



**Independent Scientific Review Panel**  
for the Northwest Power & Conservation Council  
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**Memorandum (ISRP 2008-5)**

**April 22, 2008**

**To:** Tony Grover, Fish and Wildlife Division Director, Northwest Power and Conservation Council

**From:** Eric Loudenslager, ISRP Chair

**Subject:** Final Review of Results Report and February 2008 Project Response for the *Mainstem, Middle Fork, John Day Rivers Fish Habitat Enhancement Project* (1984-021-00)

## **Background**

The *Mainstem and Middle Fork John Day Rivers Fish Habitat Enhancement Project* (1984-021-00) has been active since 1984. At the time of the ISRP review<sup>1</sup> of this project for the 2007-2009 project solicitation, the project had been ongoing for 22 years. The ISRP commented that “after 22 years, the project should be showing changes in characteristics such as abundance of fishes, bank stability, and stream-width relationships.” The ISRP recommended that “it is time for a comprehensive review of this project’s biological results. One year of funding should provide time for this activity, while continuing ongoing field projects. Future funding should be contingent on completion of a satisfactory document.” The Council recommended to Bonneville that the “sponsor should complete [an] accomplishments report as called for in the ISRP recommendation.”

On March 6, 2007 the sponsor provided the Northwest Power and Conservation Council a document entitled *Second Response to ISRP Review of BPA Project 1984-021-00: Mainstem, Middle Fork, John Day Rivers Fish Habitat Enhancement Project*. This document was to serve as a comprehensive accomplishments report. The Council requested a review of this report by the ISRP. In an April 19, 2007 memo to the Council,<sup>2</sup> the ISRP concluded that the sponsor made a conscientious effort to address our specific concerns, but the document did not serve the function of a comprehensive analysis of project results. The document also made it clear to the ISRP that sufficient data for a much needed review and analysis probably did not exist.

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<sup>1</sup> ISRP Final Review of Proposals submitted for Fiscal Years 2007-2009 Funding through the Columbia River Basin Fish and Wildlife Program: [www.nwcouncil.org/library/isrp/isrp2006-6.htm](http://www.nwcouncil.org/library/isrp/isrp2006-6.htm).

<sup>2</sup> See ISRP 2008-5a: [www.nwcouncil.org/library/isrp/isrp2008-5a.htm](http://www.nwcouncil.org/library/isrp/isrp2008-5a.htm).

Recognizing both the limitations of the existing data and the pressing need to evaluate the effectiveness of past project actions, the ISRP recommended that a comprehensive report was still needed. The ISRP suggested that the report should at least:

1. Identify locations where restoration has occurred;
2. The locations of these sites relative to spawning and rearing areas for the focal species;
3. Identify all the monitoring data that may exist for each of these sites;
4. Analyze and interpret the data;
5. Outline monitoring for the future.

The Council (May 9, 2007 email from Mark Fritsch) requested that the sponsors address the first three questions but did not seek a response to questions four and five. The Council, however, suggested that a response to ISRP M&E concerns about the project would be desirable.

On February 20, 2008 the project sponsor provided a report intended to cover the first three elements recommended by the ISRP. The ISRP was directed to review the sponsor's response to these questions. This memo is the ISRP's reply to the Council directive. We provide specific responses to each of the first three questions, general comments on the project as a whole based on the information that has been provided to us in the course of all ISRP reviews of this project, and a final recommendation.

### **Question 1: Identify locations where restoration has occurred**

The sponsors have addressed this question only partially. They provided GIS-generated maps showing distributions of steelhead and spring Chinook as well as locations of riparian fencing projects for each major subbasin (North, Middle, and South Forks) and the upper and lower mainstems of the John Day. Since 1984, at the inception of the project, the sponsors have employed a number of different restoration methods besides riparian fencing such as watergaps, spring developments, willow and cottonwood planting, bank stabilization, and a major floodplain restoration project on the North Fork. Unfortunately, only riparian fencing projects were mapped. Furthermore, it is unclear if the reaches that were fenced were those most in need of restoration or how they related to other habitat conditions that might be limiting. Other restoration projects are listed by subbasin (within the John Day subbasin), but not related to habitat features or constraints.

### **Question 2: The locations of these sites relative to spawning and rearing areas for the focal species**

Subbasin-wide distributions of spring Chinook and steelhead were shown on the maps. While this information is useful, rearing and spawning areas were not provided, unless one assumes that wherever the fish were distributed is in fact rearing habitat. Thus, the location of restoration sites relative to spawning and rearing habitat is unknown and, therefore, question two was not addressed satisfactorily. Figure 1 would be improved by labeling the subbasins to make interpretation of the maps easier.

