November 14, 2003

Ms. Lisa Croft
Federal Caucus Coordinator
525 NE Oregon ST, Suite 500
Portland, OR 97232-2778

Dear Ms. Croft:

Here are comments by the Oregon Department of Fish and Wildlife (ODFW) on the draft *Endangered Species Act 2003 Check-In Report for the Federal Columbia River Power System* (2003 Check-In Report). These comments have been reviewed and incorporate suggested revisions by the Oregon Governor's Natural Resources Office.

We only include comments on those sections for which we have specific suggestions for change or requests for further explanation. Many of these comments are the same as those made by Oregon on the draft *2000 Biological Opinion on Operation of the Federal Columbia River Power System* (draft Biological Opinion), the draft *Endangered Species Act Implementation Plan for the Federal Columbia River Power System* (2002-2006 draft Implementation Plan), and the draft *Endangered Species Act 2003/2003-2007 Implementation Plan for the Federal Columbia River Power System* (2003/2003-2007 draft Implementation Plan). We reiterate those comments in this letter because they are relevant to the 2003 Check-In Report and it does not appear to incorporate or otherwise address them.

As a general observation, the report falls short of meeting our expectations in two important ways. First, as the report acknowledges, the Bonneville Power Administration, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation (Action Agencies) have yet to resolve issues hindering the implementation of several important actions required in the Reasonable and Prudent Alternative of NOAA Fisheries Biological Opinion for the Federal Columbia River Power System. These actions include large scale regional programs such as the development of detailed habitat improvement plans for priority subbasins, securing adequate funding to ensure the implementation of critical programs and projects, and completion of a comprehensive research, monitoring and evaluation plan. However, although the Action Agencies and NOAA Fisheries deem these actions as critical to the successful implementation of the Biological Opinion, the Action Agencies do not describe whether and how they will resolve these constraints. They also fail to explain how these, and other, setbacks affect their ability to satisfy the requirements of the Biological Opinion.

Second, although the report generally describes the current status of listed salmon and steelhead, the Action Agencies make no effort to relate the actions they have taken to date to specific improvements in the survival of these stocks. Evaluations of whether and how listed fish are responding to the programs and projects implemented by the Action Agencies are crucial to assessing success or failure.

We understand that NOAA Fisheries intends to issue a draft "findings letter" by December 15, 2003 that assesses whether and how the programs implemented by the Action Agencies satisfy requirements of the Biological Opinion. We look forward to that assessment and expect it will help inform the region whether efforts by the Action Agencies have been adequate to fully implement the Biological Opinion and ensure the survival and recovery of listed salmon and steelhead.

Report 2: Pilot Studies, Research and Monitoring Projects Update

Section 2. Progress Summary and Conclusion

As Oregon recommended in its comments on the 2002-2006 and 2003/2003-2007 draft Implementation Plans, the development and implementation of a comprehensive RM&E plan as called for under the 2000 Biological Opinion and All-H Strategy should not only involve the Action Agencies, NOAA Fisheries, and other federal agencies, but also the states and the tribes as full and equal partners. As partners the federal government, states and tribes would retain their autonomous decision-making authorities, but would have equal access to the collaborative process used to develop the RM&E plan. This is warranted because the success of a comprehensive plan depends on collecting and assessing information from a wide array of federal, state, and tribal agencies and other experts in the region. Their commitment to and confidence in the results of the plan would be greatly enhanced if they played a collaborative and significant role in its development and implementation. In Oregon, collaboration should include coordination with the Oregon Watershed Enhancement Board and other state agencies involved in the current effort to complete a comprehensive monitoring and evaluation program for the Oregon Plan for Salmon and Watersheds.

The RM&E plan should also rely on independent scientific review for quality control. This would encourage recruitment and involvement of experts with specific knowledge and experience that may not necessarily reside in federal, state, or tribal institutions. These experts also may bring to the development process scientific perspectives that differ from those of federal, state or tribal staff.

In previous comments Oregon has recommended that research, monitoring and evaluation be conducted as part of a biological decision analysis. In the context of implementing measures in the Biological Opinion, a biological decision analysis would quantitatively evaluate the likely response of listed fish to the full set of actions implemented by the Action Agencies using criteria for survival and recovery and a full range of uncertainties about assumptions on past stock performance, effectiveness of management actions, future climate, etc[1].

Decision analysis is widely applied in business administration and is commonly used in natural resources management[2,3]. There are several reasons why it is a particularly appropriate approach to evaluating the likely response of listed fish to the set of actions implemented by the Action Agencies.

