



**Formal Comments of Trout Unlimited National  
to the U.S. Army Corps of Engineers'  
Draft Lower Snake River Juvenile Salmon Migration  
Feasibility Report/Environmental Impact Statement**

**Submitted by  
Trout Unlimited Western Conservation Office  
Portland, Oregon  
April 28, 2000**



April 27, 2000

U.S. Army Corps of Engineers, Walla Walla District  
Attention: Lower Snake River Study  
210 North Third Avenue  
Walla Walla, WA 99362-1876

**RE: U.S. Corps of Engineers Draft Lower Snake River Juvenile Salmon Migration Feasibility Report / Environmental Impact Statement**

To Whom It May Concern:

Trout Unlimited appreciates the opportunity to comment regarding U.S. Corps of Engineers (Corps) Draft Lower Snake River Juvenile Salmon Migration Feasibility Report / Environmental Impact Statement (DEIS). Trout Unlimited (TU) is a national conservation organization dedicated to the protection and enhancement of wild salmon and steelhead and the habitats upon which they depend. TU has over 105,000 members nationwide, including over 8,000 that reside in Idaho, Montana, Oregon, and Washington.

As written, TU believes that the Corps DEIS is inadequate, and provides an inaccurate picture of the alternatives being considered in terms of both the best available scientific and information available. Because of this fact, the picture painted regarding the potential short- and long-term biological and economic benefits associated with each of the hydrosystem alternatives is skewed. In order to correct these deficiencies and provide a more detailed analysis for public review, we submit the following comments.

**SCIENCE**

Since the publication of the DEIS in December 1999, there has been considerable debate regarding the science related to Snake River salmon and steelhead, the extinction risks posed to these magnificent fish, and the efficacy of dam breaching as a key component of a long-term recovery strategy. As this debate has progressed, two facts have become increasingly clear. First, these stocks are at a considerable risk of extinction both in the near- and long-term. Second, breaching the dams, while admittedly not a "silver bullet," is nevertheless a vitally important and necessary step in any long-term recovery strategy for Snake River salmon.

In July of 1999, Trout Unlimited published a report by Dr. Phil Mundy that projected a time of extinction for Snake River spring/summer chinook. Dr. Mundy projected that, unless current conditions change for the better, these fish could be extinct by 2017. Thus far, this gloomy projection is corroborated by continued declines in index stock spawning ground counts. The DEIS, which relied on the Cumulative Risk Initiative to analyze risk of extinction, provided more optimistic estimates. However, in response to criticism of the CRI analysis by Dr. Gretchen Oosterhout and tribal, state, and federal biologists, it now appears that updated CRI estimates are more in line with Dr. Mundy's work.

While much has been made of the statement that the breaching of the dams is not a "silver bullet," the evolution of the science since the release of the DEIS confirms earlier work by the PATH scientists and others that it is a necessary step in any recovery program. The CRI acknowledges that for fall chinook, there is a stark choice between breaching the dams or breaking commitments made to Native Americans in treaties signed in 1855. For spring/summer chinook, it is clear that changes must also be made in habitat management and the operation of hatcheries, but without breaching, the restoration of naturally sustainable populations in numbers sufficient to satisfy federal ESA and treaty obligations is unattainable.

The following paragraphs represent Trout Unlimited's comments to the primary scientific component of the DEIS, the Anadromous Fish Appendix.

**The Anadromous Fish Appendix and the observations and conclusions included therein must be amended to reflect TU comments and critiques regarding the National Marine Fisheries Service's Cumulative Risk Initiative.**

1 Trout Unlimited has several substantive comments regarding the National Marine Fisheries Service's (NMFS) Cumulative Risk Initiative (CRI). Many of these comments were first brought forward in a letter submitted by Trout Unlimited (TU), American Rivers, and Earthjustice (1/25/00), and in a report entitled "Seven Questions about the Cumulative Risk Initiative," (Seven Questions Report) prepared for the above-listed groups by Dr. Gretchen R. Oosterhout of Decision Matrix, Inc. (1/23/00). We have summarized the seven substantive comments in the section below, and submit the entire document into the record.