Only two restoration sites (Lake Creek on the Lower Mainstem of the John Day River; Fox/Cottonwood Creek on North Fork of the John Day River) were specifically related to steelhead redds but the maps do not show their location. If data on redds from locations other than restoration sites are available, it would be useful to include them on the maps. The location of a spring Chinook redd site mapped in 1997 also is not shown.

### **Question 3: Identify all the monitoring data that may exist for each of these sites**

Question three was addressed partially, but more detailed information on monitoring data could have been provided. An appendix table showing monitoring activity on a year-by-year basis would be useful to see how frequently various metrics had been obtained. Monitoring data that exist are primarily photopoints at restoration sites. The sites are re-photographed periodically to assess changes in riparian vegetation following fencing, and could be qualitatively analyzed. However, the project summary (chronology; page 18) does not provide a history of how often the various sites were photographed. Periodic checks on the integrity of the fencing are being done, but it is not clear how frequently this effort is undertaken. Information on channel changes following enhancement actions is available for a few selected locations. Bank stability on the Upper Mainstem John Day River was monitored specifically after an ISRP request.

It appears that actual biological information on fish densities and habitat use is limited and not linked to specific habitat improvements. The narrative indicates steelhead redd counts are available from only two locations. Redd monitoring has been very sporadic and seems to have been done on Fox Creek only in 1994 and 1995. Spring Chinook redds were assessed only in 1997 and the narrative does not state where redd monitoring was done. Juvenile salmon and steelhead rearing densities and fish community structure also seem to have been assessed sporadically. Determination of fish species composition by electrofishing was attempted on Mountain Creek on the Lower Mainstem John Day River, beginning in 1994 with an intended monitoring interval of five years. That effort apparently met with limited success. A fish passage barrier that blocked 47.75 miles of a steelhead “distribution stream” on Canyon Creek (Upper Mainstem John Day River) was corrected in 1988 but no monitoring appears to have been done to see if the fish actually moved into the habitat upstream of the removed barrier.

### **General Comments**

Unfortunately the sponsors were not asked to address the last two questions:

4. Analyze and interpret the data;
5. Outline monitoring for the future.

In its FY 2007-09 funding recommendation, the Council concluded that M&E should be dealt with as a programmatic issue (May 9, 2007 email from Mark Fritsch to project sponsors) and effectiveness monitoring of individual habitat projects should be de-emphasized because it is expensive and has not produced acceptable results. They instructed sponsors to focus M&E efforts on project compliance. To deal with the M&E

issue, the Council chose to “*focus program efforts for at least the near term on a limited set of subbasin habitat monitoring and evaluation projects and on a set of broader regional projects to evaluate the effectiveness of on-the-ground habitat activities, improvements in habitat attributes and trends in fish and wildlife populations and habitat conditions.*” With this perspective in mind, the ISRP offers some general comments on the John Day Fish Habitat project based on information provided in previous reviews.

Answers to questions four and five are critical for the ISRP to make a determination about the scientific adequacy of the project. We recognize, however, that the sponsors were only asked to address the first three questions posed by the ISRP and transmitted to the sponsors by the Council. Based on our previous reviews, however, the ISRP reiterates its conclusion that sufficient and appropriate quantitative data on project effectiveness do not appear to have been collected, nor is there an adequate experimental design to fully address questions four and five. As the sponsors point out, however, a mitigating factor is that proposed M&E projects in the John Day that could shed light on project effectiveness were not funded. Despite the lack of funding for M&E, there are other data sources for John Day aquatic habitat and fish abundance, including reports by ODFW and CBFWA, as well as journal papers and graduate theses from faculty and students at Oregon State University. This information doesn't seem to be incorporated into the project sponsor's submittals. In the end, after this iterative review process, we are little farther along than the initial proposal review in understanding benefits to fish from John Day habitat enhancement actions. In the future, the Integrated Status and Effectiveness Monitoring Program's Bridge Creek project should also have some data that applies to the John Day Subbasin, especially on dealing with channel incision.