1. It is systematic, allowing one to break into its component parts the complex problem of determining how actions are affecting listed fish, and how actions can be improved if responses are falling short of expectations.
2. It explicitly takes uncertainties into account, enabling one to incorporate uncertainties about assumptions on past stock performance, effectiveness of management actions, future climate, etc. into analyses.
3. It helps determine how uncertainties affect the projected likelihood of survival and recovery of listed fish given the actions taken.
4. It helps identify priorities for research aimed at guiding management actions.

The biological decision analysis should have four components.

1. The first component should be an evaluation of different assumptions (hypotheses) about how environmental factors affected past performance of listed fish (retrospective analysis).
2. The second component should be projections of the performance of listed fish given the actions taken and combinations of assumptions about past stock performance, effectiveness of management actions, future climate, etc. (prospective analysis).
3. The third component should be an estimation of the likelihood of meeting the performance standards for survival and recovery of listed fish given the actions taken, based on projections of performance over a range of assumptions (risk analysis).
4. The fourth component should be an assessment of the likelihood that certain key assumptions are true based on a comprehensive evaluation of evidence for and against each assumption (weight of evidence analysis).

This approach to performance evaluation is robust, anticipates the decisions necessary to assess success, and incorporates uncertainty into the decision-making process. It can also incorporate,

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[1] Peters, C.N., and D.R. Marmorek. 2001. Application of decision analysis to evaluate recovery actions for threatened Snake River spring and summer chinook salmon (*Oncorhynchus tshawytscha*). Canadian Journal of Fisheries and Aquatic Sciences 58:2431-2446.
[2] Clemen, R.T. 1996. Making Hard Decisions: An Introduction to Decision Analysis. 2nd edition. Duxbury Press, Wadsworth Publ. Co., Belmont, California.
[3] Peterman, R.M., and J.L.Anderson. 1999. Decision analysis: a method for taking uncertainties into account in risk-based decision making. Human and Ecological Risk Assessment 5(2):231-244.

as a fundamental element of monitoring and evaluation, analyses of how survival of fish populations destined for spawning areas upstream from projects in the Federal Columbia River Power System compares to survival of similar populations destined for spawning areas downstream from many or all of those projects. These analyses are ongoing and are critical to our efforts to evaluate whether measures in the Biological Opinion are resulting in responses by listed salmon and steelhead sufficient to meet performance standards. Using population growth rate (lambda), smolt-to-adult returns (SARs) and other metrics that measure performance over all or a large portion of the life cycle requires that analyses be able to tease out mortality associated with the federal hydropower system experience from other sources of mortality. Comparisons of these metrics between fish populations destined for upstream versus downstream spawning areas enables us to help sort out ocean effects on survival from the effects of spill, flow, and other freshwater factors. Analyses to date have shown a strong and predictive relationship between flow, spill, ocean conditions (measured as a common-year effect) and SARs. In fact, analyses have shown that in years of high flow and spill, the difference between SARs of upstream- and downstream-destined populations is less.

The Action Agencies should acknowledge and endorse in this report developing and implementing research, monitoring and evaluation programs as part of a biological decision analysis. They should also commit to adequate funding for evaluations that include comparisons of survival between upstream- and downstream-destined populations. Including these approaches in a RM&E plan will enable the Action Agencies to take credit for differences their actions have made to the likelihood of meeting survival and recovery goals for listed fish.

Report 4: Status of Biological and Physical Performance Standards

Section 3: Performance Measures and Standards

Subsection 3.1: Tier 1 - Population Level Performance Standards Update

Population abundance is an appropriate population-based (Tier 1) performance standard (p. 4-4). However, as Oregon pointed out in its comments on the draft Biological Opinion and the 2002-2006 and 2003/2003-2007 draft Implementation Plans, population abundance standards should be defined based on an entire time series of data, including pre-1980 data. By not including years before construction of the hydropower system, and by including stock status projections for future years, analyses under-estimate the decline in population abundance coinciding with construction of the hydropower system, and over-estimate the probability of survival and recovery. For example, if the time series from 1970-1999 for Snake River stocks were evaluated, then a much steeper slope in the rate of decline coupled with increased variability would likely produce much higher extinction probabilities than using the 1996-2000 time series.

Using the 1996-2000 time series sets the standard too low because recent population abundance has been depressed relative to historical population abundance. For this reason, it is also inappropriate to use the five-year geometric mean at the date of the 2000 Biological Opinion as the standard for the "test" NOAA Fisheries describes for evaluation at the end of five and eight years.