As evidenced by recent presentations by Northwest Fisheries Science Center staff members at a CRI workshop (3/29/00), NMFS has responded to some of the conservation group questions regarding the CRI. However, the DEIS' Anadromous Fish Appendix (A-Fish) must be amended to reflect and incorporate these concerns. The CRI is based on models that are currently flawed, and therefore the conclusions drawn from the application of such models in A-Fish must be reassessed and reconfigured where necessary. In sum, the Seven Questions Report emphasized the following shortcomings:

- 2 | • The CRI focuses extinction risk analyses on an analytical quasi-extinction threshold of one fish – an analysis threshold which is lower than values typically used in extinction risk assessment, and which causes the risks of extinction to be underestimated. This is one of the least conservative thresholds they could have used, and has enormous legal and policy implications regarding how much time we really have to save these fish.
- 3 | • The CRI models ignore or downplay population and environmental trends, focusing instead on average population growth rates despite the fact that Snake River populations have been declining at an accelerating pace since the early 1980s.
- 4 | • The CRI models were revised in early-2000 to ignore post-1990 population information. The NMFS response to the Seven Questions Report indicates that the agency agrees that utilizing the most recent data is important, and that analyses will be updated in a timely manner.
- 5 | • The CRI relies on a questionable sensitivity analysis method which sources they cite say should not be used; the chosen method is more appropriate for ranking variables according to the way mortality is allocated than for sensitivity analysis.
- 6 | • The CRI underestimates post-Bonneville mortality, and over-estimates first year mortality instead of using values from available literature and PATH.
- 7 | • None of the CRI reports mention model validation, or offer explanations regarding how choices were made for parameter values.
- 8 | • Despite the fact that the CRI is supposed to be a risk initiative, it uses almost no standard risk assessment tools.

9 | In addition to the issues raised in Seven Questions Document, TU would like to emphasize some of the other errors in the CRI that could impact the conclusions reached in the current version of A-Fish. First, there are a number of areas in which the CRI models have made assumptions where data is available to better focus such assumptions. For instance, A-Fish conclusions were based on models that assume both males and females produce eggs, thus doubling the estimated number of offspring. We understand that this mistake has been recognized and the models adjusted; any part of A-Fish and affected by these changes should be amended.

10 | In the same vein, the CRI models- both during initial model runs and currently – assume that all age fish have the same fecundities. However, younger fish produce fewer eggs while older fish produce more, and while the CRI models assume that half the spawners are always female, reality and available information dictate that approximately 10% of 3-year old and about 67% of 5-year old spawners are female. The CRI should be re-calibrated to better incorporate what we do know about Snake River salmon and steelhead, and ensure that A-Fish conclusions are based on the best available data and not mere generalities with no basis in fact.

11 Second, the CRI models used, and continue to use, smolt-to-adult ocean survival data for Oregon coho to estimate survival through the estuary and early ocean for spring/summer chinook. The CRI also uses Alaska sockeye data to calculate adult ocean survival for these fish. However, it has been widely recognized for many years that ocean conditions have tended to be bad for Columbia River Basin salmon. By using the rosier Oregon coho and Alaska sockeye ocean survival numbers, the CRI models produce smolt-to-adult return rates of over 3%, which is much greater than has been seen since before the Snake River dams went in. The Corps of Engineers and NMFS in the A-Fish Appendix cite SARs of 1% for the same period. The CRI thus overestimates adult survival by more than threefold. Obviously, this affects the estimated dam-related mortality impacts and undervalues the benefits of major changes to the hydro system.

12 Third, the CRI uses two models, the Dennis model to estimate extinction risk and the Leslie Matrix model to estimate benefits of various management actions across the four H's. Obviously,  $\lambda$  from the Dennis model should be very nearly the same as  $\lambda$  in the Leslie matrix, yet because of these and other computational and analytical errors,  $\lambda$ s are 18.4% greater in the matrix models used to evaluate management options, than they are in the extinction models. That means that the Leslie matrix results used for evaluating management options in A-Fish assume the populations have been increasing, on average, at 12.7% per year, when corrected models that NMFS was already using before A-Fish came out indicated that these populations have actually been declining at 13.7% per year.

13 Fourth, the CRI models assume that egg-to-smolt survival is less than 2% for most of these populations, when PATH and many other studies have shown that egg-to-smolt survival for Snake River spring/summer chinook should be around 5%—more than twice as high. This is one reason why they conclude the best opportunity for saving these fish is to improve spawning and rearing habitat quality. The federal caucus claims that improving smolt migration survival would have negligible effect on population growth, claiming in A-Fish that the CRI models show that an increase in smolt migration survival of 5-10% would produce no more than 1% increase in average population growth rate. Again, doing this analysis with the corrected models available on their website shows that this migration survival increase which they say would have negligible benefit could actually produce an increase in  $\lambda$  of 4.15%. That would get them 1/3 of the way to the improvement NMFS says is needed. Table 1 shows discrepancies between what A-Fish claims the federal models show and what the latest versions of the models actually show.

