credible salmon restoration, and there is a little evidence that Watershed Councils can be expected to lead scientifically credible restoration programs.

Another major problem is that the OCSRI proposals essentially describe the *status quo* of salmon management. Most state agency proposals describe existing efforts and some procedural reforms expected to increase their effectiveness. Watershed council proposals are merely vague speculation about voluntary measures that may emerge from local cooperative efforts. Very few OCSRI proposals actually describe specific new

conservation measures that will directly benefit salmon or salmon habitat. Many scientific studies have clearly stated the need for new conservation measures, and this need for improvement was supported by the internal OCSRI science team in their draft findings. (This passage and other portions of the draft findings were not included in the 8/28 OCSRI draft):

> "...we were most interested in knowing what was new in the OCSRI as opposed to simply a statement of what is being done in ongoing programs. If most of the OCSRI effort is not new programs or new directions, we saw the effort as falling short because the current status of coho salmon is the result of existing programs. We clearly wanted to see new efforts." Draft OCSRI Science Team findings, August 16, 1996.

Since the OCSRI is largely s *status quo* plan, it is unlikely to lead to coho salmon recovery. This judgement that the OCSRI falls short is supported by a qualitative assessment in the draft findings of the OCSRI's Science Team; the elimination of this assessment from the 8/28 OCSRI draft raises questions about the scientific credibility of the OCSRI. Although the OCSRI proposals may produce benefits, they fall short of the critically needed reforms.

The OCSRI is not a scientifically credible coho salmon recovery plan and the OCSRI should not be considered as a substitute for protection of coastal coho salmon under the Endangered Species Act. Although not a substitute for ESA protection, the OCSRI can play an important role in salmon recovery. The OCSRI process has helped organize state agencies and local efforts to support salmon conservation. Once a scientifically credible recovery plan is developed, presumably as a result of protection under the ESA, the state of Oregon can begin cooperative implementation as outlined in the OCSRI.

A number of improvements would greatly enhance the utility of the OCSRI for cooperative implementation of scientific conservation measures. These improvements should be developed by credible interdisciplinary science teams, with advice from representatives of Watershed Councils:

- Scientifically credible protocols for watershed assessments that could be used by Watershed Councils for guiding local conservation efforts.
- Scientific guidance for designing watershed action plans, including guidance for setting priorities for types and locations of projects.
- Scientific guidance for monitoring existing conditions and the results of projects.
- Development of educational programs for Watershed Councils and others, to communicate results and recommendations form scientific studies.

Overall, these improvements should be designed to increase the scientific credibility of the OCSRI, and complement the more well-developed social and political elements of the OCSRI.

As discussed previously, I remain available to assist the OCSRI effort. For suggestions on specific issues, I refer to the reviews and comments I have provided previously. Of course, many sources of scientific guidance are available. Modification of the OCSRI to make it broadly consistent with the following scientific reports and reviews would greatly improve the scientific credibility of the OCSRI:

- The National Research Council report, "Upstream, Salmon and Society in the Northwest."
- The Botkin Report, "Status and Future of Salmon of Western Oregon and Northern California."
- The Pacific Rivers Council reports, "Entering the Watershed," and "Coastal Salmon and Communities at Risk."
- The ISG report, "Return to the River."
- Comments on the OCSRI provided by the National Marine Fisheries Service: "Comments on the State of Oregon's draft proposed measures for the Coastal Salmon Restoration Initiative," dated July 2, 1996.

Thank you for the opportunity to comment on the OCSRI. Please contact me if you require any further assistance.

PUBLIC COMMENT

Return to top of page

This summary provides a scientific report card for Oregon's Coastal Salmon Restoration Initiative. This report card does not evaluate political considerations, only the scientific merit of the CSRI. The purpose is to present clearly a scientific evaluation of the initiative, ranked relative to the needs of salmon. Further information supporting this report card is available on request.

One overall grade for the CSRI is developed, by combining grades for a series of individual items that are listed below. Grading follows typical school patterns; A, B, C, D, & F, with - and - included. Grades will be combined using A=4, B=3, C=2, D=1, F=0, with - adding 0.3 to a letter grade, and - subtracting 0.3 from a letter grade.

Grading Standards:

Current conditions clearly warrant an "F" because salmon declines have forced the Northwest into emergency salmon recovery planning. Scientific studies show that many salmon stocks are extinct or critically endangered and most are severely depleted. Protection under the Endangered Species Act indicating current policies have failed. Standards for grading CSRi proposals are as follows;

A--Excellent. Salmon recovery is the top priority. Strong and enforceable salmon and habitat protection and restoration measures proposed, based on an integrated scientific recovery plan. Implementation, monitoring, and adjustments are assured.

B--Good. Salmon recovery is a high priority. Salmon and habitat protection receives emphasis, and harmful activities and adjusted to minimize impacts. Protection, impact reduction, and restoration are an integrated package based on sound science.

C--Fair. Salmon recovery efforts are substantive, and a moderate priority. Salmon and habitat protection increased, and harmful impacts substantially reduced, based on sound science measures proposed to address most of the major causes of salmon decline.

D--Poor. Salmon recovery is a low priority, and recovery efforts are weak or superficial. Protection weak and proposed measures have little scientific support. Proposals are primarily minor adjustments of harmful activities. Major causes of salmon decline persist.

F--Failure to identify or address the major impacts that harm salmon. Proposed improvements are cosmetic, or implementation is unlikely.

Overall grade for CSRI: D (see below for details)

1. Completeness. D+

a. CSRI clearly states problems and identifies needed improvements. C
The CSRI acknowledges past mistakes, and states that changes are needed throughout human society. However, the CSRI fails to acknowledge that most problems continue without substantial correction. No attempt was made to develop a scientifically credible and integrated salmon recovery plan; such a plan is necessary to guide proposed improvements.

b. Measures proposed to address all of the major salmon recovery needs. D
The CSRI relies primarily on the *status quo* of resource management, with some modest improvements

in politically acceptable areas. Such a political initiative favors human desires over the needs of salmon, and ensures neglect of costly salmon recovery needs.

c. Guarantees of implementation, enforceability, effectiveness. D-
The CSRI is primarily a voluntary plan without guarantees of implementation, enforcement, or effectiveness. Promises of voluntary salmon protection by state agencies and resource users have very little credibility. State budget shortfalls threaten implementation, enforcement, monitoring and analysis. CSRI effectiveness will not be independently audited.

2. Overall scientific credibility. D-

a. Responsive to NRC report and other credible scientific studies of salmon. D
The CSRI ignores many important recommendations from the NRC report and other credible scientific studies. For example, the CSRI continues the scientifically discredited strategy of using mitigation and restoration as a substitute for protection. The CSRI is essentially a political recovery plan, with only superficial use of science.

b. Effective recovery measures proposed for the major salmon recovery needs. D-
The CSRI only proposes recovery measures that are acceptable to resource users. For example, proposals for riparian protection are the scientifically outdated Forest Practices Act and agricultural practices to be negotiated with landowners. In addition, the CSRI relies heavily on local watershed councils which are dominated by resource users and have a poor record of scientific credibility. This dominance of resource users is a major cause of the current salmon decline, and is perpetuated by the CSRI.

c. Scientific recovery plan used to guide and integrate activities. F
The CSRI does not present salmon recovery plan, and proposed measures are not based on scientific recovery plans from other sources. This neglect of science encourages ineffective and wasteful activities. For example, ODFW salmon managers have been ignoring ODEQ water quality information and constructing artificial salmon habitat in streams with warm water, low dissolved oxygen, high pH, excessive fine sediment, an other harmful conditions. The lack of a scientific recovery plan prevents rational progress towards salmon recovery.

3. Harvest management. C-

a. Directed fishery management. B-
Intentional harvest is not allowed for wild coho salmon and other protected fish stocks. However, coho salmon fishing is still allowed where hatchery coho salmon are marked with fin clips. Increased marking of hatchery fish will soon allow increased coho salmon fishing. Depleted stocks of wild fish will be harmed by fisheries targeting hatchery fish of the same species.

b. Non-target management. D
Mortality of depleted salmon stocks is poorly evaluated for fisheries that target other species. Important untested assumptions are used to predict mortality rates, and fisheries management is based on these predictions. Mortality estimates are typically biased towards low mortality to allow fisheries to continue. Poorly evaluated incidental mortality is likely to remain a problem for depleted salmon stocks.

c. Improvements in knowledge, gear, fishery restrictions, seasons, methods, etc. C-
Protection of depleted wild fish stocks will emphasize selective fisheries rather than large scale closure of fisheries. However, many important questions about selective fisheries remain unanswered, such as mortality of wild fish following catch and release. Current ODFW plans include the elimination of research as a relatively independent branch, decreasing the likelihood that selective fisheries will be scrutinized adequately.

4. Hatchery management. C

a. Genetic impacts on wild fish. C+
The ODFW wild fish policy, where implemented, will reduce harmful genetic impacts of hatchery production on wild fish. However, implementation is not complete and ODFW appears poorly committed to full implementation. For example, Smith River coho salmon (Coast range) are planted in the very different North Umpqua River (Cascades), despite known genetic differences. The weak

justification for this out of basin transfer is that the Smith River and Umpqua River estuaries are joined.

b. Competition, disease, and other impacts on wild fish. C
The CSRI proposes decreased hatchery production, but millions of hatchery smolts and presmolts will still be released annually. The reductions in hatchery production will reduce, but not eliminate, harmful impacts. hatcheries will continue to harm wild fish, especially in streams where major hatcheries are located.

c. Use of hatcheries to support conservation, not commodity production. C-
The CSRI proposes modifications of some hatchery programs to support conservation, through use of captive broodstocks and supplementation. These approaches are largely untested, and may have unanticipated harmful impacts. Furthermore, there is no assurance that so-called conservation hatcheries can avoid the well-known harmful impacts of production hatcheries.

5. habitat management. D

a. protection of core areas. C-
The CSRI proposes protection of core areas, where salmon populations are relatively healthy. This is a good concept, but the CSRI has failed to develop useful criteria for designating core areas, and proposed protections are weak.

b. Reduction of land use impacts that harm salmon. D
The CSRI relies on mitigation and artificial enhancement strategies to compensate for land use impacts that harm salmon. Nowhere does the CSRI acknowledge the overwhelming scientific evidence that shows mitigation and artificial enhancement have failed to protect salmon. To promote salmon recovery, land use practices that harm salmon must be eliminated. The CSRI relies on outdated and discredited approaches to land use impacts.

c. Restoration programs. D-
ODFW fish habitat restoration programs have been compromised by funding from the timber industry and other resource consumption interests. These restoration programs repeat the failed approach of artificial fish habitat construction, often in badly degraded streams. Scientific studies have clearly shown that the essential first step in habitat restoration must be the elimination of damaging land use. Current forest practices regulations actually encourage increased logging near streams in exchange for construction of artificial fish habitat, a scientifically discredited approach.

6. Fish abundance standards. F

a. Escapement goal. F
The CSRI Interim escapement goal" is a total of 58,000 wild coho salmon, but counted and managed separately from four areas on the coast. This escapement goal is a substantial reduction from the current goal of 2000,000. The CSRI states that this action should lead to "quicker rebuilding" of coho stocks. Obviously a lower goal can be mete more quickly, but this is a poor method for promoting recovery. Scientific evidence indicates that escapement goals should be increased, not decreased, and division into four management groups does not justify the decreased goal.

b. Listing/delisting criteria. F
The CSRI proposes listing/delisting criteria that are based on hypothetical and speculative models of fish population dynamics. Adjustment of assumptions and modeling strategies would lead to different criteria. Use of these untested methods is completely inappropriate when evaluating important issues such as extinction of coho salmon.

c. Abundance prediction and modeling. D
Poorly tested computer models are used for many aspects of fisheries management, including habitat restoration planning. These models neglect water quality limitations, and assume that salmon abundance is largely controlled by ocean conditions and winter mortality in freshwater. These assumptions are not valid across the wide diversity of coastal salmon habitat, and these models will lead to misguided salmon recovery policies.

7. Watershed councils. D+

a. Membership, structure and by laws matching CSRI promises. C-
The CSRI describes in idealized version of watershed councils and their activities, not the reality of watershed councils. Problem areas for watershed councils include unbalanced membership that favors resource users, the failure to utilize a technical advisory team, and poor scientific credibility. Watershed assessments and actin plans are usually superficial and neglect critical salmon recovery needs.

b. Activities to date, assessments and projects. D
Few watershed councils have attempted or completed a thorough assessment of salmon recovery needs. The existing assessments are mostly superficial (Umpqua stream surveys), or neglected (Coquille Working Atlas). Most watershed council "restoration" projects lack scientific credibility and are simply mitigation or artificial enhancement. In general, watershed councils are using outdated and scientifically discredited approaches.

c. Evidence of honest commitment of salmon recovery. D.
In general, there is little evidence of an honest commitment to salmon recovery. Rather, there is a commitment to avoid salmon protection under the ESA through highly visible and widely advertised "restoration" activities. Most watershed councils are protecting the interests of resource users, to the detriment of salmon recovery.

8. State agency coordination, support of CSRI. D

a. Resolution of conflicting missions, goals, constituencies. D
The CSRI has the laudable goal of improving the coordination of state agencies, but this coordination can not be assured simply by meeting every two weeks. State regulatory agencies are often controlled by those regulated, and salmon recovery may remain a low priority. Coordination of policy must not be confused with bureaucratic coordination through regular meetings.

b. Proposed measures meet the salmon needs outline in CSRI. C-
The CSRI mentions a number of harmful impacts that have contributed to the decline of salmon. State agencies were asked to submit proposed measures that would reduce harmful impacts, and promote salmon recovery. Unfortunately, state agencies did not propose remedies for many of the problem areas, such as riparian protection for agricultural lands.

c. Proposed measures likely to solve problems, or agencies still in denial. D-
Where proposals were made to reduce harmful impacts. Most of the proposals demonstrate continued denial of problems. For example, the Department of Forestry believes that the Forest Practices Act provides adequate protection of streams, despite overwhelming scientific evidence to the contrary.;

9. CSRI corrects major current problems. D

a. Substantive and effective impact reduction for routine activities. C-
The CSRI proposes various levels of impact reduction for routine activities. Some improvements are substantial, but most improvements ar minor. The most problematic routine activities, such as logging by large private landowners, receive little or no impact reduction beyond existing programs.

b. Substantive and effective new protections for salmon. D-
The CSRI proposes many mitigation and habitat enhancement strategies, but strong new habitat protection is conspicuously absent. The CSRI does mention the concept of core area protection, without actually proposing strong new protections.

c. Restoration programs identifying and solving major salmon problems. D-
CSRI restoration programs are based on superficial analysis of conditions, and discredited artificial habitat enhancement strategies. These restoration programs have constructed artificial habitat in streams that can't support salmon because of poor water quality, for example.

10. Prediction of successful salmon recovery due to CSRI. D

a. Benefits expected from the current CSRI draft without additional new protections. F
This voluntary plan will probably be underfunded, poorly implemented, and largely ignored if the threat of protection under ESA is removed. Furthermore, responsible landowners are probably already protecting salmon, and irresponsible landowners will probably not respond to this largely voluntary

plan.

b. The CSRI as a foundation for future recovery programs. C
The CSRI is essentially a compilation of current salmon conservation programs. Future efforts can benefit from this work, by comparing the CSRI to scientific salmon recovery plans and addressing CSRI deficiencies. However, future efforts will be hampered by the CSRI's promises that weak voluntary measures are adequate for salmon recovery.

c. CSRI measures: bureaucratic reforms or real benefits for fish? C+
Many CSRI measures focus on agency procedures rather than actually reducing harm to fish. For example, bureaucratic reforms such as fewer new water rights issued will still result in lower stream flows and worse conditions for fish. In addition, bureaucratic reforms such as a recent Forest Practices Act modifications do not address increased harm to fish caused by intensified land use such as shorter timber harvest rotation. Finally, improved agency coordination and formation of local watershed councils do not, by themselves, provide any benefits to fish. Salmon recovery will require consistent and widespread implementation of strong new protections by these groups, together with major reductions of existing impacts. The CSRI does not ensure this type of salmon recovery measures.

PUBLIC COMMENT

Return to top of page

Recovery of Oregon's Coastal Salmonids

Executive summary

The disappearance of coho salmon demonstrates the failure of Oregon's salmon management programs. Despite decades of expensive mitigation and artificial enhancement projects, populations of coastal coho salmon are at historic lows. The decline of coho salmon repeats a trend seen in many other fisheries around the world where strong protection measures were applied too little and too late. Can we learn from past fisheries declines before it's too late for coho and Oregon's other salmonids?

Oregon Governor John Kitzhaber's Coastal Salmon Restoration Initiative (CSRI) is an attempt to break the pattern of failure. The CSRI offers an appealing vision of locally-based cooperative restoration efforts that can rebuild healthy salmon runs. Local watershed councils, comprised of citizens and agency representatives, will design watershed-specific salmonids restoration plans. In addition, state agencies will attempt to reduce harmful impacts on salmon without imposing new laws and inspire constructive change in all activities that harm salmonids.

A major risk for this locally-based approach is that misguided "restoration" projects can be expensive failures or may actually crate new problems. The habitat construction approach currently favored by many groups has a poor record of success, especially when used as a substitute for protection of fish and their habitat. Careful scientific guidance of restoration work is essential, and restoration must be linked to reform of hatcheries, fishing, and harmful land use practices.

The National research Council (NRC) has recently completed an analysis of salmonid restoration to meet the need for scientific guidance. The NRC report, "Upstream: Salmon and Society in the Pacific Northwest," was produced by a highly credible team of scientists with broad experience in salmon research and restoration. Watershed councils and state agencies must pay close attention to the conclusions of the NRC report, and other credible studies, if salmon restoration is to be successful.

Unfortunately, the restoration strategy proposed in the CSRI neglects many salmonid recovery needs identified by the NRC and other scientists. Critically depleted salmonids will continue to be harmed by large

scale hatchery production and fishing impacts. The CSRI does not propose strong new protection measures, and existing impacts will only be addressed with unenforceable promises of voluntary improvements. To increase salmonid production the CSRI relies primarily on artificial habitat construction, a risky approach that has little chance of success when used in badly degraded streams.

These are not new issues. As early as 1892, scientists began warning that "the salmon is doomed" without strong habitat protection (Stone, 1892). Stone's suggestion for establishment of salmon refuge parks has not yet been followed, and salmon have disappeared from substantial portions of their former range. Now, as the disappearance of salmonids becomes critical, the CSRI proposes further reliance on mitigation and artificial methods. Stone's 104 year old scientific advice, which has been re-emphasized ny recent studies, remains unheeded.

Recommendations for recovery of coastal salmonids.

1. Recovery efforts should aim for abundant, self-sustaining native salmonid populations in all basins that historically supported salmonids, including the full diversity of life history patterns.
2. Salmonid recovery efforts should be guided by scientific assessments of the health of salmonids, streams, and watersheds.
3. Protection of remaining healthy habitats and native salmonid populations must be the foundation of recovery and restoration.
4. Management should seek to maintain the remaining genetic integrity of native salmonids, and seek to restore meta-populations that include connected and interacting local populations.
5. Salmonid hatcheries should abandon their traditional role, which has been the production of mass quantities of fish in an attempt to compensate for the declines of wild stocks.
6. As salmonid recovery occurs, harvest management policies should be designed to ensure maximum production of smolts, not maximum catch (i.e. maximum recruitment, not maximum yield).
7. Salmonid recovery efforts should be designed to correct the causes of decline (such as overfishing, hatchery impacts, and habitat degradation), instead of merely reducing symptoms with artificial support for fish production.
8. Habitat restoration should focus on eliminating activities that cause habitat degradation, and allowing natural healing of damage, since active restoration is still highly experimental. Construction of artificial fish habitat should not be substituted for habitat protection.
9. Salmonid management should recognize that salmonids can only survive as an integral part of healthy ecosystems that provide good habitat, clean water, and abundant food supplies. Large artificial inputs or excessive resource extraction are not compatible with such healthy ecosystems.
10. Where scientific uncertainty or a lack of knowledge hampers management, decisions should seek to minimize risks to native salmonids.

Introduction

The long-term decline of Oregon's coastal coho stocks demonstrates the failure of Oregon's salmon management programs (PFMC, 1992; Weitkamp, et al., 1995). Despite decades of expensive mitigation and artificial enhancement projects, populations of coastal coho salmonids are at historic lows (Karr, 1994; ODFW, 1995A; Nickelson, 1996). Besides coastal coho, many other native fishes are also in serious decline, including both resident and migratory salmonids (Netboy, 1980; Nehlson, et al., 1991; Frissell, 1993). Thee declines repeat a pattern seen in many other fisheries throughout the world, where strong fish and habitat protection measures were applied too little and too late (Buck, 1993; Hutchings and Myers, 1994; Smith 1994; Walters and Maguire, 1996). Can we learn from past fisheries declines before it's too late for coho and Oregon's other salmonids?

Ineffective enhancement and recovery programs for Pacific salmonids have a long history, beginning more than a century ago with the first salmonid hatcheries (Netboy, 1980; Hilborn, 1992; Meffe, 1992; Cone and Ridlington, 1995; White, et al., 1995). These original hatcheries were an unsuccessful attempt to avoid restrictions on fishing. Ever since, various types of mitigation and enhancement methods have been used as ineffective substitutes for protecting native salmonids and their habitat (Mighetto and Ebel, 1994; Cone and Ridlington, 1995). Similar hatchery-based strategies have failed to sustain many fisheries besides Pacific salmon, such as New England's once-famous Atlantic salmon and cod fisheries (Netboy, 1968; Smith, 1994; Stickney, 1994). Now that Oregon's coastal coho stocks have declined to dangerously low level, the need for

new approaches is clear (FEMAT, 1993; White, et al., 1995; Pacific Rivers Council, 1996).

Oregon Governor John Kitzhaber's Coastal Salmon Restoration Initiative (CSRI) is an attempt to break the pattern of failure. The CSRI offers an appealing vision of locally-based cooperative restoration efforts that can rebuild healthy salmon runs. Local watershed councils, comprised of citizens and agency representatives, will design watershed-specific salmonid restoration plans. In addition, state agencies will attempt to reduce harmful impacts on salmon without imposing new laws or regulations. This leadership, it is hoped, will demonstrate strong commitment to salmonid recovery and inspire constructive change in all activities that harm salmonids.

One problem with locally-based cooperative salmonid recovery efforts is that scientific credibility can be sacrificed. Local watershed councils and state agencies typically require guidance because they lack the technical competence to design scientific salmonid recovery plans. Thus, existing scientific analyses of salmonid recovery needs must be used to guide, integrate, and fine-tune local salmonid recovery programs (NRC, 1992; Botkin, et al., 1995, Pacific Rivers Council, 1996). This will require a difficult balancing process, to ensure that both scientific credibility and broad support are maintained. However, avoiding this process would create even more difficulties for the CSRI, because no salmonid recovery plan can be effective without both scientific credibility and broad support. If the CSRI can bring all forces together, from top rank science to grass-roots efforts, then salmonid recovery may finally become a reality, ending more than a century of failure.

A major risk for this locally-based approach is that misguided "restoration' projects can be expensive failures or may actually create new problems. The habitat construction approach currently favored by many groups has a poor record of success, especially when used as a substitute for protection of fish and their habitat. Careful scientific guidance of restoration work is essential, and restoration must be linked to reform of hatcheries, fishing, and harmful land use practices. (NRC, 1992; Pacific Rivers Council, 1996).

The National Research Council has recently completed an analysis of salmonid restoration to meet the need for scientific guidance. The NRC report, "Upstream: Salmon and Society in the Pacific Northwest," was produced by a highly credible team of scientists with road experience in salmon research and restoration (NRC, 1996). Watershed councils and state agencies must pay close attention to the conclusions of the NRC report, and other credible studies, if salmon restoration is to be successful. The NRC report provides very clear guidance, and points out the need for fundamental changes in our approach to fisheries management: First, there must be broad societal involvement in reducing the many impacts that harm salmon, streams and watersheds. Second, restoration should focus on restoring the ecosystems that sustain salmon, instead of the more traditional artificial support of salmon. Other credible studies of salmonid restoration needs provide similar conclusions (Botkin, et al., 1995; Lichatowich, et al., 1995).

The role of science in salmonid recovery and the CSRI

The role of science in salmonid recovery deserves special emphasis, because of the prevalence of salmonid restoration programs based on weak or outdated science (Beschta, et al., 1994; NRC, 1995; White, et al., 1995). Many fish restoration programs rely heavily on artificial propagation and artificial habitat construction, despite clear scientific knowledge about the limitations of these approaches (Rosgen and Fittante, 1986; Heede and Rinne, 1990; Meffe, 1992; Hilborn and Winton, 1993; Beschta, et al., 1994). Such poorly designed restoration programs are often expensive failures, and may actually do more harm than good (Rosgen and Fittante, 1986; Heede and Rinne, 1990; Frissell and Nawa, 1992; Hilborn, 1992; Meffe, 1992; NRC, 1995; White, et al., 1995). Restoration is particularly risky when used as a substitute for habitat protection, a common practice which lacks scientific support (Reeves, et al., 1991; Beschta, et al., 1994).