Population growth rate (lambda) is an appropriate population-based (Tier 1) performance standard (p. 4-4) because it measures the cumulative effects of management actions on a population over the entire life cycle. It is appropriate to place a high priority on collecting information to facilitate the use of lambda (p. 4-4). However, as Oregon pointed out in its comments on the draft Biological Opinion and the 2002-2006 and 2003/2003-2007 draft Implementation Plans, this standard should be calculated using the entire time series of data available, including pre-1980 data. Recent (post 1980) measures of lambda reflect accelerating declines in population growth rates and thus underestimate the true population growth behavior. Also, lambda is supposed to represent growth for a stable population, which in fact is not the condition of listed populations. The standard must be defined with this fact in mind.

As Oregon pointed out in its comments on the draft Biological Opinion and the 2002-2006 and 2003/2003-2007 draft Implementation Plans, Tier 1 performance standards should also include several population measures not listed in the draft Check-In Report. These include estimates of the probability of extinction for each population, and measures of genetic diversity, life history diversity, and geographic distribution. Incorporating this other information will better describe the true current state of these stocks.

Subsection 3.2: Tier 2 Life-Stage Performance Standards Update

Subsection 3.2.1: Hydrosystem. As Oregon pointed out in its comments on the draft Biological Opinion and the 2002-2006 and 2003/2003-2007 draft Implementation Plans, survival rates of adult and juvenile salmon and steelhead are an appropriate life-stage (Tier 2) performance standard. However, the performance rates for juvenile fish listed in Table 4-2 (p. 4-5) should be recalculated to include delayed mortality of juvenile fish caused by the Federal Columbia River Power System. The Action Agencies discuss the potential for delayed mortality associated with transportation (p. 4-5), but not with in-river passage. The rates in Table 4-2 only measure survival of juvenile fish to points downstream from Bonneville Dam, even though the assumption of no delayed mortality is not consistent with the direct evidence that delayed mortality exists and the indirect evidence that delayed mortality is substantial[4,5,6].

[4] Marmorek, D.R., and C.N. Peters (editors). 1998. Plan for Analyzing and Testing Hypotheses (PATH): Final Report for Fiscal Year 1998. December 16, 1998. Compiled and edited by ESSA Technologies Ltd., Vancouver, B.C., Canada. 263pp.

[5] Bouwes, N., H. Schaller, P. Budy, C. Petrosky, R. Kiefer, P. Wilson, O. Langness, E. Weber, and E. Tinus. 1999. An analysis of differential delayed mortality experienced by stream-type chinook salmon of the Snake River. ODFW Technical Report. October 4, 1999.

[6] Schaller, H.A., C.E. Petrosky, and O.P. Langness. 1999. Contrasting patterns of productivity and survival rates for stream-type chinook salmon (Oncorhynchus tshawytscha) populations of the Snake and Columbia River. Canadian Journal of Fisheries and Aquatic Sciences 56:1031-1045.

If it is assumed no delayed mortality occurs, analyses under-estimate mortality related to the federal hydropower system, and consequently significantly lower the full mitigation standard. This, in turn, underestimates the survival improvement needed to meet the standard.

Tier 2 performance standards should also include smolt-to-adult return rates (SARs). The standard for SARs should be sufficient to ensure population survival and recovery. The standard should also relate SARs (or recruit per spawner residuals) of similar populations that originate in various locations throughout the Columbia Basin to account for effects of good or poor ocean survival on the populations.

For fish that are not transported and migrate in-river, evidence for delayed hydropower system mortality in relation to hydropower system experience can be evaluated by comparing the overall SARs of fish that were not collected and bypassed around the dams with those fish that were collected/bypassed one or more times. We would expect direct survival rates for collected and bypassed fish to be generally higher, because a portion of the fish that are not collected go through the turbines. However, the apparent direct survival benefits of the bypass route of passage do not always translate well into SARs. This information indicates that although direct mortality may be lowest for fish that are bypassed, there must be some delayed effect to explain the patterns of overall survival.

Subsection 3.3: Tiers 3 & 4 – Update on Performance Measures/Standards for Habitat

Table 4-4 (p. 4-8) basically describes and characterizes habitat actions according to programmatic level performance standards. However, these standards do not indicate if habitat actions address critical conditions that limit production and abundance. We anticipate working with the federal agencies through the Willamette-Lower Columbia and Interior Columbia Technical Recovery Teams to develop Tier 3 performance standards.

Subsection 3.4: Tiers 3 & 4 – Update on Performance Measures/Standards for Hatcheries

As Oregon pointed out in its comments on the 2002-2006 and 2003/2003-2007 draft Implementation Plans, “population thresholds” and “harvest effects” are not appropriate biological performance standards related to hatcheries (Table 4-5, p. 4-10). Hatchery performance should be judged as described in Hatchery and Genetic Management Plans developed for specific programs, not on whether a population attains a viable abundance threshold. Viability is a function of many factors, including effects of hatchery operations. It is not now, nor may it ever be, possible to isolate and measure the effects of hatchery operations, or any other individual risk factor, on the viability of individual populations.