**Table 1. What NMFS says (in A-Fish) their models show, and what their current models actually show.**

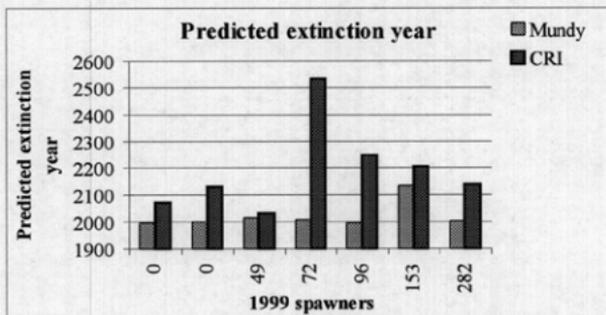
Variable	What NMFS says their models show	What the latest CRI models actually show (12-13-99extinct.xls and 12-13-99matrix.xls)
Increase in annual population growth rate required to reduce probability of extinction to 10% in 100 years	12% (A-Fish paper, p. 72) 14% (A-Fish p. A8-13) 14% required for recovery (A-Fish p. A8-21)	67%
$\lambda$ (average annual population growth rate)	1.127 (A-Fish p. A8-18): populations are growing an average of 12.7% per year	0.987: populations are declining at 13% per year
Smolt-to-adult survival	1% (A-Fish, p. A2-7)	3%

Finally, while the CRI has emphasized the use of simple models using the most reliable data, they have discounted the model developed by Dr. Phil Mundy, which used probably the most reliable and consistent data available, spawning ground counts, to develop an extinction time frame. However, given the latest spawning ground counts, and comparing Dr. Mundy's model with the more elaborate CRI analysis, it seems that the CRI emphasis on simplicity may have some merit.

In the analyses on which the DEIS and A-Fish papers were based, they were predicting extinctions in 2049 for Marsh Creek, and 2316 for Sulphur Creek. Mundy's model predicted that Sulphur Creek and Marsh Creek populations would drop below 15 sometime around 2001 and 1998 (respectively). They both hit zero in 1999. Table 2 compares the Mundy model predictions with the latest predictions from the CRI (note that they are different from the predictions on which A-Fish was based, but not in any systematic way; that is because NMFS has acknowledged that there are errors in the most recent models). Also shown in Figure 1 is a graphical comparison of the same thing.

**Table 2. Comparison of Mundy's predictions and the CRI's predictions.**

Population	1999 spawners	Mundy predicted year of extinction (<=15 spawners)	Latest (12-13-99extinct.xls) CRI predicted year of "extinction" (<=1 spawner)
Marsh	0	1998	2073
Johnson	49	2015	2397
Imnaha	282	2003	2140
Bear Valley/Elk Creek	72	2007	2534
Poverty	153	2134	2205
Sulphur	0	2001	2130
Minam	96	1998	2248



**Figure 1. Predicted year of extinction and current spawner counts, Mundy's model versus the CRI.**

**The Anadromous Fish Appendix must better highlight PATH habitat analyses, and clearly delineate prospective population gains from habitat protection and restoration activities in the Snake River Basin.**

In addition to our comments regarding the CRI, we would like to point out A-Fish appears to be very selective regarding its application of the information and analyses contained in the Plan for Analyzing and Testing Hypotheses (PATH) report. A-Fish systematically utilized PATH analyses for the hatchery, harvest, and hydropower H's, and yet either selectively presents or disregards much of the analyses applicable to habitat. This oversight, whether intentional or not, is troubling. The PATH habitat analyses – both retrospective and sensitivity – are key to ascertaining the possible contributions habitat protection and restoration can make to Snake River spring and summer chinook recovery.

The PATH retrospective analysis on freshwater habitat assumed that changes in the quantity and quality of freshwater spawning and rearing (FSR) and pre-spawning (PS) habitat may have contributed to production declines in some index streams. However, the retrospective analysis concluded that changes in adult-to-smolt survival – presumable related to the quantity and quality of FSR habitat – do not appear to be of great enough magnitude alone to explain post-1974 spring and summer chinook index stock declines. Simply put, PATH findings emphasize that aggregate Snake River spring/summer chinook productivity and survival does not appear to have declined since the mid-1970s.

The PATH sensitivity analyses regarding the possible benefits of habitat improvement measures – with all other Hs held constant (i.e., status quo) – found little appreciable change in meeting the survival and recovery standards. In other words, there was little bang for the restoration buck in terms of increasing egg-to-smolt survival. Only in streams with the most degraded habitat was there a measurable change in probabilities of meeting the survival and recovery thresholds, and then only for small sub-populations. These changes were much less than those achievable for the entire ESU if the four lower Snake River dams were removed.