Management of hatcheries and hatchboxes is a clear example of salmonid programs that fail to incorporate scientific knowledge. Coastal hatcheries in Oregon continue to produce millions of coho smolts annually, despite well known problems that can be caused by hatcheries (Waples, 1991; Hilborn, 1992; Hilborn and Winton, 1993; Flagg, et al, 1995). In addition, the Salmon and Trout Enhancement Program continues to release nearly a million coho juveniles into streams, despite documented reductions in survival of wild coho in

planted streams (Nickelson, et al, 1986). The popularity of hatcheries, together with the availability of funding, seem to prevent thorough reviews and necessary improvements in artificial propagation programs (Hilborn, 1992; Meffe, 1992).

Fishing policies could also benefit from increased use of scientific knowledge. In the last tow decades, coho harvest quotas have been based on unconfirmed assumptions and biased population estimates (PFMC, 1992; Overholz, 1994). These problems have led to excessive fishing mortality and a failure to meet escapement goals for many years (PFMC, 1992; Overholz, 1994; ODFW, 1995A). At present, the major source of fishing mortality for wild coho is likely to be incidental mortality from fisheries that target hatchery coho or other species, an impact that has not been well evaluated (ODFW 1996b). This catch and release mortality can vary depending on factors such as water temperature, salinity, and fishing gear used, but can be high as 60% (Vincent-Lang, et al., 1993; Muoneke and Childress, 1994). Thus, poorly understood fishing impacts will continue to harm wild coho, adding further risk to severely depleted populations. Salmonid recovery efforts and management of fisheries could benefit from a n explicit consideration of risks, especially where detailed knowledge is lacking (Kope, 1992; Hilborn, et al., 1993).

Construction of artificial fish habitat is becoming a widely promoted method for salmonid restoration, despite over a decade of projects that have shown little success (Frissell and Nawa, 1992; Beschta, et al., 1994). Some common problems are evident in an ongoing program jointly developed by the Oregon Dept. of Fish and Wildlife, the timber industry, and other resource interests. This program prescribes nearly uniform artificial habitat construction throughout the range of coastal coho salmon (Barber, et al., 1995; Barber, et al., 1995; Nicholas, et al., 1995; Nicholas, et al., 1996). While studies suggest benefits from this approach in relatively healthy watersheds, there is no scientific justification for this approach in badly degraded streams (Nickelson, et al., 1992a; Nickelson, et al., 1992b). For example, the benefits can only be expected "provided that water quality is adequate" (Nickelson, et al., 1992a; Nickelson, et al., 1992b). Nevertheless, projects are proposed in badly degraded streams with warm water, excessive fine sediment, little or no riparian vegetation, and continuing damage from destructive land use practices (Barber, et al., 1994; Barber, et al., 1995; Nicholas, et al., 1995; Nicholas, et al., 1996). Some of these projects have even been used as justification for increased timber harvest in riparian zones, as authorized by the Oregon Forest Practices Act (ODOF & ODFW, 1995A; ODOF, 1996). The use of restoration to justify decreased habitat protection lacks scientific support (Reeves, et al., 1991; Beschta, 1994).

These examples illustrated the failure of fisheries managers to use credible science as the basis for salmonid management policies. the problems include an unwillingness to honestly evaluate conditions, a failure to evaluate projects, and a reluctance to improve unsuccessful programs. In addition, study results are often misused to make exaggerated claims of success for projects (Kitzhaber, 1996). The use of credible science is the only rational method for analyzing the recovery needs of salmon, determining why past efforts have failed, and developing solutions. If salmonid restoration is to be biologically effective and cost effective, credible science must guide recovery efforts (Botkin, et al., 1994; NRC, 1995; Pacific Rivers Council, 1996). Without good science, we can expect a continuation of uniformed decisions, ineffective policies, and wasted time and money.

Unfortunately, the restoration strategy proposed in the CSRI neglects many salmonid recovery needs identified by the NRC and other scientists. Critically depleted salmonids will continue to be harmed by large scale hatchery production and fishing impacts. The CSRI does not propose strong new protection measures, and existing impacts will only be addressed with unenforceable promises of voluntary improvements. To increase salmonid production the CSRI relies primarily on artificial habitat construction based on an unproven modeling approach that has little credibility, especially when applied to badly degraded streams. The CSRI does have a "Science Team," but this team's job is merely to evaluate the recovery proposals developed by state agencies and watershed councils. A "Scientific peer review" is promised, but even a highly credible review team cannot compensate for a neglect of science during earlier stages of the process.

To provide a solid scientific foundation for salmonid recovery efforts, the CSRI should adhere closely to the recommendations of the NRC report and other credible sources. Some flexibility is possible in developing specific CSRI proposals, but this flexibility should not extend to ignoring unpalatable recommendations. However, the CSRI's salmon planners appear unwilling to follow the challenging path of scientifically-based salmonid recovery. If continued, this failure to meet scientifically-identified salmonid recovery needs is likely

to lead to further salmonid declines.

These ar not new issues. As early as 1892, scientists began warning that "the salmon is doomed" without strong habitat protection (Stone, 1892). Stone's suggestion for establishment of salmon refuge parks has not yet been followed, and salmon have disappeared from substantial portions of their former range. Now, as the disappearance of salmonids becomes critical, the CSRI proposes further reliance on mitigation and artificial methods. Stone's 104 year old scientific advice, which has been re-emphasized by recent studies, remains unheeded.

Assessments of current conditions and causes of problems.

A variety of assessments have been done, including the work of independent scientists, agencies, and advocacy groups (Nehlson, et al., 1991; PFMC, 1992; Kaczynski and Palmisano, 1992; Alkire, 1993; S.O.S., 1993; Botkin, et al., 1995; ODFW, 1995A; NRC, 1996; Weitkamp, et al., 1995; ODFW, 1996a). There are some common themes, particularly criticism of past hatchery practices, overfishing and insufficient habitat protection. However, there is not uniform agreement on the rank of importance for the various factors. These assessments agree that salmonids have declined dramatically, especially wild fish. These assessments also generally agree that for salmonids to recover, management of fish and habitat must change to focus more on conservation of wild fish. Policies that received harsh criticism include attempts to support high levels of fishing through high levels of artificial fish propagation, and the use of mitigation measures to substitute for protection of fish habitat.

A. *Salmonid abundance, diversity, and distribution.*

1. *Historical conditions.*
   Native salmonid populations were abundant and diverse, and spread throughout a large geographical range (Nehlson, et al., 1991). Natural stocks supported substantial fishing pressure for many decades. Coho escapements of hundreds of fish per mile were probably common, instead of the currently typical 0-10 fish per mile (ODFW, 1995A; ODFW, 1996a).

2. *Present conditions.*
   Salmonids are declining in many areas in the Pacific NW, and are already extirpated from much of their range (Nehlson, et al., 1991; Frissell, 1993). Coho salmon populations continue to decrease throughout most of Oregon (ODFW, 1995A; ODFW, 1996a).

3. *Critical problems that threaten salmonid survival.*
   Salmonid recovery faces biological, social, and political hurdles (Doppelt, et al., 1993; Botkin, et al., 1994; NRC, 1996). Vital refuge habitat remains unprotected, and habitat loss and degradation continues. Fishing and large artificial propagation programs continue, with likely impacts to wild fish. Often, impacts from hatcheries and non-target fisheries are not being thoroughly evaluated. Political pressure exists to increase fishing and hatchery production, especially if there is modest evidence of salmonid population increases. The Oregon Legislature recently authorized a task force seeking options for increasing hatchery production, in the midst of the current salmonid crisis. There does not yet appear to be a commitment to strong, long-term protections.

   New salmonid restoration programs are often partial and incomplete, as shown by the following examples: 1) The Oregon Forest Practices Act does not control timber harvest on unstable hillslopes, and allows increased riparian logging in exchange for artificial fish habitat construction (ODOF, 1996). 2) There is little riparian protection for streams flowing through agricultural and residential lands (Botkin, et al., 1994). 3) Fishing cutbacks are beneficial, but indirect mortality of wild coho salmon is poorly understood and poorly controlled, including mortality from fisheries targeting hatchery coho, and from non-target fisheries (ODFW, 1996b). 4) The ODFW wild fish policy is not yet fully implemented, and hatchery strays exceed guidelines in some areas (ODFW, 1995b). 5) The ODFW fish habitat construction program promises benefits that can not be scientifically supported (Nickelson, et al., 1992b; Barber, et al., 1994; Kitzhaber, 1996; and others cited above).

4. *Relatively healthy stocks.*
There are a few relatively healthy stocks remaining, where are they located and why are they healthy (Nehlson, et al., 1991; Huntington, et al., 1994)? What factors are present that have helped these stocks persist? Detailed answers are lacking, but the presence of good fish habitat in wilderness and roadless areas is likely to be a factor (Nehlson, et al., 1991; McIntosh, 1992; Dose and Roper, 1994).

The distribution patterns of healthy and declining salmonids stocks can help diagnose some of the causes of declines (Nehlson, et al., 1991; Frissell, 1993). Likely causes include dams, water diversions, logging, grazing, urbanization, overfishing, and hatcheries. The declines include non-migratory species not subject to fishing impacts, so habitat degradation is obviously an important concern.

B. *Links between salmonid abundance and natural and human factors.*

1. *The health of watersheds and salmonid ecosystems.*
The concepts of ecosystem and watershed health can be scientifically defined, measured and analyzed using a variety of approaches (Costanza, et al., 1992). Coastal salmonid populations that remain relatively healthy are often found in relatively healthy watersheds (Nehlson, et al., 1991; Frissell, 1993), as illustrated by an analysis of the Umpqua basin (Dose, 1996). Aquatic ecosystems are healthy where watershed functions are mostly intact, such as natural patterns of water and sediment delivery, and natural disturbance regimes. Where watershed functions and aquatic ecosystems are greatly altered from natural conditions, then salmonid populations are often depleted. This pattern of healthy ecosystems and healthy coastal salmonid populations tends to persist, even where impacts from fishing and hatcheries are significant, such as the North Umpqua River. The health of watersheds and aquatic ecosystems appears to be a critically important factor in coastal salmonid survival.

2. *Fishing.*
Economic concerns and political pressure often lead to overfishing, at least partly because fisheries science can rarely prove conclusively that populations are declining until stocks are critically depleted (Hutchings and Myers, 1994; Martin, 1995; Walters and Maguire, 1996). For many fisheries, there are not adequate mechanisms for adjusting fisheries management to correct problems. As an example, escapement goals for coho salmon have rarely been met in the last two decades (PFMC, 1992; ODFW, 1995a; ODFW, 1996a). Low escapement can lead to collapse of fish stocks, and meeting escapement goals should become the top priority for harvest management (Overholz, 1994). Another problem is that mortality of depleted salmonid stocks from non-target fisheries is poorly understood, and could be a serious concern (Muoneke and Childress, 1994).

3. *Artificial production for enhancement and mitigation.* Most hatcheries are managed to produce fish as a commodity, largely ignoring hatchery impacts on wild fish (Waples, 1991; Meffe, 1992; White, et al., 1995). This hatchery production is often used to support fisheries that cause high mortality and other harmful impacts on wild fish populations. Despite scientific knowledge of hatchery impacts, many resources users and fisheries managers continue to cling to the idea that hatcheries are the best way to increase salmonid populations (see above).
4. *Relations between abundance and life history patterns.*
Some relationships between life history and abundance are apparent for salmonids and other fishes and aquatic organisms (Nehlson, et al., 1991; Frissell, 1993; FEMAT, 1993; Holthausen, et al., 1994): 1) Fish with lengthy freshwater residence, as juveniles or adults, are in most serious decline. 2) Fish that require low gradient spawning and rearing streams are in most serious decline. 3) Coastal fall chinook, with no life stage that over-summers in fresh water, are relatively healthy. 4) Non-migratory salmonids are in decline, in addition to anadromous stocks. 5) Non-salmonid native fishes are also in decline, including species that experience little or no fishing pressure, and have no hatchery programs. Most of these fishes are poorly monitored, so detailed information is lacking. 6) Many other native aquatic organisms, both vertebrate and invertebrate, ar also in decline, however, documentation of populations and trends for these organisms is poor.

Overall, poor habitat quality in fresh water appears to be a major common theme for declines of native aquatic organisms. Poor habitat quality in freshwater appears to be especially severe in low gradient streams.

Assessment of current efforts to "restore" salmonids

Ongoing agency policies form the core of the salmon recovery proposals in the CSRI, together with the ongoing efforts of local watershed councils. In additions, the Governor has suggested that the CSRI should focus on voluntary measures that do not require new regulations. Thus, assessment of ongoing salmonid restoration efforts is important, and may permit improvement of the CSRI.

A. *ODFW policies and actions.*

1. *Fishing.*
   Fishing policies that affect coho salmon provide a clear example of problems with fisheries management. Wild coho are currently protected from some fishing impacts by closure of directed fisheries, but mortality from non-target fisheries will continue (ODFW, 1996c). Fisheries that target hatchery coho will remain open in some areas where hatchery coho have been marked with fin clips (ODFW, 1996b). Fisheries that target other species will also remain open, including some trout fisheries that impact juvenile coho and salmon and steelhead fisheries that impact adult coho. these impacts will be "reduced" through time, area, gear and size restrictions. These impacts of these mortality "reductions" are not known, but coho mortality from hook and release fishing can be high (Muoneke and Childress, 1994; Vicent-Lang, et al., 1993).

2. *Natural production.*
   Oregon's wild fish policy is featured as a mechanism to minimize hatchery impacts on wild fish. However, the wild fish policy is not fully implemented, compliance is poorly monitored, and the presence of hatchery fish spawning with wild fish appears to exceed guidelines in some areas (ODFW, 1995b). Stronger policies are needed to protect wild fish from hatchery impacts.

   New escapement goals are proposed in the CSRI, along with new aggregation units for pooling escapement data. However, these proposals set very low escapement goals that are actually well below current levels. Lower escapement goals merely lower the standards for coho rather than implementing policies that will produce recovery. In addition, coho salmon management will rely heavily on experimental and unproven habitat models that neglect factors such as water quality. These proposals fall short of the needed stock-specific scientific management.

3. *Habitat protection and restoration.*
   Habitat protection appears to be a very low priority for ODFW, based on comments of the Director, Rudy Rosen. Mr. Rosen has directed ODFW staff to reduce their advocacy for habitat protection on private lands.

   Restoration is a much higher priority for ODFW than habitat protection. ODFW habitat restoration programs are based on poorly tested models (Nickelson, et al., 1992a; Nickleson, et al., 1992b; Barber, et al, 1994; Barber, et al., 1995 Nicholas, et al., 1995; Nicholas, et al., 1996). Restoration that appears successful in some relatively healthy streams is misapplied in badly degraded streams where it is unlikely to be successful. ODFW scientific criteria for restoration are not being followed for many projects (ODOF & ODFW, 1995). Instream habitat construction is overemphasized, despite scientific knowledge about the limitations of instream projects (Frissell and Nawa, 1992; Beschta, et al., 1994; NRC, 1996).

4. *Hatchery production.*
   Salmon hatcheries are moving very slowly towards a conservation orientation. Large scale fish production continues, with the goal of supporting fisheries that target hatchery coho. Coastal hatcheries continue producing millions of coho smolts. The hatchery policies proposed in the CSRI are merely small improvements compared to the current situation.

5. *STEP program.*
   The STEP program is changing, to emphasize habitat enhancement, and de-emphasize artificial fish production, but the movement is slow. The STEP program continues to produce nearly one million coho juveniles annually for planting into coastal streams, despite know harmful impacts to wild coho (Nickelson, et al., 1986).

B. *Coastal Salmon Restoration Initiative.*

1. *Purpose and need.*
   The stated purpose of the CSRI varies for different audiences, ranging from salmonid recovery to the avoidance of endangered species listings. How will these purposes be ranked for priority, both for funding and actions?

2. *Goals and apparent proposals.*
   The goals of the CSRI include minimizing new regulations and a reliance on voluntary salmonid recovery measures. These goals are admirable, but are they compatible with the needs of salmonid recovery?

3. *Scientific basis for the CSRI.*
   As outlined above, credible science is not the primary focus of the CSRI and proposed restoration measures. The CSRI science team is merely assigned the task of evaluating the likely success of measures proposed by state agencies and watershed councils, with some involvement of ODFW staff. There is not a credible interdisciplinary science team designing a scientifically credible salmonid recovery plan. In addition, recovery measures are not closely based on the existing credible scientific studies of salmonid recovery needs.

C. *Watershed Councils and other cooperative ventures.*

1. *Purpose and need.*
   Watershed councils are designed to build local support for salmonid recovery, to involve local people in recovery, and to develop site-specific programs. Watershed councils are also designed to change the way people view salmonids and salmonid recovery.

2. *Goals and approaches.*
   Many watershed councils are compromised by resource users that are reluctant to increase fish protections. Representation of environmental and conservation groups is resisted by some councils, species listings, rather than to promote true salmonid recovery. Most watershed councils are reluctant to do honest and open assessments of existing problems and the causes of salmonid decline. Without such assessments, designing scientifically credible recovery programs is not possible. Restoration projects implemented by councils are often mitigation or erosion control, sometimes appearing to support the needs of resource users; the needs of fish can appear to be secondary. Much improvement is necessary before watershed councils can become a credible force in salmonid recovery.

3. *Record of success and failure.*
   The watershed council approach is appealing, but largely unproven. Most of these councils have been in existence for less than two years. It is likely to be many years before the results of watershed council actions can be critically assessed. Such an experimental approach can not be assumed to meet the needs of watershed restoration everywhere. The success of watershed councils is likely to vary greatly, because their sincerity, openness and commitment levels vary. Some early projects seem to provide little real benefit to fish, and some may actually be doing more harm than good. Many of these groups need stronger technical abilities to have credibility as legitimate fisheries recovery efforts.

D. *Timber industry fisheries restoration efforts.*

Restoration efforts by the timber industry focus primarily on instream habitat construction projects that are merely mitigation for the effects of timber harvest. habitat protection is a minor part of timber industry efforts. Logging and "restoring' does not follow the modern scientific consensus on salmonid recovery needs, which indicates that restoration is no substitute for protection (Reeves, et al., 1991; Beschta, et al., 1994; NRC, 1996).

1. *Forest practices Act revisions.*
   The 1994 revision of the Forest Practices Act does not necessarily increase protection of streams and riparian areas (ODOF, 1996). For example, alder conversion to conifers is encouraged for stands that are presently poorly stocked with conifers. Such alder conversion units can retain no-cut buffer widths of as little as 10 feet. These practices may be helpful in some areas, but are probably a detriment in refuge habitats, especially where water temperature is already too warm.

2. *Restoration projects.*
   Timber industry restoration projects are usually narrowly focused on construction of artificial

fish habitat, designed to increase fish production in the near future. National Forests in the Northwest have been following this approach from ore than a decade, with little success. Some of the timber industry projects lack credibility because habitat inventories are not always released to the public; these efforts would benefit from open disclosure and thorough technical review.

E. *Coastal salmon restoration and production task force.*
This legislative task force is charged with developing artificial and natural production strategies to produce more fish for harvest. Their recommendations may conflict with the CSRI, in the absence of careful coordination. This program must be made compatible with CSRI efforts.

Biological needs for salmonid recovery.

A. *Scientific context for salmonid "restoration" efforts.*
A major handicap for salmonid recovery efforts is the weak scientific foundation for many aspects of fisheries and habitat management (discussed above). This handicap results from a scarcity of data, as well as inadequate responses to known problems. A week scientific foundation can lead to undesirable impacts to salmon, such as overfishing by target and non-target fisheries. Salmonid recovery cannot be expected until biological needs (such as escapement goals) are accurately evaluated and given priority over the demands of resource users.

A scientifically credible recovery plan must begin with scientific analysis and diagnosis, producing a framework for designing and evaluating proposed recovery measures. Management must focus on wild fish abundance that meets escapement goals, and ensuring high-quality aquatic ecosystems are available to provide good freshwater habitat for salmon.

1. *Establishing a scientific framework for project choice and design.*
The most important need for salmonid recovery is a comprehensive and integrated program that links current problems, recovery needs, and recovery activities (NRC, 1996). A scientific framework is the only credible way to link problems, needs, and activities.

The CSRI does not meet these standards, because it is merely compiling a list of proposed measures that focus on direct impacts to fish and fish habitat. Although the state is portraying the CSRI as a comprehensive scientific program, it falls far short of this goal. So far, the Coastal Salmon Restoration Initiative has not placed sound science at the forefront of salmonid recovery planning. The CSRI science team is given a subsidiary role, assigned only to evaluate the success of measures proposed by others. The design of conservation measures is left to agencies, watershed councils, landowners, and resource users. Only minimal scientific guidance is provided, through superficial lists and salmonid habitat needs. This approach does not correct existing problems, such as the weak scientific foundation for management.

The science team should be outlining recovery needs and setting goals for each impact category. Then, CSRI partners could be recruited to respond to identified needs. Agencies and watershed councils require this type of technical guidance from highly credible interdisciplinary science teams. Such technical guidance can not be provided by any single agency, so advice from ODFW will not meet this need.

2. *Protection vs. mitigation, enhancement, rehabilitation, etc.*
Protection of fish and fish habitat must be the foundation of recovery (Reeves, et al., 1991; Beschta, et al., 1994; NRC, 1996). Mitigation, enhancement, and rehabilitation can only provide assistance to protection efforts. until harmful impacts are reduced, other activities can not drive recovery.

3. *What's proven, what's experimental?*

Protection is the only proven strategy. All other approaches are experimental, and should be clearly recognized as unproven. Mitigation, enhancement, rehabilitation, etc. are typical responses to problems, but they have rarely been successful in preventing salmonid declines (NRC, 1996) We must recognize that nobody has yet "restored" salmon. However, some relatively healthy stocks remain, and protection of these relatively healthy stocks and their habitat should be a high

priority (Nehlson, et al., 1991; Doppelt, et al., 1993; Huntington, et al., 1994; Pacific Rivers Council, 1996).

B. *Integrated programs for salmonid recovery.*

1. *Assessments of conditions, trends, and ecosystem processes.*
   Scientifically credible monitoring and assessment must be the foundation of salmonid recovery (NRC, 1996). There is no way to learn how to restore salmonids without evaluating conditions and the results of restoration efforts.l Once results are obtained, management should change quickly and adequately in response to identified problems.

   Assessments should be designed by interdisciplinary teams of scientists, and should include fish abundance and trends, watershed conditions, stream geomorphology, fish habitat, aquatic organisms, water quality, and potential future damage from floods, landslides, and debris torrents (Regional Interagency Executive Committee, 1995; NRC, 1996). Simplistic inventories of single issues in isolation, such as fish habitat, are unlikely to identify the most important needs for salmonid restoration and protection.

   Where data are inadequate, or where risk is present, then conservative management is essential to protect the long-term integrity of fish stocks.

2. *Re-establishing widespread, connected, diverse salmonid populations.*
   Recovery goals should include the re-establishment of abundant, diverse, and widespread native fish populations (Lichatowich, et al., 1995; Pacific Rivers Council, 1996). Diversity should include life history diversity and genetic diversity. The geographic range of salmonids must be extensive, to allow stocks to remain healthy despite the inevitable disturbances that impact habitat in local areas.
3. *Integrating refuges and protection with active intervention projects.*
   Refuge habitats should be protected, and nearby areas with good recovery potential may benefit from watershed restoration, but only when coordinated with strong protection measures (Pacific Rivers Council, 1996). Habitat restoration projects can play a role in salmonid recovery (Lichatowich, et al., 1995). For scientific credibility, these activities should only be used to assist natural recovery processes, with primary emphasis on protection and impact elimination. Watershed restoration should focus on reducing the risk of catastrophic disturbances like landslides, debris torrents, and excessive sediment delivery (Pacific Rivers Council, 1996).

4. *A scientifically credible role for artificial production.*
   Artificial production should be designed for conservation purposes, not for production of large numbers of fish for harvest (Stickney, 1994; White, et al., 1995). Local broodstocks should be used, and fish should be produced in small numbers. Furthermore, fish should only be planted into streams with no wild fish and no nearby source of wild fish or natural colonization.

C. *Fisheries compatible with salmonid recovery.*
   Fisheries should be managed with meeting escapement goals as the top priority (Overholz, 1994). Fisheries should target stocks that can tolerate fishing mortality, based on scientific analysis of credible and adequate data. Incidental mortality should not threaten the health of non-target stocks or species.

