



Independent Scientific Review Panel

for the Northwest Power & Conservation Council
851 SW 6th Avenue, Suite 1100
Portland, Oregon 97204
www.nwcouncil.org/fw/isrp

Memorandum (ISRP 2012-4)

March 12, 2012

To: Joan Dukes, Chair, Northwest Power and Conservation Council

From: Rich Alldredge, ISRP Chair

Subject: Second Follow-up Review of the Yakama Nations' Project, *Rock Creek Fish and Habitat Assessment* (#2007-156-00)

Background

At the Council's February 3, 2012 request, the ISRP reviewed a revised proposal for the Yakama Nation's Project, *Rock Creek Fish and Habitat Assessment* (#2007-156-00). The revised proposal is available at www.cbfish.org/Proposal.mvc/Summary/ISRP2011-2007-156-00. The proposal states that its primary goals are to gather information on the anadromous salmonid populations' (steelhead, fall Chinook, and coho) status, assess habitat conditions, and identify factors limiting anadromous salmonid populations in the Rock Creek subbasin. A restoration plan for Rock Creek will be developed based on this scientific assessment.

This is the third ISRP review of this proposal. An original proposal was submitted and reviewed as part of the Categorical Review for Research, Monitoring and Evaluation and Artificial Production projects ([ISRP 2011-44B](#), pages 201-202). The ISRP found that proposal needed further detail to allow a complete review. The proposal was revised and submitted for review in May 2011. The ISRP found that although detailed information was provided for the steelhead population survey and PIT-tag interrogation work, similar details were needed for many other project components ([ISRP 2011-19](#)). The ISRP specifically requested more information on the Ecosystem Diagnosis and Treatment (EDT) assessment; plans for restoration; pathogen and temperature issues; protection of riparian plantings; plans to address cattle grazing and non-native fish; and study design and methods.

The ISRP's review of the revised proposal follows below, organized by the topics listed above from the previous review.

Recommendation

Meets Scientific Review Criteria - in Part (Qualified)

In Part: Additional genetic work described in Deliverable 3 is not justified.

Qualifications: The project sponsors should:

1. Produce a report incorporating updated project results and the results of the geomorphic analysis. This report should then be reviewed by the ISRP in 2012 or early 2013. The report should detail findings from Deliverable 2 (Assessment of juvenile salmonid distribution, abundance, life history strategies, and growth), Deliverable 6 (Assessment of habitat conditions and limiting factors), and Deliverable 7 (Identification of restoration project sites and actions) and address the question of whether the potential for significant improvement in steelhead status may, or may not, exist.
2. Outline a strategy for incorporating the results of various studies into an integrated management plan with provisions for incorporating new information as it becomes available.
3. Precede restoration actions with field-verified assessments that the actions address factors that are known to limit the abundance and diversity of native fish species. See the details below in the comment section.

Comments

The revised proposal does not effectively address many of the comments and queries previously made by the ISRP. Also, with the exception of the PIT-tagging activities, the analysis and discussion of project accomplishments from 2007 to date, in the form presented, are inadequate to meet basic scientific standards. However, despite those significant scientific concerns, the ISRP reacted positively to the logic and overall conclusions presented in the Problem Statement of the revised proposal. Reviewers think there are a number of reasons (discussed below) why project activities should proceed as described in this proposal through 2012, coincident with the upcoming geomorphic analysis funded by the Salmon Recovery Funding Board (SFRB). A report incorporating updated project results and the results of the geomorphic analysis would then be reviewed by the ISRP in 2012 or early 2013. That report should detail findings from Deliverable 2 (Assessment of juvenile salmonid distribution, abundance, life history strategies, and growth), Deliverable 6 (Assessment of habitat conditions and limiting factors), and Deliverable 7 (Identification of restoration project sites and actions) and address the question of whether the potential for significant improvement in steelhead status may, or may not, exist.

If the former conclusion is reached the report should include a prioritized list of actions to protect, restore, and enhance stream reaches. The ISRP recommends that continued

implementation of restoration and monitoring should be conditional on that review. The project proponents should outline a strategy for incorporating the results of studies into an integrated management plan with provisions for incorporating new information as it becomes available, and restoration actions should be preceded by field-verified assessments that the actions address factors known to limit the abundance and diversity of native fish species.