### *Escapement Objectives*

It is difficult to assess at this point in time whether habitat enhancement activities in the John Day basin have contributed to the escapement goals for spring Chinook and summer steelhead. The escapement objectives for the subbasin, as identified in the State of the Fish and Wildlife Resources in the Columbia River Basin (CBFWA Status of the Resource (SOTR; [www.cbfwa.org/sotr/](http://www.cbfwa.org/sotr/))) are 20,000 jack and adult spring Chinook and 49,000 steelhead returning to the mouth of the John Day River. The geometric mean of the estimated number of spawning spring Chinook is 2901 and of returning steelhead subbasin-wide is 6552 since 1980. Summer low flows from irrigation diversions, instream habitat complexity, passage barriers from diversions, riparian habitat degradation from livestock grazing, and sediment, temperature, pH, and dissolved oxygen are believed to limit the abundance of both these focal species. Specific improvements in habitat metrics to yield an increase in capacity or productivity for the focal species are also not established.

Stream reaches that have been fenced to promote recovery of riparian habitat clearly appear to have improved conditions over stream reaches with heavily grazed banks. However, even if there is improvement at these stream reaches, on a subbasin-wide scale there may not be an over-all improvement in habitat features, for example, if conditions deteriorate at other locations. In fact, based on 1) the estimates of the spring Chinook and

summer steelhead adults returning to the John Day subbasin (Figures 1 and 2; data obtained from Status of the Resource; [www.cbfwa.org/sotr/](http://www.cbfwa.org/sotr/)); 2) stock-recruit relationships for spring Chinook that suggest that the subbasin is near carrying capacity for this species (from Project #199801600 cited in the March 2007 report); and 3) numbers of emigrating smolts (presented as Table 1 in the March 2007 report), it is not apparent that the plethora of habitat projects in the John Day River subbasin undertaken through the Northwest Power and Conservation Council Fish and Wildlife Program and other programs like the OWEB and Pacific Salmon Fund have collectively increased the quantity or quality of habitat in a manner that has resulted in increased smolt production. There is little empirical information or analysis that have yet to suggest that habitat conditions subbasin-wide will be quantitatively or qualitatively improved or that more fish will be returning over the next 20 years as a consequence of pursuing the project tasks as the sponsors have in the past.

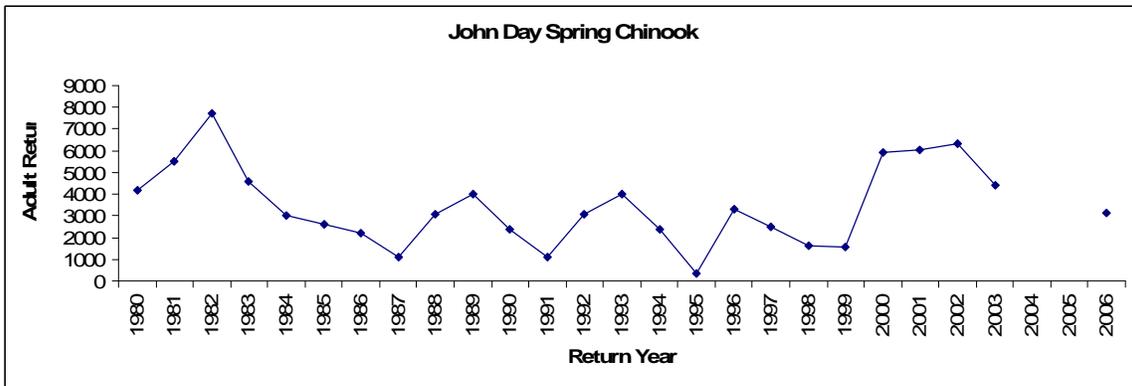


Figure 1. Estimates of the total John Day spring Chinook population (CBFWA – STOR)