The next version of A-Fish must better highlight the PATH habitat analyses. Based on PATH habitat information, as well as information prepared by Idaho Department of Fish & Game (1998), a sobering recovery picture is painted regarding a salmon and steelhead recovery program based on, or centered around, habitat protection in the Snake River basin. The IDFG information comparing five sub-populations in varying habitat conditions indicate similar dramatic declines since the 1960s, no matter the condition of the habitat. Further, the A-Fish evaluation of the biological effectiveness of habitat restoration must emphasize the fact that possible recovery outcomes will be influenced by the fact that watershed, aquatic, and ecological responses to such activities and management prescriptions often manifest only after long periods of time. Therefore, while such measures are important and will eventually contribute to overall recovery goals, they may not provide immediate or even short-term gains towards meeting survival goals or appreciably reducing extinction risks.

## ECONOMICS

Trout Unlimited recently contracted with ECONorthwest to review the Economic Appendix to the DEIS. In sum, the major findings of the ECONorthwest Report include the following:

- 16 | 1. **The Corps analyses failed to compensate for the out-dated and flawed method it chose to use, and thereby failed to describe adequately either the role the Snake River plays in today's Pacific Northwest economy or the role it could play without the four dams.** The resulting Corp's analysis underestimates the economic benefits of bypassing the dams, overestimates the economic costs of bypass, and ignores the impact of the bypass on the region's quality of life.
- 17 | 2. **The Corps has ignored fundamental economic principles in its analysis, such as how to account for the economic subsidies received by those who benefit from the dams.** The bypass offers an opportunity to improve economic efficiencies in local, regional and national economies. The current uses of the dams encourage economically inefficient barge transportation and electricity consumption, uses that receive subsidies for federal taxpayers. Some of these uses also impose large costs on others such as Native American, recreational, and commercial fishing interests. Bypassing the dams will create an opportunity to correct these inefficiencies and improve local and regional economic performance by enhancing aspects of the regional landscape that support, and will continue to support, robust economic growth.
- 18 | 3. **The DEIS Economic Appendix does not consider the speed with which the economy's inherent recuperative powers, together with prudent public policies, could quickly and affordably ameliorate the initial negative economic impacts of bypassing these dams.** Bypassing the dams probably will cause some job losses in several sectors of the local economy, including irrigated agriculture and the ports in the Lewiston area. Some of these sectors, like agriculture, face declining employment regardless of the fate of the dams because of broader changes in the economy including increased productivity and a shift away from employment in resource-intensive industries. Accordingly, infrastructure for agriculture and businesses in the Lewiston area to sustain existing economies or, alternatively, development of well-designed programs to help any displaced workers increase their long-run job prospects. The overall size of the negative impacts from dam bypass is well within the range addressed by current federally-funded investment and mitigation programs, making strategies to address the negative impacts of bypass feasible and affordable, as well as sensible.

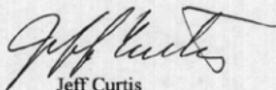
The entire ECONorthwest Report is attached to our comments, and includes specific comments pertaining to the overall method the Corp's used in its analysis, and a discussion of each economic sector analyzed in the DEIS.

## CONCLUSION

In light of what we know in terms of both the science and economics of Snake River salmon recovery, Trout Unlimited supports alternative 4 in the DEIS, and encourages the Corps in the Final EIS to identify a preferred alternative that calls for the "partial removal of the four lower Snake dams." This is not a decision our organization takes lightly. We have spent an immense amount of time in recent years evaluating what must be done to prevent Snake River salmon and steelhead from going extinct. We have also tried to present a cogent long-term economic strategy (see the attached report, ECONorthwest – An Economic Strategy for the Lower Snake River). In light of the drastic extinction risks facing Snake River fish, the time for action is now. Combined with correlative management actions regarding harvest, hatcheries, and federal and private lands habitat, breaching the four lower Snake River dams will give salmon and steelhead the greatest possible chance for recovery.

Trout Unlimited appreciates the opportunity to comment regarding the economic aspects of the Corp's lower Snake River Juvenile Salmon Migration Feasibility Report / DEIS. We believe the region deserves the best available information in order to properly analyze the various alternatives, and feel that the Corps must incorporate our suggestions in order to provide a more thorough and balanced scientific and economic discussion in the final document. Please don't hesitate to call us if you have any questions.

Sincerely,



Jeff Curtis

Western Conservation Director