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PUBLIC COMMENT

Return to top of page

Gentlemen:

I would like to comment on the salmon recovery plan. When you want to put out a fire they say you should place water at the base of the flame. That is the sam solution to the fish problem. A few years ago I was going down the Umpqua river from Gardiner to Winchester Bay. There were two large sand bars on the way. There were so many sea lions on these bars there wasn't room for any more. The rest of the river was so full with them that I slowed my boat down for fear of hitting one. It would not have been possible for a fish to have gotten through. I am certain most rivers along the coast have this same problem. When the animals get all they want to eat they kill for the fun of it. This causes the biggest loss of fish--more than any other problem that I have read about in the new papers.

I am certain the fish and game people know this as well as other organizations but very little is being said about it. Why don't we let the people that the government has trained and hired take care of the problems we have with our fish? The sea lions are far from being an endangered species and their numbers should be regulated. We do not need the environmentalist to run our government and tell the game commission how to do their work.

Of course, the sea lions aren't the only ones that is making our salmon, steelhead and striped bass an endangered species. The chub is getting plenty of them when they try to get to the ocean after they have been hatched in their spawning ground. When we get these two problems taken care of it will help our endangered species a log and the cost shouldn't be in the multi-millions either.

Sincerely,

PUBLIC COMMENT

Return to top of page

October 27, 1969

I live on the shore of North Ten Mile Lake outside of the town of Lakeside and attended the communication briefing held in Coos Bay. Living within what is more of a coastal lake basin than a river basin, my first concern is that this plan does not deal adequately with problems confronting the coho populations which are produced by the coastal lake systems that have historically been such large contributors to the overall coastal coho production. Fort the last tow years, I have worked for or been a member of the watershed council from the Ten Mile Lakes Basin and have been often frustrated by the fact that all the emphasis, educational

information and restoration programs have been developed for and designed to deal exclusively with river basins while lake systems like our are, for the most part, totally ignored. ODFW's current Ten Mile Basin Fish Management Plan states about our coho that "records in ODFW files suggest runs up to 75, 000 adults around the turn of the century." (p. 26) Even as recently as the 1955-56 spawning season, over 41,000 adult coho spawned within our Ten Mile watershed. Not bad for a watershed that covers less than 100 square miles! Is not this type of coho production potential worthy of at least some mention or is this plan really only for coho produced by river basins?

Is it possible that the lake systems have been purposely left out by the writers of the OCSRP? The answer for this may again be found in our Ten Mile Fish Mgt. Plan. It sates that "The former large population of coho salmon was supported primarily by nomad fry that moved into the lakes. today, nomad fry that enter the lakes and reside near shore apparently fail to survive in the presents of large mouth bass and other warm water fishes." (p. 27) Is it possible that we are loosing a genetically unique, evolutionary strain of nomad fry/lake rearing coho here?

Throughout the state, the legal (by ODFW) and illegal introduction of fish species which are not nature to Oregon and range from bluegill to small mouth bass to large mouth bass to walleye pike, have destroyed a large amount of coho rearing habitat. Because coho spend a year in fresh water, they have been particularly affected by this type of habitat degradation which includes not only direct predation but competition for both food and living space as well. It is quite likely that steelhead and cutthroat trout have also been affected. My second comment on the plan is that this issue is not adequately addressed and, in truth, seems to have been swept under the rug.

I realize that there is no easy solution to this problem of introduced fish species. What I would like to know is, is the solution to the dams on the Columbia any easier to find? Is the answer to that question pursued so aggressively only because there is federal money available to do so? Is fencing creeks on agricultural lands pursued because it is the private ranch owner that is required to give? Are large buffer zones in riparian areas such a good idea because the timber industry and private landowners are those that have to atone for their past sins? Is it possible that state fishery people have left the introduced fish species problem out of this plan because it is a problem they have created and they are hoping to avoid, in the future as they have done in the past, having to bear the expense and embarrassment of developing a plan to deal with this issue?

Thank you very much for not only giving me a change to comment but putting up with this hand written answer. My printer is broken and so I had to resort tot the old way.

Sincerely,

PUBLIC COMMENT

Return to top of page

Governor John A Kitzhaber
Salmon Plan Review
Capitol Building
Salem, Oregon

Dear Governor John Kitzhaber:

I feel that congratulations are in order. The salmon groups always divided, now have leadership at the highest level. Thank you for your foresight.

I am a wood window manufacturer and builder. We use lumber and build for both the fish plants and the

timber people. I am an avid sports fisherman and find myself inclined to the conservation side except their approach is so narrow and each group is so self serving that I can't really agree with all of any.

It should be remembered that when the Tillamook burns occurred, the State of Oregon decided that the restoration was, when considered, too large an undertaking. Many precious years were lost, and we are still and will always feel that tragic decision. The burn was not avoidable at that time but the decision was.

In the 70's we built a home for one of the top management people in Fish and Game. He told me that the Department would not spend serious effort on the Columbia River system because of the political and logistical problems. I ask you is this any less a tragedy?

We can, with inclusive leadership, bring the salmon back to our streams and properly manage them. The fish belong to the Pacific Northwest one and all. It is time the people of this country be aware of our national treasure.

My family were pioneers and became farmers, loggers, commercial fishermen, builders, manufacturers, sports fishermen and hunters.

If one of us wins we all win. I don't belong to any salmon group. Each group has the "all for me mentality", and why not, the other groups are trying to eliminate me.

Enclosed are several ideas that our family have had and been interested in.

Lead on.

PUBLIC COMMENT

Return to top of page

Governor John A. Kitzhaber
Salmon Plan Review
Capitol Building
Salem, Oregon

Dear Governor John Kitzhaber:

In a follow up to my previous letter I present another idea that our family has had some discussion about.

We know that the dams on the Columbia River are the number one obstacle to the salmon recovery in this drainage. Trying to remove then is not a possibility. Economic and political power won't allow it. If we can find a new way to use the rivers power to generate electricity without harming fish, this economic and political power will work for the salmon.

In the 70's the department of Energy were giving grants to develop alternate methods to produce electricity. We applied asking for a grant to experiment with river current to generate electricity. We were refused. (No useable power) They know that you needed a given head of water and turbines to produce clean 60 cycle power. This is simply not true and I don't actually believe they wanted an answer. We needed dollars to crank thru the existing dams and atomic power plants. Economic and political reasons. They gave grants for chicken do do generators, etc. I believe that the political and economic temperature could now use new and fresh ideas.

This is the day of technology. We can produce raw electricity from river current without the harm to salmon, this power can be cleaned up electronically and distributed thru the same distribution system. The dams could remain thus the economic and political power could be with us.

A plane water wheel will capture the raw power without the harm to salmon. This can be used anywhere that current on the river is strong enough. Remember the historic pictures of the fish traps and fish wheels? This could scoop fish over the dam and carry water producing power down with small fish unharmed. No hydrogen saturation, or chopped up fish. No fish caught for weeks trying to find their way upstream or worse yet lost without spawning. Why not use what used to work with the new electronic clean up.

All we really have to do is use what god gave us, gravity and brains. Simple drawings enclosed

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PUBLIC COMMENT

Return to top of page

Governor John A Kitzhaber
Salmon Plan Review
Capitol Building
Salem, Oregon

RE: UPPER YOUNGS RIVER, CLATSOP COUNTY, OREGON NEW WILD SALMON HABITAT FISH LADDER COMMUNITY PROJECT.

Dear Governor Kitzhaber:

Our Youngs River system has a wild run of Coho and Chinook in the one mile stretch from Tidewater to the Falls. This falls is a beautiful place and favorite of locals for day outings. I would propose a switch back fish ladder that would not distract from its beauty. The wild run that is long time establish under the falls would be able to use the now beautiful spawning and rearing area above the fall. This approximately 15 miles should support thousands of wild fish that are already adapted to this system.

INSERT DRAWING "FISH WATER WHEEL"

PUBLIC COMMENT

Return to top of page

Jim Martin, Governor's Fisheries Technical Advisor
C/O Office of the Governor
State Capitol
Salem, Oregon 97310-0370

SALMON PLAN REVIEW

Dear Jim:

Re. the following questions that were on the SRI Draft Plan comment form,

WITH PARTICULAR ATTENTION TO QUESTION NUMBER 7 BELOW.

1. Which communication briefing did I attend?

I attended the Grants Pass briefing.

2. How did I learn about the briefing?

I learned about it by receiving a copy of the draft plan from the Upper Rogue Watershed Council coordinator. The plan's executive summary indicated the briefing date and place. If that notice had not been in the executive summary, WI WOULD NOT HAVE KNOWN about any briefings.

As far as I know, the briefings were not items either in the local newspapers or TV stations. That might account for what I believe was the situation at the Grants Pass briefing. It appeared to me that most of the people who attended were: public agency people, a politician or two, or watershed council members and retired persons who do not have any other paid jobs to go to. If you are going to reach the general public, which I believe you know you need to do, you have to advertise such briefings, hold them in the evenings when the general public can attend, and just in case you do have a big turn out, you have to have it in a large enough place to accommodate it.

3. What did I like BEST about

-- the draft document itself?

In particular, nothing, except the fact it had an executive summary.

Suggestion: In the final plan, the executive summary should somehow indicate, **in its discussion of specific subject matter**, exactly where the details of that subject are in the body of the plan itself, so the "executive" does not have to fumble through the table of contents or the body of the plan to find where those particular details are.

-- the plan's concepts and strategies?

These are handled in the response to question 7, below that deals with "additional comments, ideas, suggestions."

4. What did I like LEAST about

-- the draft document itself?

It is just too darn long and arduous reading. One becomes weary.

-- the plan's concepts and strategies?

Handled in the response to question 7. below.

5. What questions of mine were not answered during the briefing or in the draft plan?

No questions I may have had at the briefing were unanswered. Questions I have after having reviewed the draft plan are handled in the response to question 7. below.

How can I best contribute to the restoration of anadromous fish runs?

By:

1. Volunteering my services to habitat improvement projects.
2. Continuing to try to affect societal changes by working with and making suggestions to the local watershed council.

   I resigned my council membership last June 27th because then I concluded it was a waste of my time trying to influence the majority of the Upper Rogue Watershed Council (URWC). It is futile trying to convince its members to go on record as saying the current Oregon water law id directly contrary to the intent of the recovery initiative, and at odds with watershed health and the DEQ's effort to improve water quality.

   Even though one of the councils' rolls (as defined on page VI-C-1) is to address specific limiting factors to salmon recovery, the majority of the URWC is a "stand pat" group, unwilling to face issues that most immediately hinder the success of the recovery initiative and the accomplishment of good stream quality. Issues are controversial, like eliminating some things our society does and changing the way it does others -- such as "**STOP PUMPING THE CREEKS DRY!**" -- things that adversely effect property rights and peoples' lifestyles. Pumping creeks dry is an example of precisely the type of inimical cultural practices and residential lifestyles that used to be corrected (eliminated) if stable anadromous runs are ever to be achieved.

3. Continuing to try persuading the Governor, his administrators, and state legislators that social and legal changes are needed.
4. Advocating political initiative or litigation if persuasion is not productive.

5. What additional comments, ideas, or suggestions do I have about

-- the plan's concepts and strategies:

You may remember that in my letter last August 30th to you, I said

> The plan should NOT indicate the inappropriate motive of forestalling and averting federal intervention that will dictate recovery efforts. (I believe Oregon would not even be in the business of anadromous fish run recovery, if it was not for the threat of federal intervention.)

Besides, the fish might be listed anyway by the time you ever get the final plan written.

Suggestion: So, he that as it may, take all references to that incorrect motivation out of the plan. The reason for the Initiative and its plan should be recovery, only.

You may also remember, in my letter dated last August 4th to Governor Kitzhaber, (of which you have a copy) I acknowledged that:

The foundation of the recovery initiative -- the "council process" -- is the element that is supposed to be the strongest. But understand, (and, Mike Golden, please note) that if the councils are actually the weakest element, **because they do not receive the proper (by "proper," I mean "proactive") direction and assistance from the Recovery Initiative "administrators" and managers, like yourselves, the Initiative and the Watershed Health Program are prone to crumble. I cannot emphasize that enough.**

Examples -- of important and necessary assistance needed by the councils -- that have **NOT** been actively **initiated** (actively pressed and pursued) by the state managers:

Liability insurance -- for projects and other council actions. In this matter, state government administration wants the councils to promote or do habitat improvement projects and other actions, but has "left the councils hanging out on a limb," on their own, to obtain liability insurance. This is but one example of how the Initiative and the Watershed Health Program was/is ill conceived.

Establishment of adequate bylaws -- bylaws that:

Include procedures for conducting business so the councils don't fumble around and spin their wheels. I know, the Recovery Initiative is supposed to be a "grass-roots endeavor, but each council is different, and not all of them have members who know how or who are willing to conduct business in a productive and efficient manner. In this, councils need direction. Otherwise, people will grow weary and frustrated, and the councils will dissolve.

Suggestion:

Prohibit councils from limiting their membership numbers. As an example, Upper Rogue Watershed Council Bylaws limit council membership to 13 members. After all, the salient concept of the Recovery Initiative is "all-inclusiveness."

Direction and assistance in performing proper watershed assessments - -

Councils need to have and receive direction and assistance so adequate action plans can be timely established.

Contrary to what the draft plan now says on page VI-C-9, The Upper Rogue Watershed Council DOES NOT HAVE a watershed assessment, and therefore, DOES NOT HAVE an adequately updated "Action Plan." If there is one, it has not been made known. (Change the heading of the last column on page VI-C-9 from "Work Plan" to "Action Plan.")

As far as I am able to determine, here again, the councils have been left on their own, without direction and assistance from program managers. Councils should not have to ask for assistance; it should be offered because, often, council members do not know what is available or how to access it, or even know what they need to conduct a proper watershed assessment. The councils and their coordinators cannot do it by themselves.

-- other comments on the draft itself:

About the executive summary In addition to my suggestion relating to the plan's executive summary (in the answer to question number 3 above), further review and comparison of that summary, with the plan's table of contents and the body of the plan, reveals a lack of direct correspondence to the body of the plan itself. The "summary" appears to be, not a summary -- of the plan, but an "afterthought" or an addendum placed ahead of the body of the plan. Make the titles and headings of the executive summary and the body of the plan...CORRESPOND. The executive summary needs to be just that -- a SUMMARY -- OF THE

DETAILS IN THE PLAN.

Reaction to the second "Key Principle" statement concerning voluntary approaches -- on page 2 of the executive summary It says the plan's emphasis is on voluntary rather than regulatory approaches, and the intent is to make existing system (regulatory system) work better -- not to establish a new set of laws.

> The whole reason for any "regulatory system" is because legal coercion is necessary. The mere existence of a regulatory system implies that voluntary "will" is not present. Therefore, the statement, that a "voluntary approach" and that the expectation of voluntary compliance will somehow make the present legally coercive (regulatory) system "work better," is an incredibility incongruent, illogical, and naive statement.

> The recovery initiative will have a tough time succeeding on a voluntary approach, because of the present way the state's water law is interpreted by the Water Resources Department. That interpretation or the design of the present water law thwarts the goal of the initiative.

Reaction to the "Key Principle" statement at the bottom ofthe left column on page 2 of the executive summary It says restoration of wild populations (of coho) to sustainable, that will support harvest, is "a" major plan objective.

> I submit, that sustainable harvest is the state's only real, true, objective for the initiative, and restoration of wild populations is only the goal needed to achieve that objective. Therefore, change the word "a" to "the."

Reaction to the discussion under the heading "*Harvest*" on page 3 of the executive summary It says the plan proposes ***limiting*** total fishery impacts on Oregon Coho Natural (meaning "wild" coho, I presume) to 15 percent until escapement improves, and that will ***minimize*** wild fish mortality.

> That proposal is a direct request to the National Marine Fisheries Service to postpone listing and to turn a "blind eye" to Oregon's duplicity -- of trying to "have its cake and eat it too" -- by trying to harvest coho while, at the same time, it says it is trying to reestablish sustainable populations of the fish. Such a proposal is an absolute complete absurdity, and it is completely contrary to the intent and purpose of the Endangered Species Act.

> Eventually, if the fish are listed anyway, you will have to strike out of the plan any references to ***limiting*** and ***minimizing*** mortality of them.

Reaction to the discussion under the heading *Hatcheries*, that begins on page 3 of the executive summary and continues on page 4

> For the same reason just mentioned, the discussion should be changed, and may be required to change if the fish are listed, to reflect the **elimination** (not the **decrease**) of effects of hatchery fish spawning with wild fish.

First paragraph under heading *Habitat Management*, page 4 of executive summary -- Shorten the first paragraph by rewriting it to read:

> "Changes in habitat management focus on actions that assist salmon conservation and restoration."

Second paragraph under heading *Habitat Management*, page 4 of executive summary -- Change the word "may" to "do" so the phrase reads:

> "...do affect the habitat...."

Fourth paragraph under heading *Habitat Management*, page 4 of executive summary -- "Ensure Compliance" Those two words appear in the sentence that mentions compliance with (clean water) laws. Note to Governor Kitzhaber: Ensure compliance by providing the resources necessary, so your agencies don't have the excuse not to enforce compliance.

Last paragraph under heading *Habitat Management*, Page 4 of executive summary -- It says that Watershed Councils are conducting watershed assessments and developing and action plans to correct limiting factors.

> OH? The only action plan that exists for the URWC is an extremely inadequate one, formulated at the very beginning of the watershed health program. Since then there hasn't been even a preliminary watershed assessment and updated action plan developed, even after the two years of its existence.

Discussion under ***Monitoring***, page 4 of executive summary -- Here there is a sentence that says that developing accurate information on the status of salmon populations and their habitats is one objective of the monitoring program. Reaction:

> Sounds good, but I doubt most people in state government really have an appreciation for just how big the job of stream, habitat, and status monitoring really is, and I doubt whether the state really has the commitment to carry out an adequate monitoring program.
>
> For Trail Creek, a coho "core area" stream, ODFW research fish biologist, Tom Satterthwait, has conducted, under contract with the Army Corps of Engineers, a report that will serve as a "base line" for both Trail Creek and Elk Creek, also a core area stream.

PUBLIC COMMENT

Return to top of page

Friday, August 30, 1996

Jim Martin, Governor's Fisheries Technical Advisor
C/O Office of the Governor
State Capitol
Salem, Oregon 97310-0370

Dear Jim:

Please forgive the familiarity of my salutation, but I hate formalities.

Last Saturday (8/24), from the Medford Mail Tribune I cut out the Associated Press article which had the headline that read, "Oregon unveils plan to help salmon runs." I cut the article out because I wanted to comment on some of the statements made by the article and about some of the quotes attributed to you.

But before I do, I want to tell you that since about March of '95, I have been involved and acquainted with the goings-on of the local watershed council, the state's Watershed Health Program, and, since it started, the Governor's Anadromous Fish Recovery Initiative. Last June 27th I resigned my position on the council because of frustration and anger. I have since, however, retained my position on the council's Habitat Committee because I couldn't bring myself to give up entirely, and besides, the Recovery Initiative administered through the council is really the only locally based, on-the-ground, "game in town."

I just reviewed a letter I wrote to the Governor earlier this month (8/4) on this subject, and as I was reading it, I thought to myself, "That pretty much spells out what I think about it; there isn't too much I can add. I'll send a copy of it to Jim Martin, along with this letter." And, while I am at it, I might as well send to him my recent memo to the WRD regional manager & watermaster, and a couple of my essays I wrote some time ago." So, herewith, they are enclosed.

Now for my comments relating directly to the newspaper article....

The article repeated Oregon's often stated goal -- of forestalling and averting federal intervention that will dictate recovery efforts. Jim, efforts to restore anadromous fish runs has to be bigger than any individual state's efforts. The goal of preventing federal intervention is entirely inappropriate, and the Oregon's recovery plan should not be couched in those terms of "turf conflicts." The goal should be "recovery," only. If federal intervention happens to be avoided by Oregon's efforts alone, which is virtually impossible, so be it, and Oregon should count it as just a bonus.

Oregon government starts out with little credibility in the recovery effort because it is a reflection of the society it represents. Oregon (and the nation, for hat matter) has, in reality, historically treated (and presently treats and views, both culturally and legally) its anadromous fish runs as resource to be extracted for pleasure and profit, while giving them no effective legal right to the basic source of their sustenance -- **WATER!** Is it any wonder they are diminished? Fish, forests, and all of the other natural resources suffer because our society is one that is dominated by self-centeredness, selfishness, money ("jobs"), and greed -- "The American Way."

According to the newspaper article, the draft report (the plan) released Friday August 23rd says that existing laws to protect wildlife must be enforced..." That is true enough, Jim, but what about laws, like the present Oregon water law? That law is now interpreted and administered by the state's Water Resources Department in a way that permits HARM AND DETRIMENT TO THE FISH. That law is out of date and no longer meets needs. By virtue of the way the law is presently structured and/or administered, the state acts against itself and the fish.

By the law not giving aquatic life and terrestrial wildlife any effective, "prior legal right" to just enough water for their survival, the law is presently "upside down."

Enclosures:
Aug. 4, 1996 letter to Governor Kitzhaber
Aug. 29, 1996 memo to WRD S.W. Regional Mgr. & Watermaster
OREGON WATER LAW: KILLER OF WILDLIFE
ADMINISTRATION OF OREGON WATER LAW v. THE PUBLIC BENEFICIAL USES OF WATER

PUBLIC COMMENT

Return to top of page

Sunday, August 4, 1996

John Kitzhaber, Governor
State Capitol
Salem, Oregon 97310-0370

Dear Governor Kitzhaber:

The Medford Mail Tribune carried your essay today -- the one about saving the anadromous fish. The headline read, "Save the salmon: Restoration begins at home."

At this point, in the writing of this letter to you, I have yet to read all but the first few paragraphs because I don't want to have my initial thought diluted. I want to give it to you "straight," before I read the rest of your essay.

Yes, restoration does begin at home, but just as importantly, **IT ALSO BEGINS IN THE STATE GOVERNMENT AND WITH THE STATE WATER LAW.**

Both restoration of habitat and "education of the public" are and will be the two long-term and never-ending endeavors of the Watershed Health Program and the Salmon & Steelhead Recovery Initiative. But, the most immediate, most pressing, and short-term thing that we can and must do as a society, is to change the way we regulate and use the water in Oregon's (and those of other relevant states') streams. We must regulate water on a stream flow basis, instead of on the basis that is presently used. Current regulation is based on what is known as the Doctrine of Prior Appropriation, and because of it, aquatic life has no real practical legal right to water. Also because of that doctrine, regulation that governs the division of water among the rights holders is only initiated by complaints from senior rights holders. All of this present situation is **WRONG!**

Question: After all the habitat restoration and public education is done, what will be gained if the water law or the regulators, through misinterpretation of that law, allow the creeks to be pumped dry? Tributary creeks are the primary spawning and rearing habitat for the coho salmon and steelhead trout.

Right now, taking stands on relatively short-term issues -- issues like the legal issue that relates to the outdated, antiquated, and socially pernicious administration of the state's water law -- should be of the highest and immediate priority.

Now I will read the rest of your essay.

The essay is an appeal for people to "get on the band wagon," which is very good. However it would have greater credibility to know the words are actually from the Governor's personal authorship, instead of perhaps (as is so often the case with politicians) from the authorship of one of his expert fisheries staff.

You said Oregonians are working on many factors within our control that affect the health of the depressed fish populations. I am sorry to exhibit a lack of confidence, Governor, but it has been my experience in dealing with state agencies, particularly with the Water Resources Department, that they often DO NOT adequately work with those factors. I can furnish documented examples in case you are interested. Your claim that the "best efforts of state agencies" will be pulled together has to be demonstrated without exception and qualification before true confidence can be achieved.

You say, "...we must ensure all that takes place in the watershed works to protect and restore the fish." My reaction to that is, OK Governor, ensure it by providing the resources! No matter how many times you make that pronouncement or how emphatic you make it, it will not be ensured unless the necessary resources are provided. Only until they are provided, can that "old tired and standard excuse" be eliminated -- you know, the excuse that state agencies always use -- of not having enough resources to do their jobs adequately.

And review the water law to determine if the Doctrine of Prior Appropriation is actually written into the state statutes and is not just merely a traditional misinterpretation of the law by the Water Resources Department. I have looked for a discussion of the doctrine in the statutes, and cannot find one. Even if it is written into the statutes, I cannot understand how that would preclude proactive enforcement of the law on a streamflow basis, instead of enforcement based on the current neglectful and socially destructive complaint method. I have given this subject some thought, and I have committed my thinking to writing. If you are interested, I will furnish the detail of that thinking.

You cite a few things that the phrase "all that takes place in the watershed" means. However you neglect to emphasize the most important thing that state law and/or state government now neglect. It may seem obvious, but apparently, it is not obvious to those in state government; I am not being facetious, Governor, when I say this, but, **FISH NEED WATER!**

You say that with tactics and strategies developed locally, the state and federal governments can provide the political and financial support for fish restoration. But, Governor, if those local tactics and strategies are not forthcoming or are inadequate, the whole initiative will fall on its face.

Citing restoration of the Tillamook Forest after the fires there in the 1930s and 1940s as an example of Oregon's "tradition" of non-partisan support for collaborative problem-solving on natural resource issues, is inappropriate. It is inappropriate because the political "clout" of the ranching, agriculture, and the timber interests was not opposed to restoration of the forest, like it is to restoration of fish runs. Restoration of fish runs necessitates restrictions on ranching, agriculture, and timber.