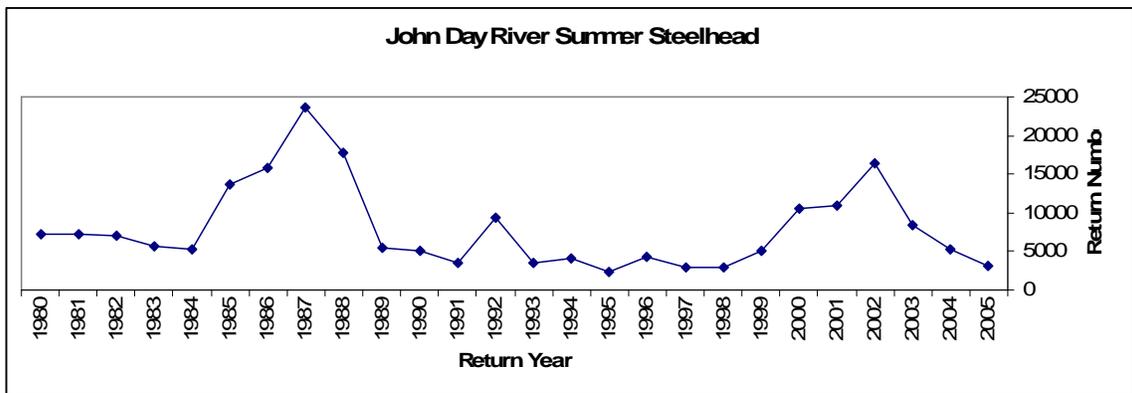


Figure 2. Estimates of the John Day River summer steelhead population

Many factors may confound detection of the contribution of habitat improvement projects to spring Chinook and steelhead escapement:

- Habitat may be degraded in other portions of the subbasin faster than it is recovering from riparian fencing and other enhancement actions

- The sites where improvements have been undertaken may not be effective in leading to improved abundance and productivity of the focal species
- Other limiting factors may have critical thresholds that are restraining the benefits to fish from being realized
- The magnitude of the problem is not being adequately addressed by installing between 2.5 to 16 miles of fencing annually
- Out-of-basin factors such as ocean conditions or mainstem mortality may interfere with detecting the effects of habitat improvement projects on target species

These factors were not discussed comprehensively by the sponsors in any of the reports reviewed by the ISRP, and we encourage careful consideration of them in interpretation of available data. Discerning whether or not the project is improving habitat on a reach scale, the subbasin scale, or whether the effort is being masked by other factors is important to know for adaptive management.

#### *John Day Retrospective Report*

Because project #198402100 is one of the longest ongoing projects funded under the Fish and Wildlife Program and a significant amount of work has been done, the ISRP believes that the John Day subbasin co-managers and stakeholders would benefit from a comprehensive retrospective review of 1) the effects of habitat enhancement actions on aquatic habitat conditions and 2) the abundance and productivity of the subbasin focal species. The report would help provide guidance on the future implementation of restoration strategies in the John Day subbasin.

The ISRP also urges that the leaders for this project work to use information from other Oregon Department of Fish and Wildlife projects and other co-managers within the John Day subbasin. Information on implementation and effectiveness of livestock exclusion, other enhancement actions at their disposal, and subbasin-wide habitat and fish population status should be used to aid in evaluating what has worked and what has not as a consequence of implementing project #198402100.

#### *Integrated Monitoring and Evaluation Program*

The ISRP concurs with the need for an integrated M&E program across the Columbia River Basin where watersheds representing major physiographic classes of basins are intensively monitored. Information on effectiveness of restoration actions gained from these intensively monitored watersheds could inform other less well-monitored, but comparable, projects throughout the basin. Because the John Day does not maintain a run of hatchery fish or major dams, and extensive habitat restoration has already been implemented, the John Day could be a good basin to demonstrate the potential benefits to fish of habitat enhancement work. Results from the John Day could be contrasted with what CSMEP proposes in the Lemhi basin. In any event, some form of basin-wide population monitoring is the most effective way to assess habitat project success. The Fish and Wildlife Program emphasizes protecting and enhancing biodiversity including life history and population diversity. Achievement of this objective could require some

sort of subbasin-scale monitoring of population abundance and productivity. The ISRP encourages the project sponsor to coordinate their activities with ongoing research efforts to examine the effects of habitat restoration on fish populations, e.g., the Bridge Creek beaver reintroduction study (ISEMP), and to apply the lessons learned from these experiments to other areas of the subbasin.

**ISRP Recommendation: Does Not Meet Scientific Criteria**

This recommendation ensued because of inadequate results reporting, apparent inadequate monitoring, and the lack of data collected in the past. The latter two factors resulted, in part, from the lack of adequate financial support for monitoring in the John Day subbasin. The Council, moreover, did not request that the sponsors answer questions 4 and 5 which were critical to a determination of whether the project was showing benefits or might show benefits in the future. Even so, the sponsors could have provided more comprehensive answers to questions 1 through 3 based on available data, which was requested by the Council. If the project is redesigned and reconfigured to account for advances in restoration science on landscape scale approaches and understanding of cumulative effects, the John Day could be a suitable candidate for an Intensively Monitored watershed in the long term.

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