In the Problem Statement, the statement is made that, “The Yakama Nation believes that there is still substantial uncertainty regarding which reaches and actions are appropriate for targeted habitat restoration work.” Moreover, a review committee that evaluated the installation of engineered log jams and enhancement of pool habitat considered those actions to be premature at this time. The ISRP agrees, and also agrees with the sponsors that the “SRFB funded (geomorphology) project will collect data that is complementary to this BPA project and both assessments will lead to a more complete understanding of limiting factors, habitat processes, and appropriate restoration actions.” Also significant is that “in addition, under this BPA project, initial investigations are also beginning to assess upper watershed forested areas (and headwater meadow conditions in particular) and their role in watershed hydrology and condition.”

The overall project seems nicely positioned to produce positive results, if it is well carried out. There seems to be synergy building with the BPA-funded effort, the geomorphologic study, collaboration with USGS in the PIT-tagging work, and 303b-related interests from landowners. The Rock Creek ecosystem has experienced significant degradation but from a limited number of causative factors. In spite of existing habitat impairment, steelhead seem to be successfully carrying out their freshwater life history phases in available habitat.

The revised proposal has generally reasonable and appropriate objectives with the exception of the genetic analysis proposed as Deliverable 3. It is not clear why five years of sample collections are needed for the genetic analysis. The rationale for the sampling, analysis, and interpretation are not provided. Previous results have shown the distinctiveness of the steelhead, according to the proponent’s text. Why is more work required, and what are the incremental benefits of such work over what has already been established? The reference now is to the CRITFC genetics lab recommendation, without justification. Reviewers believe the genetics analysis will probably not provide insight into competition between Rock Creek steelhead and hatchery or natural strays from other locations. It might enhance understanding of introgression, but how introgression is interpreted and translated into management actions is not discussed. That is, if introgression is documented how can one tell if it is more or less than typical rates? How can one tell if introgression is increasing or decreasing the productivity of the Rock Creek population? Other than the mid-Columbia steelhead status review, which identifies the Rock Creek watershed as critical habitat and suggests productive potential, little evidence has yet been provided to establish the status of the steelhead population, the habitat, or restoration goals. Oregon has a mid-Columbia steelhead recovery plan, but that document was not discussed in the proposal, nor did reviewers see reference to a Washington mid-Columbia steelhead ESU recovery plan.

The sponsors realize they will need to increase hyporheic water storage and riparian shade to successfully rehabilitate the system, as is being done in the nearby Tucannon system, and the reviewers concur. Simply constructing instream structures, as was done elsewhere in the past, will not suffice.

Based upon the descriptions (in Major Accomplishments and elsewhere in the proposal) of information gained from 2007 to date, it is clear that improvement is needed in the analysis of data sets and the matter needs to be given higher priority. A few specific comments are given here to provide feedback to the sponsors.

The portrayal of juvenile steelhead and coho salmon abundance data gathered to date was hampered by its expression in terms of numbers “per meter,” presumably per linear meter of stream. This does not allow comparison between study sites with differing widths and is meaningless unless stream width is identified so should be converted to a density basis (usually number per 100 square meters). What does this abundance data from pools only indicate about what are preferred habitats? The narrative seems to express frustration that juvenile numbers vary significantly from year to year and states “this annual variability in fish distribution illustrates the need for an additional year of study to understand these populations in Rock Creek.” Reviewers agree but point out that the relatively high inter-annual variability that characterizes freestone streams such as Rock Creek provides critical information that allows biologists, if they are also monitoring the correct habitat attributes, to assess causes of the variability and thus identify what factors are limiting.

Presentation of PIT-tagging results suffers from lack of proofreading. For example, Tables 2 and 3 are identical. Figure 6 purports to show steelhead outmigrating from Rock Creek from late March through mid May, but Figure 6 is a land ownership map.

The current proposal is short on ecological interpretation of past results. For example, the presence/ absence data presented in Table 4 would be more interpretable if it were in numerical densities or something similar.