The foundation of both the Watershed Health Program and the Salmon & Steelhead Recovery Initiative has been the local watershed councils. Those councils are, as intended, made up of all segments of society -- even those segments which are inherently antagonistic toward restoration of fish runs. They are naturally antagonistic because efforts to restore the fish populations threaten economic interests, property (water) rights, and peoples' lifestyles. The theory is that if the naturally antagonistic segments can be "brought on board," then success is guaranteed. But that is the "fly in the ointment." Because the salient feature of both programs has been the "fantasy" -- the "pipe dream" -- of thinking commitment can be obtained from all segments of society, the element that is supposed to be the strongest, its foundation (the councils), is actually the weakest, and the whole program is prone to crumble.

A personal note: I debated whether to make this an open letter and send the copies, because it has such a negative tone. I know you must think the program does not need such negative talk, but you and others should (if my opinion is at all accurate) understand just "how it is."

Sincerely,

PUBLIC COMMENT

Return to top of page

TO:
Oregon Water Resources Department (WRD)
101 N.W. "A" Street, Rm. 202
Grants Pass, Oregon 97526-2091

DATE: Thursday 8/29/96

SUBJECTS:

1. Information on the condition of Trail Creek.
2. A statement about trying to save anadromous fish in Trail Cr.
3. Status of Trail Creek stream walk.
4. My 3rd attempt to obtain a defining answer about the water law.

On Friday Aug. 23rd Trail Creek stopped flowing at my residence for the third time this month. Previously, when the surface flow stopped, there was enough water seeping through the gravel between the standing pools to maintain a "trickle" of water over bedrock and into the pools that are harboring (even during those extreme conditions) living anadromous fish. However by Tuesday Aug. 27th it became apparent the fish in the pools would soon be lost if the trickle did not resume again quickly (if it wasn't too late).

So, the Upper Rogue Watershed Council Chairman (Richard Harrington), the ODFW District Fisheries Volunteer Coordinator (Chuck Fustish), and myself launched an emergency rescue effort on Wednesday Aug.

28th by shocking the pools, netting the stunned fish, and successfully transporting the fish to the Rogue River. Of course we didn't come close to getting most of them, but we got all that we could during the time the shocking machine and Chuck Fustich's time was available for the effort.

Later, that same Wednesday evening, i.e. "yesterday" at the time of this writing, more water than before (although still a very little absolute amount) started flowing from pool to pool again over and through the gravel surfaces. (And, the fish still live.) Those recurring fluctuations and the last radical fluctuation of flow raises the question of what is happening (because there has been no rain in the Trail Creek sub-basin for 31 days). Obviously, the prior minor fluctuations might be accounted for by the diurnal temperature fluctuations and corresponding evapo-transpiration of water by vegetation in the riparian zone, but that does not account for the radical fluctuations.

So, what is happening? Apparently, some irrigator has stopped and is returning some water back into the Creek. Or, perhaps(?), have you found some more illegal water diversions as a result of your stated intention to continue and complete the stream walk of Trail Creek that you started last summer?

I would, and the Upper Rogue Watershed Council might also, like to have a written report on the status of that stream walk. Information on the exact detailed findings would be appreciated. I know the council is particularly interested because Trail Creek has been designated as a "Core Salmonid Area" by the Governor's Salmonid Restoration Initiative.

In addition, since supposedly I have your undivided attention, I again request an answer to the question I posed to you in my memo of last June 18th, which you have not yet been inclined to answer. To refresh your memory, I here repeat the essence of that memo.

I had previously asked:

> During water shortages when there is only enough water to satisfy a senior rights holder and during times when he is not using his water, is allowing junior holders to use water during those times a "statute" requirement, or is it a "WRD rule" that merely reflects the WRD's interpretation of the statute?

Your response was:

> "If the senior user chooses not to exercise his right for whatever reason, then the next senior user may use the water as it is available. This reflects statutory scheme and is the premise of the Prior Appropriation Doctrine. ORS 540.045 lends statutory credence. All statute is subject to interpretation by those charged with administering it or by the courts. In this instance, I'm unaware of any interpretators that would refute this basic premise. Subsequent law has and may continue to erode the Doctrine. The Endangered Species Act may do likewise."

I thanked you for your elucidation, but ORS 540.045 is merely a summary listing of the watermaster's duties and does not definitively answer the question.

So here, again, in the same more specific terms, is the question I posed to you in my 6/18 memo:

> WHERE is the Doctrine Of Prior Appropriation written into the law? Is it written into the Oregon Revised Statutes (ORS)? I have looked and cannot find it. Presumably, if it is not actually written into the statutes, then it must be written into the Oregon Administrative Rules (OAR) that are adopted by the Commission or else established by some case law. Where is it? Since you are the "experts" you should know where and should be able to cite its location when you explain the Department's position.

The reason for asking, of course, is to determine whether the Department's present administration of the law is based merely on presumed understanding of the law, on a rule adopted by the Commission (which can be

changed by the Commission), on case law (that can be changed by a court ruling), or on an actual writing of the Doctrine into the statutes or the state constitution.

If flow could be maintained to at least the 3rd oldest water right on Trail Creek, which is just two miles above its confluence with the river (administering the law on a streamflow basis, instead of by the old, unworkable, and chaotic method of enforcement based on complaints), we could legally guarantee (natural flow permitting, of course) water to that point at all times, even during times when that 3rd oldest rights holder cannot use, or is not using, his permitted water.

PUBLIC COMMENT

Return to top of page

ADMINISTRATION OF OREGON WATER LAW
VERSUS
THE PUBLIC BENEFICIAL USES OF WATER
March 17, 1995

In Oregon, water is a public resource; it does not belong to any one individual or group. Yet it is administered exactly as though it does belong to a special group -- the water right holders. Even though the Oregon Revised Statutes (ORS) recognize other "beneficial uses" for such things as for fish, wildlife, and recreation, the practical effect of the way the law is presently administered is to deny those "other beneficial uses." Present administration of the law makes the maintenance and support of those "beneficial uses" a farce and a sham!

Currently, when disputes involving priority uses of stream water exist, the local watermasters are only required to intervene on the basis of "calls" or "complaints" by senior water right holders. In other words, resolution of water use disputes is, in effect, only "legally" between rights holders and is driven by their "complaints" alone.

Therefore, to repeat, the practical effect is to ignore and therefore deny the beneficial uses to, for, and by all other entities.

Ironically:

> **IN THE ENFORCEMENT OF THE WATER LAW, THE AMOUNT OF STREAMFLOW DOESN'T MATTER ONE LITTLE BIT!**

What matters is whether or not a senior water user complains.

That is just too convenient for the Water Resources Dept. (WRD); unless a senior user just happens to complain, that interpretation of the law just gives the WRD people the excuse (or indeed, in their view, requires them) to do nothing.

The situation is exemplified by a senior water right holder that is not able to sustain pumping water at his certified rate because junior right holders are pumping water upstream from him. If the senior holder does not complain, the watermaster DOES NOT consider a violation of the law to exist.

The reasoning used to justify that interpretation is the analogy of an owner of real property who chooses not to complain about a trespass on his property.

The fallacy of using that analogy is the assumption that there are no other entities' vital interests at stake in the trespassing on the owners property. But in the case of the "trespass" on the senior holder's water right, there are other entity vital interests at stake. In this case, the other vital interests include, but are not limited to, support and maintenance of both aquatic and terrestrial wildlife, pollution abatement, navigation, or any other benefit that accrues to the public at large -- ORS 536.310(7) and 537.332(4).

The state continues to allow all the water to be diverted from streams by irrigators at the expense of all other entity interests because of two things:

> The doctrine of "Prior Appropriation," ("first in time, first in right," or, "I'm here now, and to hell with you and everything else!", and
>
> Item (12) ORS 536.310. It gives preference to human consumption (regardless of type) and to livestock consumption "over any other use and thereafter other beneficial purposes..."

If that continues, even the vital interests of the state government and the irrigators themselves are in jeopardy, whether they know it or not.

The threat of federal intervention in the state's authority and actions relating to water (fish habitat) is based on the possible listing of anadromous fish as threatened or endangered.

In turn, the vital interests of the irrigators are jeopardized if federal intervention occurs. Their water diversions will be judged as a "taking" of the endangered or threatened species' habitat, and therefore will be prohibited (if the U.S. Supreme Court does not change that rule this year).

Still, regardless of whether federal intervention takes place, the other interests are not currently recognized and served by the way the water law is presently interpreted and administered. They are not being served because sufficient streamflows are not really being fostered and encouraged. And, the reason sufficient streamflows are not being fostered and encouraged is that the watermasters are only required to react to complaints from senior right holders.

Given that situation, and because laws are what the courts say they are, a law suit should be brought against the state to force recognition, in reality, of those other entities' vital interests.

The weak point of attack on the present law should be the subject of the ill-defined "public interest." The courts might be persuaded to conclude that **THE WATER LAW IS PRESENTLY TOO NARROWLY INTERPRETED AND ADMINISTERED TO ADEQUATELY SUPPORT THE OTHER VITAL PUBLIC INTERESTS.**

Such a judicial decision would legally force the state to administer the law in a way that concentrates on keeping as much water as possible as far down the stream courses as possible. It would legally force the state to pro-actively intercede whether complaints are received or not.

PUBLIC COMMENT

Return to top of page

A measure of a society's capacity to perceive what is right and wrong (its conscience) is its laws. And Oregon's water law lacks the basic moral character of fairness.

Why? Because in every case, it places human economic desires about the survival of other life forms. In reality, it only pays lip service to other "beneficial uses."

But before focusing on examples of that lip service, we should remember that social evolution is never static; it either degenerates or it improves.

United States history demonstrates that our society has slowly improved, although some may argue that it is no longer doing so. We institutionalized the evil of slavery for a longer period than our formal existence as an independent country -- for 244 years (from 1619 to 1863), and we finally, painfully, purged ourselves of that. Our evil treatment of Native Americans may be diminishing. (-- but only because we "diminished" them. Remember, our pious founding fathers believed that all men were created equal except, of course, "Niggers" and Indians.) And finally, we may be starting to become a "kinder & gentler" society, in some respects, toward other life forms.

"Kinder & gentler, in some respects...," -- which brings us to the exception at hand: Oregon's water law.

The basis of that body of law is the disgusting, self-centered, greedy principle of "First in time, First in right" known as the doctrine of "prior appropriation." In other words, it is the doctrine of, "I got here first, and to hell with you and everything else!"

Under that system, our system, water right owners receive water in the order of the water right acquisition dates. During water shortages, owners of older rights receive water, and more recent ones don't. That procedure continues until there is only enough water in a stream to satisfy the desires of the owner of the oldest water right. At that time, the law allows that owner to "pig out" and divert all the remaining water from the stream. Regardless of the nice platitudes that are written into the law, when "push comes to shove," the law always allows the desires of water users to win out over the survival of aquatic life and other wildlife that depend on stream water.

Because the law allows the owner of the oldest right to dry up a stream, it gives no consideration to the possible survival of stream life. The possibility of survival is eliminated, and that is ....**WRONG!**

Such a situation may have been acceptable during the time of settlement when human impact on the landscape was relatively minimal, but the "balance has shifted." The survival of wildlife and society's need to ensure it are now of greater importance than the desires of any one individual or group. They are greater because more degradation of habitat and eventual extinction of wildlife, will make our surroundings and quality of life unacceptably diminished.

The basis of Oregon's water law, and the basis of all Western (U.S.) water law, must be "turned upside down." Oregon instream water rights were authorized too late (1987) to have effective priority dates; by then, there was not enough water to protect. The law must be changed to give aquatic life prior legal right to the last remaining water necessary for its survival.

As the Oregon's law now exists, ORS 536.310 declares that:

> Maintenance of minimum perennial streamflows to support aquatic life be encouraged. (the lip service)

Water supplies be preserved and protected for, and preference be given to, human consumption. Preference is then given to livestock consumption over all other uses, then to other beneficial purposes. (lip service to other purposes)

The statute (not the administrative rules) should define the types of "human consumption" permitted during water shortages. The law should distinguish between vital human consumptive needs (drinking, bathing, and flushing), and give priority to wildlife survival over mere amenities (lawn and garden watering).

ORS 537.352 now allows proposed multi-purpose storage and municipal use & hydroelectric projects (dams) to gain precedence over instream water rights. These projects should not be allowed to gain precedence over wildlife's prior legal right.

The state is classifying water sources as to highest and best use. Classification has the effect of restricting the use and quantities of use to those specified in the classification.

And the state is also conducting a Watershed Health Program designed to restore degraded wildlife habitat.

Such endeavors, along with the rules against waste, are needed and imperative. But what good are they if during water shortages the state also permits the holders of the oldest water rights to take out of the streams all the remaining water necessary for wildlife's survival?

The law needs to be changed as described above.

Because such a change is extremely unlikely to come by way of the state legislature, the state initiative process is the only alternative.

PUBLIC COMMENT

Return to top of page

October 24, 1996

Honorable John Kitzhaber
State of Oregon
Salem, Oregon

Dear Governor Kitzhaber:

Many of us on the South Oregon Coast strongly support your Oregon plan and program to save the steelhead and salmon and to avoid listings under the Endangered Species Act. We have applauded your strong leadership in getting normally recalcitrant state agencies to modify their programs to assist in habitat recovery and prevention of further degradation of our coastal streams fishery and riparian areas. ODT should be commended for its turn around the new leadership in water quality and riparian protection in maintenance and new construction ODT's influence has also begun to shape south coast county road department practices.

Imagine our disbelief when we read in the newspapers that your prison siting agencies are recommending a site on the Illinois near Cave Junction as a potential prison location.

Is the Department of Corrections excluded from your order to your state agencies that all

agency actions are subject to your Oregon Coastal Salmon Restoration Initiative? If not excluded how did such a siting recommendation so disastrous to the potential recovery of Coho and Steelhead populations in the Illinois get to your desk?

Did not these siting agencies make elementary fishery and water impact considerations in their review of potential sites? Does the file for review not contain information that water supply required by: proposed prison inmates, irrigating the grounds and water intensive prison farms, prison industry, the use by the direct labor force and their families, and the water supply necessary to support multiplier effects of the indirect labor force generated by this substantial primary economic activity would more than offset by two to four times the six present agricultural water rights utilized on the present site? When all the indirect and indirect effects of this growth inducing activity are finalized the **increase in water use of 4-10 cfs is not an unreasonable estimate.**

Because the porous soil conditions ground nd surface waters are closely interrelated in this part of the Illinois basin and most wells are pulling off ground/surface flows. Therefore looking to **ground water supply is not an alternative solution**.

Did the information in the sighting file not contain the information that both the Oregon Water Resources Department and the Oregon Department of Fish and Wildlife have recommended minimum summer flows ranging from 60-87 cfs. That the **average Illinois stream flow deficit was 20-47 cfs from 1988-92.** Under just normal growth estimates this disastrous instream deficit for minimum stream flows is already increasing.

Furthermore **these low flow measurements and minimum requirements do not paint the real picture of a dried up river due to illegal withdrawals and illegal instream impoundments** along the stretch of the Illinois and tributaries proposed as a prison sight.

In letter dated 9-6-1991 U.S. Siskiyou Forest Supervisor Lunn commented by letter to the Water Resource Department:

> **"the minimum flows listed for fish (in the Illinois River) are to[o] low. Consumptive uses in both the Illinois Valley and Deer Creek have severely reduced instream flows and elevated temperatures, leading to our current salmonid fish survival problems."**

The Mayor of Cave Junction has previously called for construction of one or more water supply dams on the Illinois because water supply to support future urbanization is not available. There is no question that building a prison in the Illinois Valley will go a long way to make the proposed dam a reality.

I have not addressed the endangered fishery species issues and the water quality issues related to this proposal. A cursory examination of the serious water environmental impacts and the costs to declining Coho and Steelhead fishery by a responsible agency would have ruled out a siting recommendation at the first cut.

It is my opinion that the Department of Corrections in ignoring the serious and irreversible water quantity, water and fishery impacts has brought serious question to the public mind. **It has severely undermined the credibility of Oregon's Coastal Salmon Restoration Initiative**. It has irreparably weakened the states case against listing by National Marine and Fishery Service. It could not have happened at a more unfortunate time for us on the South Coast that are working to avoid a Federal Endangered Species listing on the Rouge-Illinois system.

Sincerely,

PUBLIC COMMENT

Return to top of page

OREGON COASTAL SALMON RESTORATION INITIATIVE
Draft Plan Comment Form

What I liked best about the plan was: the attempt to bring the people who actually adversely effect the salmon into the equation. I liked that an attempt was made to allow these folks to come up with ideas and projects that actually benefit fish.

What I liked least about the plan was: that it did not bring all the players to the table. By leaving the Federal agencies out of the equation we lose in two equally important areas. First, we lose the ability to lessen the impact federal land management decisions have on salmon. If these federal land managers are not brought into the discussion their activities may place a greater and unacceptable burden on the private landowners. Second, we will lose the federal funding needed to actually recover salmon species in an expeditious manner.

Additionally, the plan gives too much leeway to the resource users who are most likely to impact fisheries habitat and relies heavily on the recovery actions of local watershed councils. In the Illinois Valley, many of us who have worked for salmon protection and recovery have been excluded from participation on the watershed council. My experience is that the council has not adequately addressed the most critical limiting factors for salmonid species in the Illinois Watershed: the lack of adequate flows in the summer months due to the over-appropriation of water and the lack of serious enforcement of laws.

The questions that were not answered were:

1. Is it reasonable to expect a state that will not fund schools to fund the recovery of salmon?
2. Since Oregonians want less taxes, where will the money come from?
3. Would not other agencies such s DOC take priority for money?
4. Would not other agencies such as DOC are allowed free reign to site prisons in water quantity and quality limited areas such as the Illinois Valley where there will surely be conflict between recovering species and housing inmates?
5. How will agencies that in the past not done a very good job with enforcement of laws that effect salmon now be able to do so with perhaps even more limited funds?
6. Recently WRD issued a Proposed Final Order that set flow numbers for instream water rights to protect salmon habitat at lower flows than suggested by ODFW. In light of the fact that you say that agencies are now being more coordinated in their approach to salmon recovery, how can this discrepancy occur?
7. Why is there such a big effort to avoid federal protections when 2 years ago the Oregon Fish & Wildlife Commission determined that coho did not merit listing? What has changed?
8. Since the Governor is the driving force behind this initiative, what will happen when this plan gets challenged by partisan politicians? And what will happen if the Governor chooses not to run or is not re-elected?
9. Will the use of conservation easements to protect riparian habitat be encouraged under the plan? How will the acquisition of these easements be funded and what organization will hold them and monitor them?
10. Since most of the salmon refugia or critical habitat of healthy populations is on federal lands, how will you get the federal agencies to protect these ares without protection from the ESA? Since Goal 8 of OCSRI is to make this a science based system, what group of independent scientists will you use to peer-review this plan and any actions that may be recommended in the future?

Additional Comments

I encourage you to not delay protecting coho salmon. I believe that the Governor should work with NMFS to gain the protection afforded by the Endangered Species Act and to help define the recovery strategy. While I

encourage and applaud volunteer efforts, it would be less than responsible to assume that volunteer efforts alone can solve what volunteer efforts failed to prevent.

I believe that the state agencies and the watershed councils have not been sincere in their efforts to strongly support the efforts to recovery salmon. WRD's recent Proposed Final Order rulings regarding instream water rights actually works against recovery. DSL does not have the budget to adequately enforce gravel removal operations which effect salmon.

After having read the specific actions that have and will be taken by the individual agencies, I am encouraged but I believe a serious long term commitment must be displayed before we gamble the fate of coho salmon. State government did not prevent the decline of the coho therefor we need to enlist as much help as possible.

Yours truly,

PUBLIC COMMENT

Return to top of page

Upper Nehalem Watershed Council
1647 Timber Rd., Vernonia, Oregon, 97064 (503)429-2401

Governor's Office
Capitol Building
Salem, OR 97310

Honorable Governor Kitzhaber,

I'm writing to you on behalf of **The Upper Nehalem Watershed Council**. As a Watershed Council we recognize the monumental effort that is in progress to develop and implement a plan for restoring healthy function to our states watersheds so they can support sustainable healthy native salmon populations. The Council members and technical supporters wish to express their support for **The Governor's Coastal Salmon Restoration Initiative.**

Our Council is formed according to watershed boundaries and is officially recognized by the Columbia County Board of Commissioners. The Council has representation from a diversity of interests: Timber, Agriculture, Education, Economic Development, Fisheries, Conservation Groups, Citizens & Citizens Groups, Real Estate, Local Business, Cities and Municipalities, Soil and Water Conservation Districts, Small Woodlot Owners, Private Land Owners, Fishhawk Lake, and The Izaak Walton League. We are supporting efforts to form a lower Nehalem Watershed Council and are currently seeking representation from stakeholders in the Central Nehalem Watershed. Simultaneously we are regrouping our technical support team to assist us in forming a management plan that will work to restore healthy function to the watershed.

The Columbia Soil & Water Conservation District has agreed to be our fiscal agent. The Columbia, Clatsop & Washington SWCD's all have representation on our council. NW Oregon Resource Conservation & Development has provided us with guidance through-out the formation process. We have grown to rely on the generous support of the Natural Resource Conservation Service. Oregon Department of Fish & Wildlife has been ever present providing us with valuable technical advise. The Oregon Water Resources Department, Oregon Department of Forestry and the Bureau of Land Management have dedicated staff that attend our meetings on a regular basis and are working hard to support our efforts. We have also received input from the Governor's Watershed Enhancement Board, Division of State Lands, Oregon Department of Environmental Quality, Oregon Department of Transportation, US Fish and Wildlife Service, For The Sake of the Salmon, Oregon Trout, and the Pacific Rivers Council. The Governor's own Salmon Team has attended our local meetings and we appreciate their guidance and look forward to working more with them in the

future.

We formed our council around the Salmon issue and our initial focus will be on salmon habitat restoration. We have members of our council that have restoration projects completed and in progress that are of benefit to the Coho. The Habitat Restoration Jobs program being implemented by the Clatsop and Columbia Soil and Water Conservation Districts has many positive aspects, for instance; The Private Landowner volunteers to work in cooperation with the Districts to have salmon restoration work done on their property while developing Best Management Practices for the Riparian Zones, Winter Habitat Refuges are also protected, quality fences are installed, "Fisherman" are employed to do the work, and the projects are made known to the public and are well received.

Another group represented by our council is the Nehalem Valley Chapter of the Izaak Walton League who are well established and respected in our communities. They have performed numerous volunteer activities for Oregon Department of Fish & Wildlife with benefit to the Salmon. One of these activities involved placing hobo temp. thermometers instream to detect rising stream temperatures. Once those temperatures were identified as reaching lethal limits to salmon they implemented a Riparian Replanting Project to re-establish conifers in the riparian zones for future shade production.

There is another Group active in the watershed that deserves recognition; The Oregon Wildlife Heritage Foundation. They have identified, implemented and completed many Salmon friendly restoration projects in the Nehalem Watershed. Their positive influences on the health of the watershed can only improve with the passing of time. We Applaud them!

These are just a few of the highlights. These projects would not be successful if it were not for the untiring efforts of dedicated volunteers and support staff.

Our Vision is: "***To recognize the natural function of the watershed and the needs of the associated life forms. In harmony work to restore optimum health to the watershed. Balance economy with ecology by creating sustainable communities for all.***"

We look to create focus throughout-out the watershed so we can work together from the grass roots level with state and federal agencies and other technical advisors putting the available resources to the best use. We feel private citizens and landowners are already working to do the right thing and given proper guidance and incentive can continue to build on those efforts.

The Governor's Coastal Salmon Restoration Initiative has already demonstrated to us that local people can have influence in Government process and we will continue to support your efforts to restore Healthy Native Salmon Populations.

Sincerely,

PUBLIC COMMENT

Return to top of page

November 1, 1966

Salmon Plan Review
Capitol Building
Salem, OR 97310

Dear Sirs:

Thank you for this opportunity to comment on the Governor's Coastal Salmon Restoration Initiative Plan. We are very aware of the time constraints under which it was produced and its necessarily provisional nature, and we also appreciate that NMFS has given us additional time in which to improve it.

STEP

As a STEP organization, we were not slow to realize that STEP is hardly mentioned in the text, does not seem to be an integral part of the plan, and has been largely ignored in the planning (though we are told that volunteers are going to do much of what needs to be done). It is as though, under scrutiny by "wild fish" organizations and biologists, ODFW lumps STEP with outmoded hatchery approaches, and lets this group of dedicated, experienced and passionate volunteers (fishemen all) twist in the wind.

We suggest, instead, that active outreach for the opinions of STEP volunteers be sought, as they represent the most dedicated of those who will provide the manpower for all remedial steps. They also represent THE conservation organization with knowledge and experience in fishery restoration within their respective basins.