Harvest effects on populations are not an appropriate hatchery performance measure. Harvest effects result from fishery management decisions, not hatchery management decisions. Harvest rates are set in the context of impacts on listed stocks, not on the number and stock of hatchery mitigation fish produced. Harvest effects are more appropriately judged using performance standards for fisheries.

The Action Agencies should explain the basis for the hatchery fish straying rates proposed in Table 4-5. In a truly collaborative management context, federal decisions should be fully informed by the legal, policy and scientific perspectives of the states and tribes. Straying rates should be set based on a scientifically rigorous and transparent risk assessment in which all parties have confidence.

Report 6: Update on Adult Population Trends, Population Growth Rate, and Hydrosystem Survival

Section 2: Progress Summary

As Oregon stated in its comments on Report 4, Subsection 3.1, it may not be appropriate to compare status of stocks today to status in the 1990s. Stocks were severely depressed in the 1990s, making such comparisons overly optimistic. The "relative productiveness" of returns (p. 6-1) should be in relation to returns from a broader time period, including years prior to completion of the hydropower system.

Section 3: Adult Returns and ESU Performance

As stated above, comparisons of adult returns to the 1991-2000 average (Figures 6-2, 6-3, and 6-4) may not be appropriate. Also, these figures include hatchery and naturally spawning fish, provide no specific stock information, and show only counts at dams, not returns to spawning grounds. Not all hatchery populations are included in all ESUs. Also, for those hatchery populations in an ESU, not all are currently ESA-listed. Inclusion of hatchery fish that are not part of an ESU or are not ESA-listed could mask trends in returns of listed fish. The same is true for including non-listed stocks. Finally, the number of fish returning to spawning grounds is of critical importance to the growth of listed stocks, not returns to dams along the way.

Figure 6-1 (p. 6-2) indicates that based on ocean conditions, it would be most appropriate to compare recent returns to those from approximately 1950 to 1975, when ocean conditions were similar. This would reduce bias in comparisons due to differential ocean conditions, and focus comparisons more on the effects of the hydropower system.

The time periods shown in Figures 6-5 through 6-17 should be extended as far back as possible for the reasons stated above.

As we stated in our comments on Report 4, Subsection 3.1, comparisons in Table 6-1 (p. 6-12 and 6-13) using the 1996-2000 geometric mean as the base sets the standard too low because population abundance was depressed relative to historical population abundance. This is also true for Figures 6-18 and 6-19 (p. 6-14).

As we also stated in our comments on Report 4, Subsection 3.1, comparisons of lambda (p. 6-15) should be calculated using the entire time series of data available, including pre-1980 data. Recent (post 1980) measures of lambda reflect accelerating declines in population growth rates and thus underestimate the true population growth behavior.

Section 4: Salmon and Steelhead Survival through the Federal Hydrosystem

As we stated in our comments on Report 4, Subsection 3.2, the performance rates for juvenile fish should include delayed mortality of juvenile fish caused by the Federal Columbia River Power System. The assumption of no delayed mortality is not consistent with the direct evidence that delayed mortality exists and the indirect evidence that delayed mortality is substantial. Assuming no delayed mortality under-estimates mortality related to the federal hydropower system, and consequently significantly lowers the full mitigation standard. This, in turn, underestimates the survival improvement needed to meet the standard.

Tier 2 performance standards should also include SARs. The standard for SARs should be sufficient to ensure population survival and recovery. The standard should also relate SARs (or recruit per spawner residuals) of similar populations that originate in various locations throughout the Columbia Basin to account for effects of good or poor ocean survival on the populations. As we described in our comments on Report 2, Section 2, ongoing analyses of how survival of fish populations destined for spawning areas upstream from projects in the Federal Columbia River Power System compares to survival of populations destined for spawning areas downstream from many or all of those projects is enabling us to sort out ocean effects on survival from spill, flow, and other freshwater effects. This will enable the Action Agencies to take credit for differences their actions have made to the likelihood of meeting survival and recovery goals for listed fish.

Thank you for the opportunity to review and provide comments on the draft report. Please refer any questions you have to Mr. Tony Nigro at (503) 657-2000, ext. 416, tony.nigro@state.or.us.

Sincerely,

(Original with original Signature on Agency letterhead sent 11/14/03 by standard post.)

Ed Bowles
Fish Division Administrator

Cc: Lindsay Ball, Jim Brown, Melinda Eden, Jim Myron