1. Results of EDT work and outline of restoration and protection work

Reach-specific EDT modeling has taken place, as evidenced by the coho and steelhead analyses displayed in Tables 7 and 8. These tables indicate that some of the attributes that are being studied in this project (e.g., pathogens, flow, competition with other species) warrant low protection and restoration priority. While other attributes that are not explicitly mentioned in the proposal (e.g., food, and [for steelhead] obstructions) merit a high strategic priority. The ISRP assumes that the ongoing effort to revegetate riparian areas will improve streambank stability and temperature conditions, but how the other parts of the project will address the attributes rating medium or high priority in the EDT model is unclear, nor is justification given for working on topics that rated low priority in the model. The implication is that the previous EDT model has not been populated with enough high quality data to provide believable results, but the proposal (under Objective 4) stops short of saying this. If EDT analyses are performed

again, using more complete data from field surveys, what will be the strategy for refocusing on high priority items such as food limitation?

With major drying of the lower portion of the basin to the point of intermittency, and a statement of how historical information points to the much higher flows of the past, how can it be that flows are not a major factor in Tables 7 and 8 as indicated by EDT? How well does EDT deal with these intermittency issues and the issue of instream flows? Is irrigated agriculture withdrawing flow from Rock Creek? Reviewers are not confident that enough focus has been placed on the water quantity issue and understanding the extent to which it might have major impacts on steelhead production.

2. Clarification of the pathogen and temperature issue

No additional justification was presented for the pathogen study. Based on the results presented, the pathogen issue appears to be of less importance than other potential limiting factors. However, this is a minor component of the work and will contribute to understanding the status of fish health. It is worth asking how the data will be interpreted, how it will be incorporated into restoration decisions and priorities, and how it will be integrated with other fish health work being conducted elsewhere.

Only a brief summary of water temperature was presented although it is clear that the data have been, and continue to be, gathered. There seem to be severe difficulties in getting even very basic datasets analyzed. In Table 6, the information on temperatures exceeding 20°C is useful in a general way but would be more useful if tied specifically to salmonid or other species habitat suitability conditions.

The temperature results addressed only maximum daily temperatures; however, it would have been very helpful to include information on diel change, particularly during the warmest part of the summer. In general salmonid fishes tend to avoid habitats where the thermal regime is highly variable, and knowing where the temperature swings are most extreme over a diurnal cycle might help to identify areas of thermal stress.

3. Steps to protect riparian plantings

The revised proposal states that fencing will be used to protect plantings from ungulate browsing. No mention is made of measures to control damage due to beaver activities. This issue should be considered and resolved during contracting.

Plans to produce seedlings of a variety of species were advanced. However, no information was presented on performance of plantings to date. Monitoring the success of riparian revegetation projects is critical. Project proponents should develop post-treatment monitoring plans that quantify the 5-10 year survival of planted seedlings so the efficacy of protection methods (fences, tubing, etc.) can be determined.

4. *Grazing and non-native fish*

Livestock grazing was not addressed. The impact of any grazing must be addressed before restoration activities involving re-vegetation proceed. If grazing control measures are put in place, they should be monitored relative to the location of restoration projects. Cattle can severely damage young seedlings if riparian grazing is uncontrolled, so it will be important to verify that cattle have been excluded from replanted areas.

Non-native fish were only briefly mentioned indicating that they would be evaluated in the future. Future expansion of non-native fishes should be monitored as stated in the proposal, particularly if obstructions to upstream movement (Table 8) are removed.

5. *Details on study design, sampling techniques, and analytical methods*

The revised proposal contains some information on sampling design and analytical methods. Justification for sample sizes is missing or inadequate in the study design. Justification of the adequacy of sample sizes should be included as part of the report requested by the ISRP above that contains details of findings from deliverable 2.

If it has not already been done a comprehensive post-restoration habitat effectiveness monitoring program should be drawn up, including a time commitment for surveys and evaluations. Over half of the total project budget is for “on the ground restoration projects,” and it will be important to learn from successes and failures. The ISRP is encouraged that project proponents are using CHaMP protocols for habitat restoration monitoring, so that data from Rock Creek can be compared to other sites in the region that have adopted the CHaMP survey protocols.