All STEP activities not already in compliance with the wild fish policy--and we assume this is very few--should be brought into compliance. The fact that most programs take wild local broodstocks and seed underutilized streams or produce terminal fisheries should be made widely know. If this is not so in other areas, as it is here on the Umpqua Basin, it should be made so. And conservation organizations need to be educated to understand this approach as helpful and legitimate.

STEP volunteers should be particularly sought out as designation of CORE areas is refined.

FISHERMEN

ODFW should speak even more strongly than it has for the legitimate interests of a sport enjoyed by a high percentage of all households in Oregon as elsewhere. Every effort should be made to subdivide the problem so that truly recovered stocks and areas, or areas that don't really have a problem, are allowed to resume fishing harvest in streams. In this regard, the new grouping of the Umpqua with rivers south is highly desirable and should be pressed with NMFS.

We believe there is a real effort by environmental organizations to hold the fish hostage so as to get reform in the forests. Their refrain is "habitat, habitat, habitat." We think water quantity and water quality is a first priority, and that forest practices certainly contribute in many ways to both. The not-so-subtle difference is that we want to rescue the fish, not the forests. We will be happy to rescue the fish in ways that do not solve the forest problems (though we would be happy to see those problems eventually solved). Environmentalists should not be put in a position to obstruct short-term but legitimate and sustainable solutions just because they do not solve the forest problems. The Governor's staff, GWEB, 4SOS, and ODFW need to be careful to stay with the fish.

FEDERAL ACTIVITIES

It seems that NMFS is willing to make a contribution to the Governor's plan, and that this partnership might develop without unneeded regulation. If so, we would like the federal government to be further encouraged, through leadership, congressional representation,and/or the force of right thinking, to consider:

--major studies of legal bycatch issues

--increased emphasis on high-seas enforcement of international agreements

--increased federal attention to salmon treaty problems with Canada and Alaska

--increased representation for sportfishing on the PFMC.

SCIENCE AND SCIENTISTS

We note that throughout this process there will be scientific studies, reviews, peer reviews, etc. etc. Those who think science takes place in a political vacuum are naive and/or not acquainted with decades of scientific thought to the contrary. While considering explosive issues such as owl recovery plans and the like, however, scientists are understandably wary enough to want to meet in private. This is, in our opinion, almost always a mistake, leading to public distrust of the results of such inquiry. At the local level, certainly, where action plans are being developed, ways should be sought out to include public members without disrupting the process. At the very least, silent and nonparticipating but welcome "observers" should be included to interpret the process to the public and legitimize it.

ENFORCEMENT

Agencies submitting action plans have varying degrees of enforcement responsibility and capability. We found the ODF plan strong in this area, for instance. However, the DSL plan sounds as though enforcement is minimal and not well defined. It appears that ODFW is actually carrying much of the burden of this agency's regulatory responsibilities with regard to streams. We feel that this should be corrected, as biologists at the ODFW field offices need to be freed for other functions.

Many of the smaller agencies are rather difficult to contact. There are also an amazing number of them with different missions and jurisdictions. A complaint from a rural area may cause the well-meaning citizen hundreds of dollars of long-distance telephone calls. An "ECO" toll-free number, widely disseminated, might result in easier access, more citizen awareness, and maybe more effective regulation. Fishermen are on the rivers all the time; they just don't know how to report in when they think something might be wrong.

In this regard, more information to sportsmen's organizations about allowable logging, water withdrawal, bank disturbance, and such laws might be a good educational investment for watershed councils.

BASS

It is difficult to believe that it is easier to take the fishermen out of the salmon waters than the bass out of the coastal lakes, but this seems to be the political reality. We can, however, suggest that using one or two of the larger lakes for intense rehabilitation and restoration would probably be more immediately effective than anything else we could do. Here is a large piece of former habitat that could be relatively quickly reclaimed. At the very least totally unrestricted bass and pan fishing should be allowed in these lakes.

BOATING EFFECTS

The state and the federal government should take a close look at the effects of boats charging up and down sensitive stretches of river. Bank erosion caused by sightseeing jets and fishermen's boats should be considered in areas where migrating fish and/or spawning fish may be found. Is the State Marine Board considering this? Perhaps just an educational campaign would be helpful.

PUBLIC COMMENT

Return to top of page

November 5, 1996

To: Jim Martin
Governor's Natural Resource Office

Please accept my comments on the OCSRI which were due November1. I called 378-3589 ext 834 on that date and left a message requesting your fax number, but have not received a return call, nor was there an operator on duty when I called. Today I contacted the operator and obtained this fax number.

Thank you

PUBLIC COMMENT

Return to top of page

Salmon Plan Review
Capitol Building
Salem, OR 97310

Dear Comment Readers:

I applaud the efforts of those who put together the OCSRI. In general, the OCRSI analysis of the problem is scientifically credible. However, based on my experience with State agencies, with watershed councils, and with the general public, I feel that the plan for recovery is overly optimistic, if not somewhat naive.

The Oregon Fish and Wildlife Commission's decision not to list coho and the subsequent creation of the OCSRI in response to the threat of federal intervention, clearly demonstrates that without at least that threat, Oregon may not respond in a manner commensurate with the problem. Failure of the NMFS to list may result in the loss of precious time due to a perceived lack of urgency. On the other hand, federal listing could ultimately result in emasculation of the ESA by Congress, given the nature and size of the affected political constituency. However, whether or not listing occurs, it is likely that many aspects of the OCSRI approach will be implemented. With that in mind, I offer the following observations and comments, based on my experiences.

I reside on 72 rural acres, of which 25.8 are pasture irrigated under an 1899 decreed water right. I have been a member of the Upper Rogue Watershed Council (URWC) for almost 2 years, and am currently the chairman. However these comments are strictly my own personal views, not those o the URWC. I have been involved in habitat surveys, spawning surveys, stream temperature monitoring, fish passage improvement, and habitat improvement projects.

Page XV: "Obstacles to Success of the OCSRI Plan" fails to note the critical role assigned to the watershed councils (WCs) in generating local public support for the Plan, the difficulties facing the WCs in accomplishing this task, and the potential failure of some WCs to perform as expected for whatever reason.

Wcs are to "represent a balance of interested and affected persons within the watershed", according to ORS 541.388. Since by nature a WC represents a diverse group of interests, not all members will automatically be in support of watershed protection and enhancement, or the OCSRI. Citizens join WCs for a variety of

reasons, including staying informed and having a voice in decisions that may affect the status quo. Some may perceive the OCSRI a threat to their own interests; others may feel that the WCs are being "used" by the State and Federal Governments to facilitate acceptance by the local population of non-local/from-the-top-down decisions. The Plan ignores the individual personalities of WCs; as a group they are not uniformly competent, committed, compliant or necessarily united to save the salmon.

The public in the Upper Rogue Watershed Council watershed area is largely indifferent to watershed issues (understandable with all of the world's other problems); and worse, many are opposed to anything that they perceive as a threat to their economic or personal freedoms. I base this statement on the low level of public interest in URWC meetings; the lack of response to public requests for volunteers for projects; conversations with riparian landowners; loud public outcry over proposed closures of nonessential BLM/industrial forestland roads (to reduce road-caused sediments and reduce stress to deer and elk); acceptance of illegal water diversions; etc. That the URWC can and will generate the necessary public support for the OCSRI is not a matter of certainty, because the council members themselves are generally not especially committed to salmon recovery. Among the 11 members of the URWC, only 4 could be considered to be committed, with the rest either indifferent, ignorant, in denial, or skeptical that a problem even exists. Most of the members are too busy with their own personal affairs to do much more than attend the monthly meeting.

I make these observations not in criticism of the Council, but to call attention to the reality of one watershed council, and the potential danger in basing the OCSRI on watershed councils. It should also be noted that one council, the Middle Rogue, disbanded not that long ago; and another council, the Illinois, was formed with the exclusion of local environmentalists.

The WCs face other serious problems:

1) Coordinator Funding. The Plan acknowledges the need, but states that the problem of funding "is an issue that remains unsolved" (VIC-4). Coordinators are currently unfunded, and a similar problem existed earlier this year. It is difficult for coordinators to continue to function as such if they cannot pay their bills. It is also unrealistic to expect them to not seek other employment in this uncertain period. The loss of the URWC's experienced coordinator would be a serious setback for the Council, and a loss for the State.

2) Coordinator Work Load. Our coordinator (and presumably other councils') is faced with an unreasonable work load. In the absence of a high degree of volunteerism among the members, almost the entire workload of the URWC falls upon the shoulders of the coordinator. This includes the "roles and responsibilities of local watershed councils" set forth in VI-C-5 and 6, plus all the mundane tasks such as answering the phone and mail, taking the meeting minutes, typing and copying, plus attending all the various meetings (many called on very short notice by the State), reviewing documents (such as the OCSRI and the Southwest Oregon SRI), and more. In short, our coordinator is almost singlehandedly the Council. Clearly the coordinator is unable to do it all and to the level of expectation set forth in section VI-C. State agencies do not expect such an unreasonable level of performance and sacrifice from their employees, and they pay much better. Councils which are actually doing ridgetop-to-ridgetop analysis have two or three staff members (e.g., Applegate and Evans Creek). If the State is having difficulty funding even one staff person (coordinator) per council, it is unlikely that they will be able to fund more. Without additional paid staff, it is doubtful that many Wcs will be able to perform to the State's expectations. If Wcs do not perform as expected, the OCSRI will not succeed.

3) Organizational Guidelines. The State created the WC concept, but provided no substantive guidelines for organizing and running the local Councils. (At this late date the URWC is stilling working on its bylaws). Much wasted time could have been saved (and could be saved for new councils) if the State took a more assertive role in getting councils of the ground by providing at least minimal suggestions that local councils could consider.

4) Liability Insurance. I recently organized a fish ladder construction project which involved approximately 10 volunteers. Part of the way into the project, I suddenly realized that if one of my volunteers were injured, I might be rewarded for may altruism with a liability suit. The URWC itself does not have insurance, and it is doubtful that the State would have voluntarily extended its insurance to a group of volunteers over which it

has no direct control (even if it legally were allowed to do so). In the future, the URWC will be unwilling to implement on-the-ground projects without liability insurance (for which we currently do not have funds). The State could and should extend insurance coverage to the WCs.

5) Informational Assistance. The State could/should increase the efficiency of the WCs by providing them with essential information that currently is left up to the individual councils to feral out for themselves. All known potential funding sources should be compiled, constantly updated, and provided to all WCs. Coming events, conferences, grant deadlines, etc. should be provided to the councils in a timely manner. Toward this end it would be useful to have a State WC newsletter, which could also include council reports, feature articles, interviews, etc.

To summarize my feelings on WCs, for the OCSRI to succeed, local citizen involvement is essential. But the State must be realistic about its expectations for agency quality work from volunteers with limited time, expertise, or commitment; or from overworked and underpaid coordinators. The State must also provide additional support services. As currently conceived, WCs probably will not work in the long term. A more practical model may lie somewhere between the current one and ODFW's STEP, with coordinators employees of the State, and with council members having a substantial voice in decisionmaking. Keeping the decisionmaking in the hands of the WCs would provide motivation for councils to implement their own decisions, and not feel that they are but a free labor source for the State, or unwitting agents for the State and Feds to pacify the local populace.

Without a commitment from the State for long term funding, the Plan fails its own element number 7 of "the nine critical elements of a conservation plan" (page I-1), i.e., "Provide high levels of certainty that actions will be implemented." By stating that "[t]o retain the local autonomy needed to be effective, councils must work at becoming self-supporting by obtaining funding through local governments; local businesses; industry; and grants from state, federal and private sources[]" (page Vi-C-5), the Plan does not communicate that critical "high level of certainty", but rather the opposite.

Chapter IV divides "factors responsible for the decline of Oregon coastal coho" into four categories: harvest, hatchery, habitat, and other. Of these, harvest and hatchery are but a matter of State administration. Ocean environment (other) is beyond Oregon's control. This leaves habitat as the most challenging and appropriate area to focus our collective attention. Page I-5 notes that perhaps the "...productive potential for Oregon coastal coho has been degraded 50 to 90 percent from pre-development conditions." Page IV-4 presents a long list of anthropogenic activities contributing to this habitat degradation and loss, and notes that "[a]lthough some habitat functions can be readily restored through habitat improvement projects, other functions...may require decades or centuries to recover." However, I should like to point out, some of these activities (e.g., organization, wetland loss, road construction, damming streams) have resulted in irreversible habitat loss.

Other of these anthropogenic activities are ongoing, culturally ingrained, and may be politically difficult to meaningfully mitigate within the available timeframe. In the absence of dramatic changes in attitudes among natural resource users, changes in laws and regulations will be necessary. But changes in laws cannot be made without general public support. One segment of society must be willing to pay another segment for any losses incurred as a result of new regulations in land use. The issue here is government "taking" of private property rights.

Out of all of man's natural resource utilization activities impacting habitat, one stands out as being the most fundamental--withdrawing water from streams. Without the minimal quantity and quality of water, the impacts of man's other activities are academic. Since municipal withdrawals (other than the conservation question) are non-negotiable, irrigation policy and practices must be scrutinized illegal irrigation is a matter of enforcement. But overappropriation of small streams is a reality which the OCSRI does not adequately address. Specifically, WRD4's proposed issuance of pending instream water rights is about 90 years too late. Such junior rights will only prevent additional appropriations, and most coho streams were overappropriated long ago. A similar criticism applies to ODFWIVA3. ODFWIVB5 would seek to transfer existing irrigation rights through "purchase, lease or donation". However, this is a "phase 1" action. Since ODFW is already strained financially, it is difficult to imagine that any serious ODFW money will be available for purchase or lease. The Oregon Water Trust does have some money, but far from the quantity realistically needed. Without

any greater commitment from the State to provide funds for purchase or lease of strategically important water rights, the Plan cannot be taken seriously.

Short of purchasing and leasing water rights, there are other management measures that could result in increased stream flows and reduction of pollution. For example, almost all of the agricultural water diversions from Big Butte Creek and its tributaries utilize small canals, several of which are measured in miles. Water losses through seepage, leaks, evaporation, and transpiration are significant. Water la and decree allows these losses. With the point of diversion distant from the place of use (and often difficult to reach); and with multiple users on a canal (but with no rigid schedule of use), the quantity of water diverted is maintained at the capacity of the canal regardless of the demand. That is, it is easier to run the canal at capacity, than to manage the flow on a demand basis. While the excess water eventually returns to some creek at some point downstream, this excess has been absent from that stream segment downstream of the point of diversion. Unregulated canal filling is a practice that is not strictly legal, but it is an accepted aspect of the antiquated irrigation methods practiced in Oregon.

The water in question is used for flood irrigation of pasture/hayfields. Runoff is warm and contains nutrients from leaching of manure and applied fertilizers. Since almost none of the land in question has been "leveled" to facilitate efficient distribution of the flood water, volumes sufficient to irrigate high spots are necessary. Generally flooding continues over a period of several days in the same location to allow water to diffuse to these high spots. This inefficient method of irrigation is outdated, and not necessarily a property right.

Suggestions: If funds were available, canals could be replaced with pipelines. This would mean that diversion would be controlled at the place of use, and canal losses would be eliminated. This would also mean that canal maintenance would be greatly reduced, and in many cases sufficient pressure would be available to run sprinklers, which, in turn, would mean much more efficient water distribution, less runoff, and, less water diverted. Furthermore, if irrigation runoff were prohibited, and the tailings recycled back onto the same fields, the irrigator could benefit from the conservation of the nutrients and the stream would be spared the input of chemical and thermal pollution. Obviously these are just a few of many possible management practices that could aid in salmon recovery. If the implementation of these suggestions could be win-win (with the capital improvements subsidized either directly or through long term tax incentives) they would not suffer from resistance born out of "takings" resentment.

Another irrigation related problem that needs fine tuning is that in order to lease a water right for instream purposes, one must lease it for the entire irrigation season. If the law could be revised to allow the lease period to cover only the period of greatest instream need (the months of July, August, and September), ranchers could still raise a crop of hay without totally abandoning their lifestyles. Since a good portion of the water for this first hay crop derives from winter/spring precipitation falling directly on the field, this would be an efficient use of natural resources.

A related regulatory barrier to salmon recovery involves the requirement that owners of rural land zoned Exclusive Farm Use (EFU) must gross a set minimum amount of agricultural income from the land in order to continue to be eligible for that zoning and the associated property tax reduction. Many (myself included) are thus forced to raise cattle (due to simplicity and climatic factors), pollute streams with runoff, and use water that might better be left in the streams. Considering the time and trouble involved, the only way I make money from leasing my irrigated pasture is from the property tax break I receive, not from the lease revenue itself. If there were not this minimum gross revenue requirement, there would be far less pretend farming, and consequently far less water wasted.

ODFW lists 43 "phase 1" measures in support of salmon recovery. By definition these are proposed measures that "...can be implemented with existing resources and budgets". I am in frequent contact with ODFW personnel, and I am aware that the Central Point office is chronically understaffed and underfunded. What existing programs will be abandoned to free up ODFW personnel for these 43? Reading this section leaves me highly doubtful about the credibility of the Plan.

In conclusion, there is a distinct difference between being negative and being realistic. I support your efforts

and have tried to offer positive suggestions for improving the Plan. And I thank you for the chance to comment!

PUBLIC COMMENT

Return to top of page

11/1/96

Salmon Plan Review
Capitol Building
Salem OR 97310

Dear Salmon Plan Review,

On behalf of the Ten Mile Lake Owners Association, I have reviewed at length your materials and been in attendance where an ODFW biologist explained the program in some detail. The plan, in writing, is impressive in its comprehensives. Al in all, it seems to be an exciting and challenging "wish" list.

As a matter of fact, the Governor's Coastal Salmon Restoration Initiative, is quite long on planning and extremely short on implementation and the concrete details thereof.

Our own deep reservations about the plan are more than adequately outlined in the October 15, 1996 letter to the Governor by twenty-two environmental and educational organizations.

We urge your careful reading of that letter which outlines why the OCSRI cannot succeed by itself, nor serve as a viable substitute for a federal listing.

One additional point not covered in the group's letter but which is of paramount importance to any such plan administered by the state of Oregon, is the necessity of complete cooperation among the many state agencies involved in the plan. If the Governor gives a "clear direction to all state natural resource agencies" then it would seem that direction would be of the highest priority and be reflected in a clear continuity throughout the agencies.

We in the Ten Mile Lakes Basin, on the contrary, have not sen that clear direction and continuity. Ten Mile Creek and Ten Mile Lakes once supported historical runs of native Coho's that numbered about 70,000 returning fish. Today, although the runs have been drastically reduced, a viable remnant still returns to some of the best Coho habitat on the central coast.

However, in a classic case of "speaking with forked tongue", the state of Oregon's Water Resources Department (One of the Governor's lead agencies) is actually considering the possibility of granting a permit that would allow 50 million gallons of water per day to be diverted from Ten Mile Creek during the height of the native Coho and steelhead spawning run!

This is exactly what is wrong with the Governor's plan. The Governor cannot say that he wants to save the salmon on one hand while on the other hand his very agencies go about dewatering the streams that need to be protected and restored in order that the salmon might prosper.

Far from being an isolated incident, the WRD careens about the state setting up detrimental decisions in many

crucial watersheds. The Governor touts saving the salmon while the WRD decides to allow the removal of 140,000 acre feet of water from the John Day pool of the Columbia river adversely impacting salmon recovery efforts in the Columbia Basin.

Clearly, the Governor's plan cannot be expected to succeed when such contradictory policies are being pursued.

Sincerely,

Return to top of page

Go to Peer Review:

- OSU
- American Fish Society
- Invited
- Federal Agencies
- Industry
- Conservation/Environmental Group
- Questionnaries

Return to home page

Modified February 20, 1997
Web Page Construction: Janet Demaris (503) 378-3397 x 234

PEER REVIEW 1996

COASTAL SALMON RESTORATION INITIATIVE

December, 1996

TABLE OF CONTENTS

- 2/20/97

QUESTIONNAIRES

Salmon Workshop Questionnaire
Draft Plan Comment Form

October 4, 1996

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

SALMON WORKSHOP QUESTIONNAIRE

Public involvement is key to Oregon's effort to restore its salmon. In order to make the most efficient use of the public's precious time and resources, workshops are being considered as a means of providing background and technical information to those who wish to volunteer to help in this effort. The following topics are just some of the options possible for workshops. Check the ones in which you would be interested and also please provide ideas on any other salmon restoration related topics you would find useful. If you need more space, use the back of the paper. Your name and address are important so that you may be contacted when the workshops are scheduled. Thank you.

---- Salmon 101. Basic salmon biology and life cycle. Important background information.

---- What is a Watershed Analysis and how is one done?

---- What is a Habitat Conservation Plan and how is one made?

---- Watershed Council formation.

---- Stream monitoring. What to monitor and how to do it.

---- Pasture management; including fencing, waste & nutrient management.

---- Water diversions (alternatives to push-up dams, alternative livestock watering options, etc.).

---- Culverts 101; what makes a culvert "fish friendly", how to tell if a culvert is functioning properly.

---- In-stream structure and off-channel rearing area possibilities and construction.

---- Tree planting; including information on species of trees and brush native to specific sites.

---- "Fish friendly" stream bank stabilization techniques.

---- The role of wetlands and how to protect them.

-X-- Noxious weed control.

-X-- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: Include aquatic weed control in workshop on noxious weeds.

A workshop on unique problems of lakes would be good.

Return to top of page.

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

SALMON WORKSHOP QUESTIONNAIRE

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---- Noxious weed control.

---- Floodplain connectivity, its role in salmon restoration and society's interaction.

---- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: You must address the predator problem or all the above will fail. If you cannot get the smolts through the estuary there's no way to produce them.

Return to top of page.

October 7, 1996

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

SALMON WORKSHOP QUESTIONNAIRE

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---- "Fish friendly" stream bank stabilization techniques.

---- The role of wetlands and how to protect them.

---- Noxious weed control.

---- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: Nothing is being done to protect the adult coho once they return to spawn! All streams should be closed to bank and drift boat fishermen above Tidewater.

Return to top of page.

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

SALMON WORKSHOP QUESTIONNAIRE

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-X-- Salmon 101. Basic salmon biology and life cycle. Important background information.

---- What is a Watershed Analysis and how is one done?

---- What is a Habitat Conservation Plan and how is one made?

---- Watershed Council formation.

---- Stream monitoring. What to monitor and how to do it.

---- Pasture management; including fencing, waste & nutrient management.

---- Water diversions (alternatives to push-up dams, alternative livestock watering options, etc.).

---- Culverts 101; what makes a culvert "fish friendly", how to tell if a culvert is functioning properly.

-X-- In-stream structure and off-channel rearing area possibilities and construction.

-X-- Tree planting; including information on species of trees and brush native to specific sites.

-X-- "Fish friendly" stream bank stabilization techniques.

---- The role of wetlands and how to protect them.

---- Noxious weed control.

-X-- Floodplain connectivity, its role in salmon restoration and society's interaction.

---- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS:

Return to top of page.

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YOUR SUGGESTIONS: How can city dwellers become involved?

Return to top of page.

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---- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: A workshop for sportsmen telling them how fragile spawning beds are and the importance of not disturbing redds.

Return to top of page.

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

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YOUR SUGGESTIONS:

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---- The role of wetlands and how to protect them.

-X-- Noxious weed control.

-X-- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: Consider a biodiversity approach.

Return to top of page.

October 9, 1996

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

SALMON WORKSHOP QUESTIONNAIRE

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---- Salmon 101. Basic salmon biology and life cycle. Important background information.

---- What is a Watershed Analysis and how is one done? (Not like USFS!)

-X-- What is a Habitat Conservation Plan and how is one made?

---- Watershed Council formation and operation.

---- Stream monitoring. What to monitor and how to do it.

---- Pasture management; including fencing, waste & nutrient management.

---- Water diversions (alternatives to push-up dams, alternative livestock watering options, etc.).

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-X-- "Fish friendly" stream bank stabilization techniques.

---- The role of wetlands and how to protect them.

---- Noxious weed control.

---- Floodplain connectivity, its role in salmon restoration and society's interaction. (Make broader. See comments below.)

---- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: 1. Fish Screens 101 - Design, construction and maintenance by landowners.

2. How Rivers Work - stream processes, floodplains, meanders, and shared ESU.

3. Road Management - Construction & maintenance of rural, ranching & forest roads for landowners & managers.

4. Share workshops with Northern California - ESU folks and vice versa.

Return to top of page.

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

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---- "Fish friendly" stream bank stabilization techniques.

---- The role of wetlands and how to protect them.

---- Noxious weed control.

---- Floodplain connectivity, its role in salmon restoration and society's interaction.

---- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: The RC&D staff & council are available to help organize and put on workshops in Coos, Curry, Douglas, Jackson and Josephine Counties. Give us a call. 541-476-5906.

Return to top of page.

October 10, 1996

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

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-X-- In-stream structure and off-channel rearing area possibilities and construction.

---- Tree planting; including information on species of trees and brush native to specific sites.

-XX- "Fish friendly" stream bank stabilization techniques. (* I need info now!)

-X-- The role of wetlands and how to protect them.

---- Noxious weed control.

-X-- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: Unless you make a commitment and schedule some workshops in the Rogue Valley, our volunteer, grassroots folks won't (can't) get to them.

Return to top of page.

October 10, 1996

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

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-X-- Noxious weed control.

-X-- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS:

Return to top of page.

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---- The role of wetlands and how to protect them.

-X-- Noxious weed control.

---- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: Information packets - user friendly to be passed out through Watershed Council Education Forums and other meetings rather than workshops.

Return to top of page.

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

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-X-- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: We as humans talk about situations from all angles, but when we accomplish the projects, is it really a help?

TODAY'S MEETING LOCATION Culture Center Coos Bay Library Downtown Coos Bay, Oregon

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Return to top of page.

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---- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: How to know if a septic system is broken.

Return to top of page.

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-X-- Noxious weed control.

-X-- Floodplain connectivity, its role in salmon restoration and society's interaction.

-X-- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS:

Return to top of page.

October 7, 1996

GOVERNOR KITZHABER'S COASTAL SALMON RESTORATION INITIATIVE

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---- Floodplain connectivity, its role in salmon restoration and society's interaction.

---- How to get technical and economic assistance for restoration projects.

YOUR SUGGESTIONS: Hatcheries vs. wild fish: genetic consquences and how to restore wild runs.

Return to Top of page.

December 13, 1996

OREGON COASTAL SALMON RESTORATION INITIATIVE

Draft Plan Comment Form

Your thoughts about the salmon restoration initiative are important. Please use this form to provide your comments or, if you wish, send comments and questions in a separate document to: Salmon Plan Review, Capitol Building, Salem, OR 97310 -- no later than November 1, 1996.

Which communication briefings did you attend?
[X] Astoria [ ] Coos Bay [ ] Gold Beach [ ] Grants Pass [ ] Newport [ ] Portland
[ ] Roseburg [ ] Tillamook

How did you learn about these briefings?
[X] Notice in mail [X] Media
[ ] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Comprehensive nature
- Involvement of concerned individuals
- Demonstrating that people do care
- Good educational effort

Please list what you like the least about the draft plan.

- No funding
- No enforcement, lack of managed agency cooperation
- Depends on voluntary cooperation of private landowners. What have you to exhibit any significant large scale change in practices around here?

Please list questions you have that were not answered during the briefing or in the draft plan.

- Since ODF&W and other state agencies are hurting for funds and are unable to perform their most routine functions - how will they do more with less?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- I have been a member of several volunteer groups. Have formed one myself, "Friends of the Skipanon River", have and do serve on the Skipanon Water Council District, have talked with just about every agency and individual who will help, have restored altered wetlands on my property, have started riparian restoration efforts on my property, and am assisting in creating of a watershed council.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- I wish I could be more optimistic but I am skeptical of what we are doing. So little so late! I believe it will take ESA listing and more to make the critical difference of sustainability. Humans are the source of the problem and we need to change our thinking and apply sustainable values on a personal and cultural scale.

It has taken me years of effort to finally get a one square foot hole cut in the Kipanon River Eighth Street Dam. Most of the same agencies have been less than helpful in assisting my efforts to restore the nearly extinct coho of the Skipanon.

Return to top of page.

October 14, 1996

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Please list what you like best about the draft plan.

- It includes state inter-agency participation which leads to change in policy on the ground actions.
- It's a science based system that recognizes the need for grass roots, local level.
- It shows a lot of effort by the state.

Please list what you like the least about the draft plan.

- No specifics for future Council support.
- Phone numbers and contact name for each participating agency. I wanted to get attachments.

Please list questions you have that were not answered during the briefing or in the draft plan.

- See attachment.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Spirit of the Rogue Nature Center has already formed a partnership with Upper Rogue Parks & Recreation Association, USFW, BLM, OPRD, USFS, ODFW, School District #9 & #59, National Park Service, S.O. State College and others for environmental education and public outreach. This is a model project of Army Corps of Engineers.
- This would be a perfect venue for our region to bring message of OCSRI!

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- Please see attached comment page.

Return to top of page.

OCSRI Draft Plan Comment Form Attachment

Refer to:	Comment
ODF50	If livestock irrigators could reduce herds but keep EFU tax structure, unused water could go to in-stream use. They would still stay on greenbelt, and would not be penalized by having to pay higher tax. Additional amounts of water obtained by this would need to stay in-stream and not re-allocated.
VI-D-1	There is no educational component in state wide planning goals.
SMB	Has no direct education component.
VI-I-5	There are no outreach and education displays that came to Southern Oregon. Southern Oregon is an important link in the OCSRI and should not be neglected.
VI-I-3	Spirit Of The Rogue Nature Center in Jackson County is a prime example of agency sharing resources, not only on a state level but on a federal, and private level. You should investigate this project and consider participating in it.
VI-I-6	Under "Bring in New Partners", Upper Rogue Parks and Recreation Association who is sponsor of Spirit Of The Rogue Nature Center, should be listed here.
OEDD5	Look for proactive ways to consider *positive* effects to the environment, not just if it will have negative impacts.
	General Comments
	When applying for hunting or fishing permit, it should clearly have a place to initial that users will not litter/ trash/cause harm to the environment and that they will respect outdoors and natural setting, and that they are aware that it is a violation.
	For the Sake of Salmon has made it top priority to provide support for the Council and Coordinators. To date there has been very little support and no funding? Why? When? What is process for this?
	All agencies should have an education component and look for existing education venues such as Spirit of the Rogue Nature Center in the Upper Rogue Region of Jackson County who already have federal, state, and private partnerships in place.

Return to top of page.

October 14, 1996

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[ ] Notice in mail [ ] Media
[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan. See last page.

- The Plan fosters greater cooperation of state, federal and local agencies.
- Recognition that stakeholder cooperation is paramount for successful specie recovery.
- Education is premiere and the Plan recognizes this in a small way.

Please list what you like the least about the draft plan.

- Too short on education. This is key for long range success.
- No specific plan for education regarding issues.
- No indication/mention of specific non-profits doing work - i.e., Oregon Trout
- Riverkeepers Program? Does not teach people what happens in uplands severely effects stream habitat.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Insurance coverage for volunteers and Council members working on habitat restoration projects. This is a limiting factor.
- For Sake of Salmon = Council support? Where, When, How?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Providing public education.
- Recruiting landowners into habitat restoration projects.
- Providing education on watershed issues to educators plus students.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- Since OCSRI goes beyond traditional political boundaries there is no mechanism to deal with political issues on a county level; i.e., turf wars + pet projects, etc. There needs to be a way to resolve these issues. (If Council can do good work it can be hampered presently by local policies.)
- OPRO 9 - Spirit of The Rogue Nature Center is between Stewart State Park and Casey State Park and could educate visitors on Hwy 62 corridor to Crater Lake and local children and residents. This is normal education project of URWC.

I like the Stewardship Recognition of landowners, agencies and organizations. Individual recognition is important. Can recognition be coupled with incentives?

Return to top of page.

November 5, 1996

OREGON COASTAL SALMON RESTORATION INITIATIVE

Draft Plan Comment Form

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[ ] Astoria [ ] Coos Bay [ ] Gold Beach [ ] Grants Pass [X] Newport [ ] Portland
[ ] Roseburg [ ] Tillamook

How did you learn about these briefings?

[X] Notice in mail [ ] Media
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Please list what you like best about the draft plan.

- It can be made to work/plan uses existing laws.
- The credit (some) will have to go to landowners.
- The credit (some) will go to Oregonians as a whole.
- The Plan doesn't point fingers.

Please list what you like the least about the draft plan.

- The federal biologist and radical enviro's will work to end this idea as they lose power, and credit when the salmon runs increase.

Please list questions you have that were not answered during the briefing or in the draft plan.

- How monitoring will be paid for.
- How or what will the monitoring guidelines be.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- By continuing the stream work in progress.
- By not damaging streams with existing good runs.
- By word of mouth, advertising the benefits of initiative versus endangered species act.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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Please list what you like best about the draft plan.

- Voluntary cooperation!
- Broad agency involvement (including NMFS).
- Support of governor.
- Realistic view of what to expect in the way of improvements.

Please list what you like the least about the draft plan.

- Watershed Councils may not be strong endorsing - perhaps too much reliance on them?
- How much funding will be available? (Watershed projects may be costly.)

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Tours, educational efforts with landowners.
- Assistance with projects (time-conservation).
- Participation in Watershed Councils.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- From what I've heard at OSU conference, poor ocean conditions should be a major factor (if not the major) in salmon decline rather than a "potentially important factor."

Return to top of page.

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Please list what you like best about the draft plan.

- The concept of "Watershed Councils."

Please list what you like the least about the draft plan.

- Ask me after another year!

Please list questions you have that were not answered during the briefing or in the draft plan.

- Will the "permit process" for individual projects become streamlined or simplified?
- Will the process of applying for funding become more simplified through education?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- I can participate on a Watershed Council.
- I can personally assist in individual projects "hands on."
- I can keep my eyes open for potential correctable problem sites.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

September 30, 1996

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Please list what you like best about the draft plan.

- It is a cooperative venue that involves state, federal agencies and local people.
- It is a voluntary cooperative effort vs. mandatory enforcement of regs and laws.
- It will reduce plizaration as we work as a team.
- It will help us do assessments of our watersheds so all will have same information and to work with.

Please list what you like the least about the draft plan.

- Trying to make examples of watersheds that were formed using large amounts of state and federal money to the ones now forming with almost no financial assistance.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- We have assisted in organizing watershed councils in all counties in Northwest Oregon (7 counties).
- We are building a resource base to be used on the GIS that the non-profit council purchased. This can be used by all parties that wish to participate so efforts need not be duplicated.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- Progress should be measured by outputs not inputs.
  Not how many miles of fence was built but what was accomplished by the fencing or
  other activities (how much sedimentation was kept out of the stream or how many degrees did the water temperature drop. It would be nice if all agencies could contribute their expertise in a cooperative venture with others to develop plans as as Team Members vs Turf.

Return to top of page.

September 30, 1996

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[ ] Plan Summary [ ] Word of Mouth [X] Other: All of the above.

Please list what you like best about the draft plan.

- The fact that the State of Oregon is going to do it with help of the federal government not a federal government program.

Please list what you like the least about the draft plan.

- 100% in favor.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- If the state could in some way help find more funding for the local Soil & Water Conservation District.
- As local county elected volunteer we could help with education in and out of schools.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- Bring pressure on the Dept. of Ag., NRCS to locate additional biologist to the North Coast basin - Clatsop, Tillamook and Columbia Counties.
- Astoria office of the NRCS has no full time employees.
- Make sure county governments are aware of the role that partnerships will play and the importance of watershed councils.

Return to top of page.

September 30, 1996

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Please list what you like best about the draft plan.

- Cooperation with all concerned.
- Input from the different users.
- Use of volunteers builds ownership.

Please list what you like the least about the draft plan.

- The best ideas of an ideas. An ideas changes of work won't be able to be done because you have no biologists to supervise and dispatch the work.

Please list questions you have that were not answered during the briefing or in the draft plan.

- How can it happen? Is this just a smoke screen? I really would like to participate and be positive - but how - you will loose all support if this isn't real.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- We are builders/construction/fishermen/loggers - we get it done.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- I have written 3 letters with specific ideas and projects.

Return to top of page.

October 30, 1996

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Please list what you like best about the draft plan.

- Grassroots emphasis - voluntary.
- Cooperation - partnership - accountability

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- City of Bandon to establish tributary council for Ferry Creek watershed - tributary of Coquille.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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Please list what you like best about the draft plan.

- Goals and strategies - excellent statement of the "ideal."

Please list what you like the least about the draft plan.

- Various agencies comment plus plans. WRD listing 38 positions become a bit "iffy."

Please list questions you have that were not answered during the briefing or in the draft plan.

- See attached sheets.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Ten Mile Lakes "Partnership" is functioning and we hope it will continue.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

Other questions, comments and ideas:

1. In as much as the coho spend their ocean period in the near-ocean at relatively upper or surface levels, will the State approach Federal authorities to declare these areas off limits to indiscriminate fishing, especially foreign factory fish operations, long seine fishing, etc.? Such action appears warranted regardless of whether there is listing or not.

2. The Plan's forward (xiii) notes that Tahkenitch, Siltcoos and Ten Mile Lakes are still perhaps the most productive coho habitat on the Oregon Coast.

Given the above:

(a) What steps will be taken by ODF&W to reduce the predation of introduced species (bass) in Ten Mile Lakes on young salmon. Elsewhere ODF&W refuses to take limits off bass and walleye pike. Jim Martin said we shouldn't characterize good and bad fish. Yet squawfish have a bounty. --Bad fish?? Are there stomach content analyses to prove bass and walleye have minimal impact on salmon?

(b) How can WRD defend its recent issuance of in-stream water rights for fish that are secondary in perpetuity to human consumption? No matter the salmon potential of a stream, if someone wants to build a condo, the fish get left-over water, if any.

(c) Since from the late 1920s into the forties or early fifties some 26+ million salmon eggs were taken from Ten Mile Lakes and distributed across the state. In all probability most of the State's coho are in part Ten Mile coho. Aren't extraordinary steps justified to protect the local stock--the base DNR stock, as it were?

At the meeting Mr. Martin indicated that evolutionary adaptations were already occurring in the transplanted stock. What evidence exists that this is indeed evolution adaptation? What authorities support this stand?

(d) Yet, even the map in the executive summary page 9 nor thresholds of wild spawners (page V-9 Salmon Plan) does not even mention the three lakes' systems--why?

3. The salmon plan envisions all agencies work together to increase the salmon levels. Yet what has happened this year? We have seen the Salmonberry River situation, the refusal to help the salmon by taking the limits off of bass and walleye, issuing in-stream rights secondary to human consumption in all cases apparently, WRD willingness to permit the Millton Hill dam plus making plans for other dams, and finally, but not least, the task force saying, "Oh, we should keep Savage Rapids Dam" at an exorbitant price and against the advice of Water Resource Department and U.S. Bureau of Reclamation. Business as usual?

4. If the coho stock south of Cape Blanco is listed, will the Rogue be set aside? What happens to the Applegate group?

5. If listing occurs, will the south fork of the Coquille be excluded since I understand historically the south fork did not host coho?

6. Will plans for predation control specifically include plans to reduce impact of non-native species?

Return to top of page.

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Please list what you like best about the draft plan.

- People working together on a seat of the pants, area by area program.

Please list what you like the least about the draft plan.

- Funding and regulatory obstacles that need to be overcome.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- ?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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Please list what you like best about the draft plan.

- Has most of the facts.
- Most of all the agencies involved were there.
- Their speeches and plans were great but how many people will be out in the streams that were at the meetings and get their hands dirty.

Please list what you like the least about the draft plan.

- What I think should be done is to clean up the mountain waters that flow to the sea. If all that have suggestions get out of their easy chairs and do, what a wonderful coast water.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Our teenagers are always looking for things to do on weekends. On their days off why don't you try and work with middle schools, high schools in the area and give these teenagers something to do. They need self esteem, something constructive to do and single parent kids, adults feeling of doing something they can do together worthwhile.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

All I can give is my working support. Hopefully, get my teenage son, his friends out doing something constructive.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

October 7, 1996

OREGON COASTAL SALMON RESTORATION INITIATIVE

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Please list what you like best about the draft plan.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Participate as a volunteer on a watershed council.
- Protect and preserve forest & farmlands from development.
- Attend and participate in workshops.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- The bottom line in saving salmon and habitats is land use. One of the greatest challenges is the public perception of our land use laws. Our legislators' knees go limp when forces that oppose land use planning try to subvert our land use laws. Without land use laws to protect farm and forest lands our work will be a futile exercise. We must be strident in supporting good land use practices. Our watershed councils can a great venue to gain support in this effort - we seem to have a chance to get this support from our councils.
- Thanks for coming to Coos Bay, I appreciate the way the meeting was planned and meeting the staff.

Return to top of page.

October 7, 1996

OREGON COASTAL SALMON RESTORATION INITIATIVE

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Please list what you like best about the draft plan.

- Bottom - up approach.
- Recognized it will take decades (long term).
- Primary goal is to restore functioning systems - not single species.
- Doesn't assign blame.

Please list what you like the least about the draft plan.

- Monitoring portion could become more concrete.
- No estimates on costs of the plan. How much to taxpayers? Over how many years?

Please list questions you have that were not answered during the briefing or in the draft plan.

- Not sure about federal (NMFS) involvement over the long haul. How will they implement? Oversee? How much time will be given to Oregon to achieve results? How will this potentially change the ESA?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Coordination with councils/adjacent landowners.
- Assist in monitoring efforts. Need to define protocols.
- Technical assistance.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- #1) State tax on either cigarettes or gasoline to fund restoration for the long haul. Oregonians would support (I believe).
- #2) Problem Marine Mammal Areas: At these areas around bottlenecks, locks & fish ladders, allow native Americans to do limited hunting (preferably harpoon & canoe), especially on problem animals. These animals are smart - once one is killed - they will> avoid man and become wary of these bottlenecks, fish ladders and locks.

Return to top of page.

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Please list what you like best about the draft plan.

- The sincerity of wanting to restore fish not just avoid a listing.
- Educating the public about the coho's differences and needs.
- Getting cooperation of landowners - from the bottom up.
- Oregon "setting the pace" by offering and initiative before regulation.

Please list what you like the least about the draft plan.

- Not being specific enough about which watersheds will/should be judged in the listings process.
- Giving NMFS the option of choosing areas that lack any abundance to justify the listing.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Why do we have to share listings with California when they do not put forth the effort that Oregon does with environmental issues? Is there any other thing we can do to fight the listing besides a great plan?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Depends on whether the coho is listed. There will be a lot of energy and cooperation the decision is to accept the plan and give Oregon a chance to succeed. If its regulated and they still want cooperation, that may be a problem.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary). I feel NMFS will simply accept the plan as a great effort, a good work piece, and list the coho anyway, hoping, of course, that Oregon will put the plan into effect and they will still be regulating the damage to the habitat, requiring "no-damage" proof before releasing any federal funds and causing our government entities to expend a lot of energy defending itself while being pro-active in restoration.

Return to top of page.

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Please list what you like best about the draft plan.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

- See additional comments section on back.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- What plans, if any, are there to increase the number of OSP troopers in the Fish & Wildlife Division to provide an adequate level of enforcement for salmon protection in light of declining revenues from license and tag sales. The funding would need to come from another source obviously. I believe that we need at least an additional 2 troopers just for the Coos and Coquille drainages to provide a minimum level of effective enforcement presence.

Return to top of page.

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Please list what you like best about the draft plan.

- I like the local, grassroots approach.
- I like the voluntary rather than regulatory approach.
- I like the interagency partnerships the CSRI will bring about.
- With good implementation, this type of plan will accomplish much more than a federal/regulatory approach.

Please list what you like the least about the draft plan.

- Any talking of "taking" or aquisitioning of land even if it is great salmon habitat unless it is in a "fair" way to the landowners.

Please list questions you have that were not answered during the briefing or in the draft plan.

- What kinds of legislation will be implemented concerning agriculture?
- The CSRI talks about protection and acquisition of significant salmon habitat. What does acquisition mean here?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- I work for the Coquille Watershed Association and we can organize and implement projects for enhancement and monitoring just to mention a couple of things.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- We have to go at this in such a way as to be sympathetic and understanding of private landowners and private property. I think we will accomplish this CSRI plan faster and with less hardship to all concerned with the grassroots, voluntary type plan that is proposed. My only worry is that some might want to start "forcing" landowners to participate and cooperate. I don't feel a tactic like this would work.

Return to top of page.

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Please list what you like best about the draft plan.

- Keep coho from listing.
- Bottom up.

Please list what you like the least about the draft plan.

- A concern on cost to landowners.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Watershed Council.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- I appreciate the Governor on 'moving' on this issue.

Return to top of page.

PLEASE SEE COMMENTS ON BACK

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Please list what you like best about the draft plan.

- I'm glad to see the Watershed Council concept.
- I also agree with the emphasis in habitat restoration.

Please list what you like the least about the draft plan.

- This seems like an unfunded mandate. Habitat projects require money for equipment/manpower. Local landowners and timber companies can provide some money but the State needs to put its money where its mouth is.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- I am currently planning on graduate school at OSU. I am interested in any habitat restoration monitoring projects that could use graduate research. I hope to specialize in watershed restoration/slope stabilization. Please contact me at my address if I can assist in any way.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- I think the step program using wild brood stock may significantly increase depressed stocks. I worked with the Humboldt Fish Action Council, a non-profit restoration organization and we had excellent success in restoring coho to the Freshwater Creek Watershed (and other tributaries to Humboldt Bay) using native brook stock propagation and fry plants in restored habitat areas. Tom Weselow at 707-839-1056 was the council president and he may be able to provide more information.

Return to top of page.

OREGON COASTAL SALMON RESTORATION INITIATIVE

Draft Plan Comment Form

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Which communication briefings did you attend?
[X] Astoria [ ] Coos Bay [ ] Gold Beach [ ] Grants Pass [ ] Newport [ ] Portland
[ ] Roseburg [ ] Tillamook

How did you learn about these briefings?
[ ] Notice in mail [ ] Media
[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Fish taxes.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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Please list what you like best about the draft plan.

- Focus on cooperation.
- Focus on local watershed councils.
- Enlisting volunteers to do monitoring and restoration.
- Commitment to developing science date basis.

Please list what you like the least about the draft plan.

- Diminished funds preclude availability to provide technical assistance to volunteer efforts.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Participate in watershed council.
- Sponsor educational workshops.
- Monitoring within city's watershed.
- Contribute funding assistance.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Grassroots origin and use of watershed councils, voluntary efforts.

Please list what you like the least about the draft plan.

- Like to se more use and "recognition" of soil & water conservation districts.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- We serve as technical support to SWCD's. We are pass through agency for HRJP (Habitat Restoration Jobs Program). We also furnish technical assistance to ? and we're at the formation of watershed councils. We have a fish biologist that is locally based that is used and can be continued to be used with works for NLCS.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- We need funding for soil & water conservation districts. They are one of your most effective tools to get things done.

Return to top of page.

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[ ] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Question and answer period - emphasis on urgency.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Lets revitalize the old STEP project with incubation boxes, habitat improvement, etc. on small streams use eggs from local fish - release as swim-up fry.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Maintain enthusiasm in the Oregon Small Woodland Association. Most landowners are interested.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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[X] Notice in mail [X] Media
[ ] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- The inclusion of education - long-term positive impact!

Please list what you like the least about the draft plan.

- Not enough specifics. No need to equate timber harvest with sediment production - not a proven fact.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- We have a long-term proven history of working with small woodland/farmers/general public. Since we are not regulatory we have a high level of credibility and the expertise to design and deliver educational programs.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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[ ] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Local leadership.

Please list what you like the least about the draft plan.

- Need more ideas for funding.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- I plan to write as many positive articles as possible (Seaside Signal).

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- Invite more (some) tribal people and encourage them to give input.

Return to top of page.

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Please list what you like best about the draft plan.

- Fish history and life cycle.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

- How can we reach the landowners with out frightening them. What I mean is educating them so the winter habitat can be left alone when wet and pastured when dry.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- Just keep helping us the way you are. The GWEB people have been very helpful to me and my community. Thanks!

Return to top of page.

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Please list what you like best about the draft plan.

- Control in local and state hands - not with "distant feds."

Please list what you like the least about the draft plan.

- Nothing - as stated plan seems to be very good.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Remain active in local watershed and fishermens groups.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- 1. Increased education with RIF to the difference B/T coho and other salmon.
- 2. Increase info to fishing public as to what "fin clipped" is - and wire codes are.
- 3. Better public info as to wire coded snouts, their collection, ? the info ?

Return to top of page.

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How did you learn about these briefings?
[X] Notice in mail [X] Media
[ ] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Collaborative nature.
- Less regulatory and more emphasis on planning/local involvement.

Makes local responsible for restoration/habitat measures in their own areas/"they take the lead and responsibility."

Please list what you like the least about the draft plan.

- Less reliance on hatchery fish. Don't agree with the need for limiting this resource so much.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- As a city council - lend meeting space and moral support for local efforts, etc.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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How did you learn about these briefings?
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[ ] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Clear and concise presentation.
- Emphasis on outreach and education.
- Emphasis on voluntary vs regulatory approach.

Please list what you like the least about the draft plan.

- Oregon's Coastal Programs (DLCD) not included as "partners."
- Little mention of landuse connections.
- No mention of current research on ocean conditions funded through Coastal Ocean Programs.
- No mention of the affect of Goal 5 planning on salmon recovery.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- DLCD should be recognized as a legitimate partner with specific directives to assist in salmon recovery efforts.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

October 30, 1996

OREGON COASTAL SALMON RESTORATION INITIATIVE

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How did you learn about these briefings?
[ ] Notice in mail [ ] Media
[ ] Plan Summary [ ] Word of Mouth [X] Other: et al.

Please list what you like best about the draft plan.

- See back.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- The only comment I had concerned your "Draft Maps of Core Areas." My comments refer to the Lower Rogue River area. You listed Boulder Creek (a tributary to South Fork Lobster Creek) as a core area. I believe Boulder Creek should be removed as a core area. I have two main reasons for this. One, I have never observed juvenile or adult coho salmon in Boulder Creek; and two, there is a migratory barrier (a waterfall) approximately 2 miles upstream from the mouth of Boulder Creek. No anadromous fish, or resident fish exist above this waterfall. The South Fork of Lobster Creek should remain as a core area. If you would like further information on potential core areas in the Lower Rogue River area, please feel free to contact me.

Return to top of page.

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How did you learn about these briefings?
[ ] Notice in mail [ ] Media
[ ] Plan Summary [ ] Word of Mouth [X] Other: Curry Anadromous Fishermen

Please list what you like best about the draft plan.

- Emphasis on voluntary cooperation.
- Watershed-by-watershed approach.
- Comprehensive monitoring proposal.

Please list what you like the least about the draft plan.

- Danger of arbitrary NMFS decisions/listings.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Details of monitoring plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Continue operation of Indian Creek Hatchery.
- Participate in Watershed Improvement Projects.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

November 1, 1996

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How did you learn about these briefings?
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Please list what you like best about the draft plan.

- State involvement.

Please list what you like the least about the draft plan.

- Core area concept.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Sustainability.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- See attached.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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How did you learn about these briefings?
[X] Notice in mail [ ] Media
[ ] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Tremendous interagency and grassroots effort.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Grant administration, grant writing, project development, training, facilitation, council support, leadership development and organizational planning/development.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- It is a plan based on good science.
- It utilizes input data from ALL agencies.
- It encourages participation from common folks in all watersheds.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

- I hope that (updating) every 6 months will really occur and if NMF really does review the plan annually that would help.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- In the care of Rural Outdoor Education I suppose to keep doing what I'm already attempting is most important. Teaching stewardship and working with youth from grade to college level in 5 counties (17 schools).

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- The message I'm presenting to students from Grants Pass, Butte Falls, Prospect, Myrtle Point, Gold Beach, etc. is a brief history about their particular watershed, the importance of healthy salmon runs, creation of watershed councils, and the Governor's Coastal Salmon Initiative plus what students can do here, right now, to help. (Curricula attached.)

Return to top of page.

SALMON:	Their impact on this community past, present, future. What can we do?
EARLY HISTORY:	Watersheds. People. Salmon.
20TH CENTURY: Slow? Change	Industry--River travel Early hatcheries. A slowly eroding abundance.
80's & 90's	A need for reexamination. Time to pull together with an acceptable plan.

Formation of watershed councils using lottery money and citizen driven plans (grassroots input).

Governor's	Coastal salmon restoration. Initiative August 1996.

(MISSION)

"To restore our coastal salmon population and fisheries to productive and sustainable levels which will provide sustainable levels which will provide substantial environmental, cultural, and economic benefits."

We can be part of this restoration by being open to changes, Education, and a willingness to work together.

Return to top of page.

Saturday, October 5, 1996

Jim Martin, Governor's Fisheries Technical Advisor
C/O Office of the Governor
State Capitol
Salem, Oregon 97310-0370

Dear Jim:

It was a pleasure to have had the opportunity to meet and talk with you after the Salmon Recovery Initiative communication briefing that was held in Grants Pass October 1st.

I only just obtained a copy of the draft of the initiative plan previously to the briefing and hadn't completed my review of it at the time. In fact, I am still wading through it.

Had I gotten as far through it as I now am, I would have publicly questioned you at the briefing about the Water Resources Department (WRD) proposed Management Measure WRD6b (on page VI-A-I-36). That measure says WRD has identified the need for additional stream gauges to aid instream flow monitoring and it will be seeking funding for their installation.

But before I make the inquiry, I want to outline the situation.

In a December 7th 1994 letter, WRD Director Martha Pagel, told me:

> "Watermasters only regulate to satisfy senior rights if those senior rights do not have enough water to meet their needs. In other words, Oregon water law does not require or even allow the watermaster to restrict the diversion of a junior user unless the water is going to be used under the terms of a senior water right. Watermasters do not regulate to allow water to flow past a senior's diversion."

The essence of that statement, is that in the regulation of water rights, THE AMOUNT OF STREAM FLOW HAS NO BEARING AND MATTERS NOT AT ALL. In other words, the WRD does nothing until a senior rights holder complains.

My inquiry at the briefing would have been, and is, this:

> What is the point of WRD installing more stream gauges and WRD monitoring stream flows if the amount of stream flow is of not consequence to its regulation of water rights? If there is no relation between the regulation of water rights and the amount of stream flow, what practical interest does the WRD have in monitoring stream flow?

(Such an inquiry brings into question the scope of WRD. Water quantity directly affects water quality, and of course, the Recovery Initiative.)

To me, separation of water right regulation and the amount of stream flow makes no sense (logic) at all. It is directly contrary to the intent of both watershed health and the Recovery Initiative.

Return to top of page.

Received
Oct 18 1996
Water Resources Dept.
Salem, Oregon

October 17, 1996

Jim Martin, Governor's Fisheries Technical Advisor
C/O Office of the Governor
State Capitol
Salem, Oregon 97310-0370

SALMON PLAN REVIEW

Dear Jim:

Re. the following questions that were on the SRI Draft Plan comment form,

WITH PARTICULAR ATTENTION TO QUESTION NUMBER 7 BELOW.

1. Which communication briefing did I attend?

I attended the Grants Pass briefing.

2. How did I learn about the briefing?

I learned about it by receiving a copy of the draft plan from the Upper Rogue Watershed Council coordinator. The plan's executive summary indicated the briefing date and place. If that notice had not been in the executive summary, I WOULD NOT HAVE KNOWN about any briefings.

As far as I know, the briefings were not items either in the local newspapers or TV stations. That might account for what I believe was the situation at the Grants Pass briefing. It appeared to me that most of the people who attended were: public agency people, a politician or two, or watershed council members and retired persons who do not have any other paid jobs to go to. If you are going to reach the general public, which I believe you know you need to do, you have to advertise such briefings, hold them in the evenings when the general public can attend, and just in case you do have a big turn out, you have to have it in a large enough place to accommodate it.

3. What did I like BEST about

- the draft document itself?

In particular, nothing, except the fact it had an executive summary.

Suggestion: In the final plan, the executive summary should somehow indicate, **in its discussions of specific subject matter,** exactly where the details of that subject are in the body of the plan itself, so the "executive" does not have to fumble through the table of contents or the body of the plan to find where those particular details are.

- the plan's concepts and strategies?

These are handled in the response to question 7. below that deals with "additional comments, ideas, suggestions."

4. What did I like LEAST about

- the draft document itself?

It is just too darn long and arduous reading. One becomes weary.

- the plan's concepts and strategies?

Handled in the response to question 7. below.

5. What questions of mine were not answered during the briefing or in the draft plan?

No questions I may have had at the briefing were unanswered. Questions I have after having reviewed the draft plan are handled in the response to question 7. below.

6. How can I best contribute to the restoration of anadromous fish runs?

By:
1. Volunteering my services to habitat improvement projects.

2. Continuing to try to affect societal changes by working with and making suggestions to the local watershed council.

I resigned my council membership last June 27th because then I concluded it was a waste of my time trying to influence the majority of the Upper Rogue Watershed Council (URWC). It is futile trying to convince its members to go on record as saying the current Oregon water law is directly contrary to the intent of the recovery initiative, and at odds with watershed health and the DEQ's effort to improve water quality.

Even though one of the councils' rolls (as defined on page VI-C-1) is to address specific limiting factors to salmon recovery, the majority of the URWC is a "stand pat" group, unwilling to face issues that most immediately hinder the success of the recovery initiative and the accomplishment of good stream quality. Issues are controversial, like eliminating some things our society does and changing the way it does others -- such as **"STOP PUMPING THE CREEKS DRY!"** -- things that adversely effect property rights and peoples' lifestyles. Pumping creeks dry is an example of precisely the type of inimical cultural practices and residential lifestyles that need to be corrected (eliminated) if stable anadromous runs are ever to be achieved.

3. Continuing to try persuading the Governor, his administrators, and state legislators that social and legal changes are needed.

4. Advocating political initiative or litigation if persuasion is not productive.

7. What additional comments, ideas, or suggestions do I have about

- the plan's concepts and strategies:

You may remember that in my letter last August 30th to you, I said

> the plan should NOT indicate the inappropriate motive of forestalling and averting federal intervention that will dictate recovery efforts. (I believe Oregon would not even be in the business of anadromous fish run recovery, if it was not for the threat of federal intervention.)

Besides, the fish might be listed anyway by the time you ever get the final plan written.

Suggestion: So, be that as it may, take all references to that incorrect motivation out of the plan. The reason for the Initiative and its plan should be recovery, only.

You may also remember, in my letter dated last August 4th to Governor Kitzhaber, (of which you have a copy) I acknowledged that:

> The foundation of the recovery initiative -- the "council process" -- is the element that is supposed to be the strongest. But understand, (and Mike Golden, please note) that if the councils are actually the weakest element, **because they do not receive the proper (by "proper," I mean "proactive") direction and assistance from the Recovery Initiative "administrators" and managers, like yourselves, the Initiative and the Watershed Health Program are prone to crumble. I cannot emphasize that enough.**

Examples -- of important and necessary assistance needed by the councils -- that have NOT been actively **initiated** (actively pressed and pursued) by the state managers: **Liability insurance --** for projects and other council actions. In this matter, state government administration wants the councils to promote or do habitat improvement projects and other actions, but has "left the councils hanging out on a limb," on their own, to obtain liability insurance. This is but one example of how the Initiative and the Watershed Health Program was/is ill conceived.

Establishment of adequate bylaws -- bylaws that:

Include procedures for conducting business so the councils don't fumble around and spin their wheels. I know, the Recovery Initiative is supposed to be a "grass-roots endeavor, but each council is different, and not all of them have members who know how or who are willing to conduct business in a productive and efficient manner. In this, councils need direction. Otherwise, people will grow weary and frustrated, and the councils will dissolve.

Suggestion:

> Prohibit councils from limiting their membership numbers. As an example, Upper Rogue Watershed Council Bylaws limit council membership to 13 members. After all, the salient concept of the Recovery Initiative is "all-inclusiveness."

Direction and assistance in performing proper watershed assessments--

Councils need to have and receive direction and assistance so adequate action plans can be timely established.

> **Contrary to what the draft plan now says on page VI-C-9. The Upper Rogue Watershed Council DOES NOT HAVE a watershed assessment, and therefore, DOES NOT HAVE an adequately updated "Action Plan."** If there is one, it has not been made known. (Change the heading of the last column on page VI-C-9 from "Work Plan" to "Action Plan.")

As far as I am able to determine, here again, the councils have been left on their own, without direction and assistance from program managers. Councils should not have to ask for assistance; it should be offered because, often, council members do not know what is available or how to access it, or even know what they need to conduct a proper watershed assessment. The councils and their coordinators cannot do it by themselves.

-- other comments on the draft itself:

About the executive summary. In addition to my suggestion relating to the plan's executive summary (in the answer to question number 3 above), further review and comparison of that summary, with the plan's table of contents and the body of the plan, reveals a lack of direct correspondence to the body of the plan itself. The "summary" appears to be, not a summary -- of the plan, but an "afterthought" or an addendum placed ahead of the body of the plan. Make the titles and headings of the executive summary and the body of the plan...CORRESPOND. The executive summary needs to be just that -- a SUMMARY -- OF THE DETAILS IN THE PLAN.

Reaction to the second "Key Principle" statement concerning voluntary approaches -- on page 2 of the executive summary. It says the plan's emphasis is on voluntary rather than regulatory approaches, and the intent is to make the existing system (regulatory system) work better -- not to establish a new set of laws.

The whole reason for any "regulatory system" is because legal coercion is necessary. The mere existence of a regulatory system implies that voluntary "will" is not present. Therefore, the statement, that a "voluntary approach" and that the expectation of voluntary compliance will somehow make the present legally coercive (regulatory) system "work better," is an incredibly incongruent, illogical, and naive statement.

The recovery initiative will have a tough time succeeding on a voluntary approach, because of the present way the state's water law is interpreted by the Water Resources Department. That interpretation or the design of the present water law thwarts the goal of the initiative.

Reaction to the "Key Principle" statement at the bottom of the left column on page 2 of the executive summary. It says restoration of wild populations (of coho) to sustainable levels, that will support harvest, is "a" major plan objective.

I submit, that sustainable harvest is the state's only real, true, objective for the initiative, and restoration of wild populations is only the goal needed to achieve that objective. Therefore, change the word "a" to "the."

Reaction to the discussion under the heading "*harvest*" on page 3 of the executive summary. It says the plan proposes *limiting* total fishery impacts on Oregon Coho Natural (meaning "wild" coho, I presume) to 15 percent until escapement improves, and that will *minimize* wild fish mortality.

That proposal is a direct request to the National Marine Fisheries Service to postpone listing and to turn a "blind eye" to Oregon's duplicity -- of trying to "have its cake and eat it too" -- by trying to harvest coho while, at the same time, it says it is trying to reestablish sustainable populations of the fish. Such a proposal is an absolute complete absurdity, and it is completely contrary to the intent and purpose of the Endangered Species Act.

Eventually, if the fish are listed anyway, you will have to strike out of the plan any references to ***limiting*** and ***minimizing*** mortality of them.

Reaction to the discussion under the heading *Hatcheries,* that begins on page 3 of the executive summary and continues on page 4

For the same reason just mentioned, the discussion should be changed, and may be required to change if the fish are listed, to reflect the **elimination** (not the **decrease**) of effects of hatchery fish spawning with wild fish.

First paragraph under heading *Habitat Management,* page 4 of executive summary -- Shorten the first paragraph by rewriting it to read:

"Changes in habitat management focus on actions that assist salmon conservation and restoration."

Second paragraph under heading *Habitat Management,* page 4 of executive summary -- Change the word "may" to "do" so the phrase reads:

"...do affect the habitat..."

Fourth paragraph under heading *Habitat Management,* page 4 of executive summary -- "Ensure Compliance." Those two words appear in the sentence that mentions compliance with (clean water) laws. Note to Governor Kitzhaber: Ensure compliance by providing the resources necessary, so your agencies don't have the excuse not to enforce compliance.

Last paragraph under heading *Habitat Management,* page 4 of executive summary -- It says that Watershed Councils are conducting watershed assessments and developing action plans to correct limiting factors.

OH? The only action plan that exists for the URWC is an extremely inadequate one, formulated at the very beginning of the watershed health program. Since then there hasn't been even a preliminary watershed assessment and updated action plan developed, even after the two years of its existence.

Discussion under *Monitoring,* page 4 of executive summary -- Here there is a sentence that says that developing accurate information on the status of salmon populations and their habitats is one objective of the monitoring program. Reaction:

Sounds good, but I doubt most people in state government really have an appreciation for just how big the job of stream, habitat, and status monitoring really is, and I doubt whether the state really has the commitment to carry out an adequate monitoring program.

For Trail Creek, a coho "core area" stream, ODFW research fish biologist, Tom Satterthwait, has conducted, under contract with the Army Corps of Engineers, a report that will serve as a "base line" for both Trail Creek and Elk Creek, also a core area stream.

Return to top of page.

October 23, 1996

OREGON COASTAL SALMON RESTORATION INITIATIVE

Draft Plan Comment Form

Your thoughts about the salmon restoration initiative are important. Please use this form to provide your comments or, if you wish, send comments and questions in a separate document to: Salmon Plan Review, Capitol Building, Salem, OR 97310 -- no later than November 1, 1996.

Which communication briefings did you attend?
[ ] Astoria [ ] Coos Bay [ ] Gold Beach [ ] Grants Pass [ ] Newport [X] Portland
[ ] Roseburg [ ] Tillamook

How did you learn about these briefings?
[X] Notice in mail [ ] Media
[ ] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Bottom up approach.

Please list what you like the least about the draft plan.

- Can't find where it acknowledges a cooperation between watershed councils and soil & water conservation district. SWCD's represent a lot of private land and must play a vital role.

Please list questions you have that were not answered during the briefing or in the draft plan.

- If its all voluntary, what reward(s) are there besides it's the right thing. Some will 20%, some won't 20%, the rest will wait to see.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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Please list what you like best about the draft plan.

- I like the cooperative approach to management. Hopefully, at least 95% of those affected will participate.

Please list what you like the least about the draft plan.

- I felt that not enough emphasis was placed on Tidal Estuarine Rehabilitation. I feel that if you don't improve the entire habitat, and consider all parts of the lifecycle, the weakest link will be the downfall of the project.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

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Please list what you like best about the draft plan.

- Bottom-up rather than top-down.
- Relies on collaboration rather than regulation.
- Salmon strategy team.
- "Thousands of small improvements" vs. one massive, regulated answer.

Please list what you like the least about the draft plan.

- Didn't hear or see anything in the plan presentation that struck me negatively. Don't know enough to add suggestions for input. Thank you for this plan for Oregon.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Given the increase in Chinook and the decrease in Coho, why is it important to save the Coho as it appears that this species is not thriving ... What is the ramification of allowing the Coho to become extinct?
- Jim Martin did an excellent job - easy to listen to.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

October 23, 1996

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[X] Roseburg [ ] Tillamook

How did you learn about these briefings?
[ ] Notice in mail [ ] Media
[ ] Plan Summary [ ] Word of Mouth [X] Other: City of Lakeside

Please list what you like best about the draft plan.

- Finally someone is listening.

Please list what you like the least about the draft plan.

- I can see no enforcement plans or funding for them.
- In Coos County its politics as usual.
- Relies too much on volunteers.

Please list questions you have that were not answered during the briefing or in the draft plan.

- If "OAR 690-517" The South Coast Basin Plan was not and has not been upheld, what assurance do we have that the new plan will fare any better?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Supporting the tenmile basin watershed partnership.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- Please enforce the basin plan "no municipal water rights on Tenmile Creek and lakes."
- > CB/NB water board do not need our water and will do irreversible harm to the coho and steelhead.

Return to top of page.

November 1, 1996

Oregon Coastal Salmon Restoration Initiative

Draft Plan Comment Form

Salmon Plan Review
Capitol Building
Salem, OR 97310

Communication briefings attended:

Coos Bay Roseburg

Learned about meetings by:

Plan Summary Internet

Features liked best about the plan:

Key principles are well identified.
Plan recognizes role of watershed councils.
Plan is accessible via Internet.
Plan might eventually eliminate policy conflicts between agencies.

Features liked least about the plan:

Relies too heavily on volunteer participation.
Allows too much room for local "old boy politics"; Coos Bay, for example.
Too many "motherhood statements" (Where's the beef?)
No tie-in with Pacific Northwest Economic Recovery Initiative or S.C.E.R.T.
Funding left to legislative whim.

Questions not answered during the briefing or in the draft plan:

Why aren't unemployed timber workers and fishermen a project resource?
Why are dedicated "outside" scientists and engineers excluded from technical participation?
What percentage of total funding is actually used for habitat restoration?
Why are large landholders being paid to increase their own property values?

How can I best contribute to the Coastal Salmon Restoration Initiative?

Technical Participation: Professional background in forest soils, watershed management, agricultural engineering and GIS.
Now own a computer system with in-house GIS and digitizer capability.
Now actively consulting in wetland recovery, land use planning and GIS.
Now participate in watershed council, STEP and Oregon Lakes Association.
Now interact nationally with like-interest groups and agencies via Internet.

Additional comments, ideas and suggestions:

CAP TRAVEL AND ADMINISTRATIVE OVERHEAD COSTS.
Conferences, workshops and meetings have developed into an industry, with hosts and facilitators getting rich on watershed money.

USE TECHNICAL PROFESSIONALS TO DO WHAT THEY'RE TRAINED FOR.
I don't hire technical skills to attend meetings, so why should the state? Too many "professional meeting goers" are spending too much time running up and down I-5, leaving "real work" to trainees and volunteers.

BRING BACK THE CIVILIAN CONSERVATION CORPS.
Unpaid (and unemployed) volunteers resent being "supervised" by a paid "coordinator."

USE INTERNET MORE EFFECTIVELY THROUGH E-CONFERENCE SITES.
This is a good place for the pros to hold their meetings and save money.

MAKE WETLAND POLICY HOLISTIC & SEAMLESS BETWEEN AGENCIES.
Army COE cares nothing for function and value of wetland habitat - just removal-fill under Section 404. My contacts with DSL, ODFW, DEQ and WRD suggest wanton habitat destruction of aquatic vegetation is permitted as "weed control." Where does this leave the benthic environment for salmon and other wildlife? Removal of aquatic vegetation should be confined to essentials only.

REVISE THE MUNICIPAL WATER RESERVE POLICY. SALMONID WATER RIGHTS MUST HAVE PRIORITY OVER WATER BROKERAGE SCHEMES.

Return to top of page.

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Please list what you like best about the draft plan.

- Plan the work ... work the plan.

Please list what you like the least about the draft plan.

- Why this restoration problem when we could have included it in the "STEP" that was stopped due to funding. Let's be consistent and eliminate the surges.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Addressing mining operations in the tributaries of the Umpqua watershed, monitoring offshore foreign drag/cannery ships, enforce utility companies to implement fish passage systems: (a) screen turbines, (b) fish ladders and (c) regulate water flow.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- 1. Monitoring process.
- 2. Habitat restoration.
- 3. Participate in watershed council.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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How did you learn about these briefings?
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[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Visible state agency preservice in Roseburg.
- Focus on habitat restoration.

Please list what you like the least about the draft plan.

- Lack of enforcement.
- Serious violation of Forest Practices Act in Douglas County. State forestry is deeply remiss here. Major lack of reforestation. Show us you mean business here.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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Please list what you like best about the draft plan.

- The OCSRI program is a big step in the right direction.
- State and local cooperation is very necessary for a successful trout, steelhead and salmon restoration plan.
- We are thankful for the governor's support.

Please list what you like the least about the draft plan.

- The OCSRI meetings should have been more widely advertised.
- The STEP and Hatchery programs should be increased, not decreased.
- There is no mention of controlling the predators such as small-mouth bass, seals and sea-lions. This is very important.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Why are the opinions and desires of the sport clubs recognized more than the multitude of fishermen with their practical knowledge and experience who have no representation?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Become more involved with the STEP and Hatchery programs.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- "OREGON COASTAL SALMON RESTORATION INITIATIVE" means exactly what it says--by increasing the population of fish into the ocean and streams of Oregon. After 10 years or more of expense, man-power, research, paper work by the tons, over regulation and increased license fees, etc., etc. what has been accomplished? LETS TIGHTEN THE BUDGET AND GET IT DONE. Putting salmon on the endangered species list won't put one more fish into the water....

2 enc.

Return to top of page.

OREGON DEPARTMENT OF FISH AND WILDLIFE
Southwest Region
4192 North Umpqua Highway Roseburg, Oregon 97470

WINCHESTER DAM COUNTING STATION - NORTH UMPQUA RIVER

Fish Counts through September 30, 1996

YEAR	Period of Sept. 16-30	Total through Sept. 30	Total Count	Percent of run by Sept. 30
		* SPRING CHINOOK * Jack Count = 956		
1987	259	15,573	15,573	100.0
1988	192	11,605	11,605	100.0
1989	56	9,863	9,863	100.0
1990	38	7,566	7,566	100.0
1991	88	4,167	4,167	100.0
1992	88	5,006	5,006	100.0
1993	10	5,928	5,928	100.0
1994	83	5,305	5,305	100.0
1995	52	9,816	9,816	100.0
1996	123	6,536*	6,536	100.0

* Final count for 1996

		COHO SALMON * Jack Count = 170		
1987-88	55	67	2,381	2.8
1988-89	78	78	1,645	4.8
1989-90	56	56	3,306	1.6
1990-91	245	256	2,386	10.7
1991-92	106	106	6,404	1.7
1992-93	127	127	6,829	1.8
1993-94	79	136	3,427	4.0
1994-95	14	14	3,491	0.1
1995-96	117	133	4,777	2.8
1996-97	468	470*	?	

To whom it may concern:

Count of Coho Salmon over the Winchester Dam on the Umpqua River near Roseburg, Oregon by September 30, 1996, 470 salmon. A possibility of 10,000 to 12,000 by the end of 1996. This number does not include the Smith River, the South Umpqua, Elk Creek and many other streams of the Umpqua basin.
The largest run of Coho in 10 years, far from being endangered.

Return to top of page.

Why Don't we take a hand in salmon's reproduction?

Without help, the wild fish may be doomed

As I read about the salmon problem, I have come to notice that environmental, historical, economic and cultural factors are extensively explored, but little is said about the biology of these great fish.

As a retired science teacher with a life-long interest in salmon, I believe this is short-sighted.

For over 100 years, scientists have recognized the fact that salmon were poor breeders, and this fact was going to limit their numbers. That is why hatcheries were started.

If you were to carefully watch salmon on their spawning bed, you would notice there is little coordination between what the females and the males do. It is no wonder that less than 10 percent of the eggs become fertilized.

Salmon success is a numbers game. When people are satisfied with thinking in hundreds or a few thousand, we are dooming the species to failure. When the numbers get this low, it is a formidable task for the fish to even find each other.

When we consider that most waters presently available are unsuitable for spawning or for the incubation of eggs, it appears we are going to have to do something else.

We know that hatcheries can fertilize and incubate in excess of 95 percent of the eggs spawned. While waters necessary for spawning and incubation are limited, waters suitable for the rearing of fry are considerably more extensive.

If wild fish are the objective, the obvious solution is to capture and spawn these fish, incubate the eggs in a hatchery and then return the fry to the wild when they have lost their egg sac and are ready to eat. To do less is to waste at least 85 percent of the eggs carried by the female to the spawning grounds. With the flooding that occurred this winter, the waste might be closer to 100 percent in some streams.

From the point where the fry are returned to the stream, these fish are subject to those natural selection factors facing wild fish.

Another precept that is seemingly being ignored is the importance of adaptation upon evolution. We seem to be preoccupied with saving pure strains of fish that may be poorly adapted to existing environmental conditions while inhibiting the desirable effects that straying, hybridization and natural selection might bring to bear.

The sockeye of Redfish Lake are nearly extinct while the Okanogan Sockeye, a closely related strain, are doing quite well. In all likelihood these upper Columbia River fish will eventually stray into the Snake and adapt. The fact that this might take hundreds of years is unthinkable when we have the ability to speed the process through enhancement.

It seems to me that our effort and money would be better utilized if we were to study the ecology of the many strains of salmon and when we find a strain that appears to be better suited to a particular environment, we introduce it to that area. If not suited, natural selection will eliminate them.

If they do adapt, then we have accomplished what straying may have accomplished, given time.

For those who would cry that these are not wild fish, I contend that left to the pressures of natural selection, wild salmon are only one generation away from a fish hatchery.

Throughout time, salmon have thrived where they have been able to generate millions of offspring. When we deal in thousands, biological factors are compromised. Trying to preserve a particular strain even further compromises their success.

Artificial propagation is not a dirty word. Without it, we would have been out of business long ago. Present circumstances indicate there is very little water remaining with all the environmental conditions necessary for healthy natural reproduction. Under these circumstances endangered species status would seemingly be the indicated outcome.

If we are satisfied with this and all it entails, then this is probably what we will get. As for me, I would like for us to take a different tack. In so doing, we might produce sufficient numbers to at least satisfy some of the demand. In all probability this would also be less costly.

Carlisle Harrison grew up on a fish hatchery in the Columbia Gorge and taught science for 33 years in Hermiston, Oregon. He has a bachelor of science degree from Pacific University in Oregon and a master of science degree from the University of New Mexico.

reprint from "Capitol Press" Salem, Oregon

Return to top of page.

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[X] Roseburg [ ] Tillamook

How did you learn about these briefings?
[ ] Notice in mail [ ] Media

[X] Plan Summary [ ] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- The plan recognizes the importance of beaver to habitat.
- It recommends the use of hatchery carcasses.
- It provides some semblance of local control.
- It provides for fish run establishment.

Please list what you like the least about the draft plan.

- The plan lacked local input, especially, STEP volunteers 14 years of volunteer service.
- It does not identify specific coho streams or cutthroat streams.
- The cost and the amount actually spent on the stream.
- Cutting streamside hardwoods without better science.
- No core area for cutthroat. (VI-H-7).

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- See attached.

Return to top of page.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

A moratorium on beaver trapping should be invoked to help re-establish the population, which has been decimated by predators during the recent low water years. Live trapping and relocation of problem beaver to streams with potential beaver habitat and an absence of beavers should be encouraged. Umpqua National Forest and Roseburg BLM have refused to take problem beaver even though it is well established that the beaver contributes beneficially to fish habitat.

More stream miles must be made available to anadromous fish runs. Currently less than 25% of federally owned land streams are available to anadromous streams. (SEE ENCLOSURE) With the huge reduction of coho numbers from coastal lakes--Ten Mile, Tahkenitch, Siltcoos--numbers

which equalled those of coastal rivers, and from other streams, such as, Roberts Creek, Newton Creek, Sutherlin Creek, on the Umpqua; other streams with the proper gradient and spawning gravel must be made available for coho and sea-run cutthroat. Oregon must start practicing diversity in the streams instead of maintaining segregation. Obstacles, which become barriers in periods of low flows, must be made passable to anadromous fish. The farther the obstacle is located from the ocean, the more restrictive the obstacle becomes. It is difficult for fish to arrive at the obstacle when the freshet has provided enough water for passage. Spawning ground survey numbers show that higher numbers are found closer to the ocean. Fish on the spawning run are forced to stop because of the obstacle and become much more vulnerable to predators. If Oregon is to depend on wild fish for a consistent fishery, then it must provide access to adequate spawning and rearing streams. At the present, no one actually knows the number of coho streams or cutthroat streams in Oregon. No plan can set a goal of 400,000 returning coho without knowing that there are enough streams available with the carrying capacity to provide the necessary spawning and rearing to get the production that will ensure the return of 400,000 spawners, as well as provide for ocean and river losses because of predation, etc. and also furnish a fishery. Trained fish biologists or technicians need to determine the coho and cutthroat streams.

As early as the 1890's, fishermen and biologists realized that supplementation of the Columbia and coastal rivers was necessary if the fishery were to be maintained at those levels. Modern harvesting technology in the ocean is just as efficient today as were the river gill nets of the 1890's and 1900's. Contingency numbers of coho must be available if needed to offset shifts in ocean conditions, large blow outs of spawning beds by winter storms, losses of spawners because of low flows, etc. Recommendations like this have been made previously by fish biologists--see 1946 Umpqua Report. STEP plantings of coho in deficient streams in the Umpqua basin during the recent low flows have proved the wisdom of this practice.

More information about coho and cutthroat needs to be assembled and more attention given ignored studies--Karen Bruner's thesis on beaver effects on streams and coho populations, OSU, 1989; Kaufman study of Cape, Little Cummins, and Gwynn Creek, OSU; and hardwoods studies done at OSU. Observations and data collected by individuals constantly on the streams, i.e. guides and streamside residents, needs to be recognized and evaluated.

More effort needs to be made to identify illegal water removal from streams, illegal dams that restrict passage, and water rights that have not been used for the five year period. Example of collecting this information--request from power companies notification of irrigation meters not used for five year periods. OWR issue a sticker to be placed on legal withdrawal pumps.

Page VI-A-I-22

ODFWIVA2 Improve Riparian Tax Incentive Program--Has this program proved to be beneficial to anadromous fish runs?

ODFWIA3 Protect Instream Flows "...Conduct surveys to identify streams where quantity of flow is limiting salmon production. As needs are identified, proceed with application for instream rights." Comment--If one waits until the flow is limiting salmon production, it is too late to apply. If salmon are present, apply for rights.

Identify critical water rights, especially rights not currently used that may be near the mouth of tributaries, and recommend purchase by the Oregon Water Trust.

Information by all agencies must be made available to properly prepare a plan. For instance, records of smolt traps need to be evaluated to determine the contribution or absence of contribution of coho and other species to the fishery. Specifically, I requested results of the smolt traps of the Umpqua National Forest traps on the South Umpqua but my request was never acknowledged. ODFW does not have this data.

Good Luck!

Return to top of page.

BLM DISTRICTS STATISTICS

ROSEBURG BLM DISTRICT -- 419,400 Acres
837 miles of third order and higher streams
756 miles contain resident fish
192 miles support anadromous salmon and trout
23% of stream miles support anadromous fish runs

EUGENE DISTRICT -- 316,592 Acres
533 miles of perennial water in planning area
275 miles resident trout
187 miles anadromous fish
67 miles blocked by barriers man made or natural, Dorena and Cottage Grove dams
35% of stream miles support anadromous fish runs

SALEM DISTRICT -- 393,600 Acres
1,596 miles of stream
376 miles contain cutthroat and rainbow trout
211 miles support anadromous and trout
62 miles chinook
144 miles coho
188 miles steelhead
376 miles cutthroat/rainbow
2 miles chum
13% of stream miles support anadromous fish runs

COOS BAY DISTRICT -- 329,000 acres
672 miles perennial streams
140 miles resident trout
216 miles anadromous
17 miles above natural or man made barriers suitable habitat for anadromous
32% of stream miles support anadromous fish runs

MEDFORD DISTRICT -- 866,300 acres
3,910 miles streams of 2nd order and larger
529 miles support fish
216 miles support anadromous and resident fish
7% of stream miles support anadromous fish runs

KLAMATH FALLS DISTRICT -- 212,000 acres
317 miles of streams
29 miles contain trout
0 miles support anadromous fish

UMPQUA NATIONAL FOREST LANDS
1,750 miles of Class 1, 2, & 3 streams
343 miles Class 1 -- 273 miles anadromous
430 miles Class 2 -- resident fish
977 miles Class 3 -- perennial streams capable not currently supporting fish
20% stream miles support anadromous fish

WILLAMETTE NATIONAL FOREST
2,661 miles of Class 1, 2, & 3 streams
426 miles Class 1 -- anadromous fish
940 miles Class 2 -- resident fish
1,295 miles Class 3 streams
16% stream miles support anadromous fish

ROGUE RIVER NATIONAL FOREST
1,150 miles perennial streams
50 miles Class 1 -- anadromous fish
200 to 400 miles Class 2 -- resident fish
700 to 900 miles perennial streams -- no fish
4% stream miles support anadromous fish

SISKIYOU NATIONAL FOREST
1,150 miles of Class 1 & 2 streams
620 miles of anadromous fish
530 miles of resident (may have lakes)
54% of Class 1 & 2 streams support anadromous fish

Return to top of page.

RECOMMENDATIONS OF FISH BIOLOGIST 1949 BIENNIAL REPORT

Barriers

The items marked with an asterisk (*) below are natural obstructions needing special attention and construction work.

Done 1.* Smith River - log jams, 20 miles above Highway 99. 3.1 miles below guard station. Probably passable at certain water stages. Should be removed.

** 2. Hubbard Creek - tributary to Umpqua River, four miles below town of Umpqua. At Cleveland Ranch, 3.5 miles above mouth. Ladder needed.

3.* Little River - natural falls one mile above mouth Cavitt Creek. One or two simple baffles will make this much more easily negotiated.

4.* Fall Creek - tributary to Little River. Ladder needed for stream entrance. Excellent spawning stream now little used.

5.* Cavitt Creek - tributary to Little River. Falls three miles above mouth. Ladder desirable.

6. North Deer Creek. Dam at mouth needs ladder.

7. South Myrtle Creek. Old dam 150 yards above mouth of Louis Creek should be removed.

8. Slide Creek - tributary to North Myrtle Creek. Dam creating log pond needs ladder.

9. Canyon Creek - tributary to South Umpqua River. Dam at Alpine Lodge should be completely removed. Irrigation dam below needs better ladder.

10. Cow Creek - irrigation dam near mile post 244 on Highway 99 should be provided with at least one good step and jumping pool, or dam relocated and redesigned.

Done 11.* South Umpqua Falls. Major construction project to provide easier passage for salmon and steelhead and at same time continue block to

suckers and squawfish. This should have priority.

**If this had been done, the 1964 washout may have been prevented. No present access.

#These two still not done. Again, recommended that Cavitt Creek falls pool be deepened by line of boulders to assist coho passage in 1990's, but not done. Coho were reported by Dave Faurot, BLM Biologist, not able to access above falls in 1991 and 1992. Falls Creek, 6.25 miles in length has some of the best spawning ground in the North Umpqua Basin. Steamboat Creek had been recommended earlier to be made accessible.

Return to top of page.

RECOMMENDATION FROM "UMPQUA RIVER STUDY" OF 1946

5. A hatchery be established on the Umpqua River or some suitable tributary, or if possible the present one improved, for the purpose of raising young silver salmon. The necessity for such a hatchery is not to supplant natural propagation but to raise enough fish to (a) have a supply to transplant to such tributaries where the runs have been wiped out by logging operations or the presence of impassible barriers, and (b) have a supply to release each year which may serve in some years as a buffer against loss to the spawn or fingerlings due to floods or periods or protracted low water levels. (Currently the Salmon Trout Enhancement Program (STEP) is attempting to fulfill these objectives.)

As with many studies most of the recommendations of the fish biologists' "Umpqua River Study" of 1946 were not followed. One beneficial aspect of the study has remained. Numbers of certain species and populations have continued to be counted over Winchester Dam. Some interesting comparisons taken from the "Progress Report 1991-1992 of the North Umpqua River Fish Management Plan," are listed below:

	WILD RUN AVERAGES	
POPULATION	PAST 47-YEAR RUN (46-92)	PAST 15-YEAR RUN (78-92)
Summer steelhead	3,469	4,614
Winter steelhead	7,253	6,936
Spring chinook	5,513	5,688
Fall chinook	148	168
Coho	1,069	941

The past 15 year average contains the counts of the recent drought years. It is true that the coho averages are down compared with the numbers that went up back in the early 1900's, but today's North Umpqua coho problem is similar to the cutthroat and is going to take some creativity to solve. I would recommend distributing coho eggs and planting STEP coho fry in Fall Creek in Little River to help furnish the existing cutthroat population in that creek with feed. If former fish biologists and commercial netters on the Umpqua River are right, more of the cutthroat trout in Fall Creek will live, smolt up and become sea-run, plus coho will survive and contribute to the fishery. If this works, make Fall Creek accessible once again to the coho and sea-run trout, and let nature take over.

In support of the above proposal, I refer to the plantings of coho fry in Sutherlin Creek, which has resulted in 300 to 800 coho smolts being trapped coming down. Also, cutthroat trout smolts have been trapped. This past year, when no coho had been planted and the trap was operated, only 2 cutthroat came down versus larger numbers when coho fry were available as feed. According to oral reports from old timers and written testimony by fish biologists in early Game Commission Reports, the cutthroat trout were spawn and fry eaters of salmon, especially coho since they used the small streams frequented by cutthroat.

Return to top of page.

OREGON COASTAL SALMON RESTORATION INITIATIVE

Draft Plan Comment Form

Your thoughts about the salmon restoration initiative are important. Please use this form to provide your comments or, if you wish, send comments and questions in a separate document to: Salmon Plan Review, Capitol Building, Salem, OR 97310 -- no later than November 1, 1996.

Which communication briefings did you attend?
[ ] Astoria [ ] Coos Bay [ ] Gold Beach [ ] Grants Pass [ ] Newport [ ] Portland

[X] Roseburg [ ] Tillamook

How did you learn about these briefings?
[X] Notice in mail [ ] Media

[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Voluntary approach.
- Recognizing a need before it is too late.

Please list what you like the least about the draft plan.

- Implementation of legislation on agriculture on private lands early on.
- Reducing coho smolt release - agriculture has been very successful in livestock genetic crossing.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Need more information to ask questions - cost, timing, etc.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Seek cooperation among my ranch friends.
- Continue improving riparian areas on our ranch.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

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[ ] Notice in mail [ ] Media

[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Not a helluva lot.

Please list what you like the least about the draft plan.

- I don't see where anybody but the Greenies are going to have anything to say in this program.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- I have 35 years experience on the Nehalem system and also have studied the predator> problem for the past 10 years but I see very little mentioned about it in this plan.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- You must listen to the people that have been out there and seen the problem. I see a lot of suggestions but no solutions. We have proven several times predation is the number one problem (birds) and we have solved this problem with good returns at NF Hatchery but we feel nobody wants to look at the issue, especially ODF&W staff above the local biologist.

Return to top of page.

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Please list what you like best about the draft plan.

- The concept of local participation to meet the specific circumstances of the local environment. (See also, "Additional Comment.")

Please list what you like the least about the draft plan.

- See "Additional Comments."

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- The briefing presented only generalities of the plan. I am in agreement with those generalities, but it will require a conscientious and determined pursuit of specific actions for them to be achieved. I had expected that the briefing would have included at least some discussion of specific programs.

Return to top of page.

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How did you learn about these briefings?
[ ] Notice in mail [ ] Media

[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- It appears that something is trying to be done but it may be too late.

Please list what you like the least about the draft plan.

- Lack of input from people who sports fish and know the kinds of problems that go on on in the fishery once the adults come back to spawn.

Please list questions you have that were not answered during the briefing or in the draft plan.

- Where is the enforcement going to come from?

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

- Be happy to be a member of a watershed council.

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

- Close the streams above Tidewater.
- Monitor the adult fishery closely.
- Stop the waste from farms.
- This spring I was on gravel bars on three of the five rivers in the Tillamook watershed and found many stranded smolts in pools that dried up this summer. Called the ODFW and was told they couldn't be bothered.

Stop removing gravel from the gravel bars! Every year gravel is removed. This does not let the stream perform properly, it changes nature.

Return to top of page.

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[ ] Plan Summary [X] Word of Mouth [ ] Other: _____

Please list what you like best about the draft plan.

- Refer to the extra sheets.
- Not enough space for my writing.

Please list what you like the least about the draft plan.

Please list questions you have that were not answered during the briefing or in the draft plan.

How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

Please list additional comments, ideas or suggestions. (Attach additional sheets if necessary).

Return to top of page.

1. Please list what you like best about the draft plan.

   Maybe it will allow the Salmon to go up the river and streams to spawn without being harassed by thousands of fisherman and predators.

2. Please list what you like least about the draft plan.

   To many high paid officials. Not enough just good common sense. When there is a problem and you cannot fix it due to some higher up restriction that prevents you from solving the problem thats not good common sense.

3. Please list questions you have that were not answered during the briefing or the draft plan.

   There was to many questions from the large group. Most the same.

4. How can you, your business, your organization or agency best contribute to the Coastal Salmon Restoration Initiative?

   As a retired small farmer times are tough, but I'm still willing to help.

5. Please list additional comments, ideas or suggestions.
   ATTITUDE

   Only one person at the top of it. Some who knows what the Truth is. Not a person to shake your hand then belt you over the head with more laws and restrictions. If measure 38 passes expect very little hope for a good attitude from the landowners.

   Attitude is most important thing of all, its more important than facts. It is more important than the past, than education, than money, than circumstances, than failures, than success, than what other people think or say or do.

   It is more important than appearance, giftedness or skill. It will make or break a company or government, a church, or a home.

   The remarkable thing is we have a choice everyday regarding the attitude we will embrace every day.

   We cannot change our past, cannot change the fact that people will say and act in a certain way. The only thing we have is our attitude and the attitude we get for the projects.

Return to top of page.

FACTORS RESPONSIBLE FOR THE DECLINE IN SALMON ABUNDANCE AND DISTRIBUTION IN THE PACIFIC NORTHWEST

MAJOR FACTORS

Agriculture 1, 2, 4, 5, 6, 8, 9, 10, 18, 21, 22	**Fishing** 16, 19
Dams 9, 11, 18	**Forestry** 1, 2, 4, 6, 7, 10, 21, 22
Drought 9, 10	**Urbanization** 1, 3, 5, 6, 7, 8, 9, 10, 11, 21, 22

POTENTIALLY IMPORTANT FACTORS *

Gravel Harvest 6	**Hatchery Fish Interference** 19, 20
Irrigation 9, 12	**Poor Ocean Conditions** 13, 14, 15, 16
Bycatch Mortality 16, 19 (salmon killed during fishing for other species)	**Illegal Fishing** 16, 19

MINOR FACTORS

Bird Predation 17	**Marine Mammal Predation** 16, 17

Components Of The Factors Causing Salmon Decline

1. Loss of Streamside Vegetation and Functions	14. Altered Ocean Currents and Flow
2. Pesticide Exposure	15. Decreased Food Abundance
3. Industrial Pollutants Exposure	16. Reduced Numbers of Adults Reaching Their Spawning Grounds
4. Increased Amount of Sediment Entering Streams	17. Reduced Numbers of Young Fish Making It To The Sea
5. Stream Straightening and Channelizing	18. Barriers Preventing Salmon From Migrating Upstream or Downstream
6. Habitat Destruction	19. Loss of Genetic Integrity and Diversity
7. Decreased Amount Of Large Logs In Streams And Loss of Deep Pools and Channel Form	20. Competition Between Hatchery and Wild Fish
8. Filling of The Side Channels of Streams	21. Forest Fragmentation
9. Reduced Fresh Water Flow In Rivers and Streams	22. Estuary Degradation
10. Exposure to Abnormal Temperatures	
11. Habitat Area Loss	
12. Lack of Screening of Water Diversion Canals to Keep Fish Out	
13. Reduced Upwelling	

* Insufficient data exists for an appropriate assessment of magnitude.

Table based on studies of rivers in Western Oregon and Northern California. Adapted with permission by Pacific States Marine Fisheries Commission from Status and Future of Salmon of Western Oregon and Northern California: Overview of Findings and Options by Botkin, Cummins, Dunne, Regier, Simpson, Sobel, and Talbot. For a copy send $17 to The Center for the Study of the Environment, P.O. Box 6945, Santa Barbara, CA 93160.

Return to top of page.

WHERE ARE THE SALMON, WHEN?

GENERALIZED LIFE HISTORY PATTERNS OF SALMON, STEELHEAD, AND TROUT IN THE PACIFIC NORTHWEST*

	ADULTS RETURN TO STREAMS FROM OCEAN	SPAWNING LOCATION	EGGS IN GRAVEL**	YOUNG IN STREAM	FRESHWATER HABITAT	YOUNG MIGRATE DOWNSTREAM	TIME SPENT IN ESTUARY	TIME SPENT IN OCEAN	ADULT WEIGHT (AVG)
COHO	Oct-Jan	coastal streams, shallow tributaries	Oct-May	1+ years	tributaries, main stem side channels, slack water	Mar-July (2nd year)	few days-month *(This wrong-we found up to 3 months)*	2 years	5-20 lb (8)
CHUM	Sept-Jan	coastal rivers and streams, lower reaches	Sept-Mar	days-weeks	little time spent in freshwater	shortly after young leave gravel	7-14 days	2.5-3 years	8-12 lb (10)
CHINOOK **Spring run** **Summer run** **Fall run**	Jan-July June-mid Aug Aug-March	main stem -- large and small rivers	July-Jan Sept-Nov Sept-Mar	1+ year 1+ year 3 - 7 months	main stem -- large and small rivers	Mar-July (2nd year) Spring (2nd year) April-June (2nd year)	days-months *(Wrong again, migration is in Aug & Sept)*	2-5 years	10-20 lb (15) 10-30 lb (14) 15-40 lb
CUTTHROAT (Coastal-Sea Run)	July-Dec	tiny tributaries of coastal streams	Dec-July	1-3 years (2 avg)	tributaries	Mar-June (of 2nd-4th yr)	less than a month	0.5-1 year	0.5-4 lb (1)
PINK	July-Oct	main stem of large and small streams, tributaries, lower reaches	Aug-Jan	days-weeks	little time spent in freshwater	Dec-May	few days	1.5 years	3-10 lb (4)
SOCKEYE	July-Aug	streams, usually near lakes	Aug-April	1-3 years	lakes	April-June (of 2nd-4th yr)	few days	1-4 years	3-8 lb (6)
STEELHEAD*** Winter Spring Summer	Nov-June Feb-June June-Oct (Columbia) April-Nov (coastal)	tributaries and small streams and rivers	Feb-July Dec-May Feb-June Feb-July	1-3 years 1-2 years 1-2 years 1-3 years	tributaries	Mar-Jun (2nd-5th yr) Spg & Sum (3rd-4th yr) Mar-Jun (3rd-5th yr) Mar-Jun (2nd-5th yr)	less than a month *(Wrong again, 3 months is better time)*	1-4 years	5-28 (8) 5-20 5-30 (8)

* There is much variation in life history patterns--each stream system having fish with their own unique timing and patterns of spawning, growth, and migration. You may want to ask a local biologist about the specific patterns of the fish in your streams and update this chart for your area.

** The eggs of most salmonids take 2-5 months to hatch at the preferred water temperature of 50-55 degrees F.

*** Steelhead and cutthroat trout, unlike salmon, may not die after spawning. They can migrate back out to sea and return in later years to spawn again.

Adapted by Pacific State Marine Fisheries Commission. Sources: Ocean Ecology of North Pacific Salmonids, Bill Pearcy, University of Washington Press, 1992 Fisheries Handbook of Engineering Requirements and Biological Criteria, Milo Bell, U.S. Army Corps of Engineers, 1986; Adopting A Stream; A Northwest Handbook, Steve Yates, Adopt-A Stream Foundation, 1988.

Return to top of page

Go to Peer Review:

- OSU
- American Fish Society
- Invited
- Federal Agencies
- Industry
- Conservation/Environmental Group
- Public Comments

Go to home page

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