



Independent Scientific Review Panel

for the Northwest Power & Conservation Council

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Memorandum (ISRP 2012-1)

January 25, 2012

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

From: Rich Alldredge, ISRP Chair

Subject: Review of November 2011 response and revised proposal for the Confederated Tribes of the Warm Springs Reservation's Fish Accord project, *Monitoring Wild Populations of Spring Chinook Salmon (*Oncorhynchus tshawytscha*) and Summer Steelhead (*O. mykiss*) in Tributaries of the Lower Deschutes River within the Boundaries of The Confederated Tribes of the Warm Springs Reservation of Oregon (#2008-311-00)*

Background

At the Council's request, the ISRP reviewed a November 2011 response and revised proposal for the Confederated Tribes of the Warm Springs Reservation's Fish Accord project, *Monitoring Wild Populations of Spring Chinook Salmon (*Oncorhynchus tshawytscha*) and Summer Steelhead (*O. mykiss*) in Tributaries of the Lower Deschutes River within the Boundaries of the Confederated Tribes of the Warm Springs Reservation of Oregon (2008-311-00)*. This project was previously titled *Natural Production Monitoring and Management*.

This project is designed to monitor production of naturally produced spring Chinook salmon and steelhead in Reservation streams. Objectives include verification of species distribution, adult escapement, spawning surveys, juvenile outmigration and abundance and development of management strategies and goals. The ISRP reviewed earlier versions of this proposal: one in 2008, one in 2010, and two in 2011. See the most recent past review from May 2011 at [ISRP 2011-13](#).

Recommendation

Meets Scientific Review Criteria (Qualified)

In general the project proponents provide sufficient justification for collecting and analyzing information on juvenile abundance to assess stream capacity, outmigration abundance, and migration timing for juveniles and adults. Data collected will also allow a better description of spring Chinook diversity, adult abundance, and pre-spawning mortality.

Although the ISRP does not need to review any additional responses, the project should address the following ISRP suggestions in development of a final statement of work and implementation of the project:

- Existing data presented in Appendix A deserve further analyses to assist development of the decision framework and proposed activities.
- The proponents should identify hatchery and natural adults in areas upstream of the smolt traps and incorporate downstream harvests of their fish into the recruitment analysis.
- Justification for sampling 50 juveniles of each species each week should be provided. Why is sampling 50 fish sufficient, but not excessive?
- Rationale for the target goal for estimating trap efficiency presented on page 40 is not provided. Justification is necessary, including why 5% precision in Table 7 is the target.
- The proponents should develop a set of criteria for establishing when improvements in juvenile outmigration can be clearly linked to habitat restoration efforts.
- Although snorkel surveys have been described in good detail and methodological concerns with redd surveys have been addressed, it would be helpful to establish visibility criteria based on turbidity measurements that would be used to determine when snorkeling and redd surveys would be suspended.

More details on these and additional suggestions are provided in the ISRP comments below.

Summary Comments

This proposal includes many details in support of the proposed activities and provides a fairly comprehensive narrative. The proposal's eight listed objectives (although essentially tasks) identify reasonable activities in support of the project's overall objectives that are described in narrative form. Inclusion of additional staff is a step in the right direction.

The project proponents have done a good job of describing field methods and techniques to assure quality control. The ISRP appreciates the details given for field crew training – something often lacking in other proposals. The sampling methods, for example the modified Hankin-Reeves snorkel surveys, have been carefully considered and are appropriate to the project's setting and objectives. The proponents should identify hatchery and natural adults in areas upstream of the smolt traps and incorporate downstream harvests of their fish into the recruitment analysis.

The proponents have constructively used the ISRP comments, sought statistical advice, and modified sampling schemes to address the precision and bias of PIT tag assessments and sampling designs. Nevertheless, more information on the multiple regression analytical techniques proposed to evaluate the strength of fish abundance-habitat relationships would have

been helpful, as well as a better description of how data would be archived and eventually made available to others involved in similar restoration projects.

The management application of the data is clearer in this iteration of the proposal. The information will be essential to the ongoing habitat restoration under the Warm Springs Fish Accord proposal #2008-301-00 (see [ISRP 2011-27](#)), for both assessment of effectiveness and for developing restoration strategies. Objective 8 provides a framework for assessing monitoring data to guide management and is a valuable component of the project indicating that project results will have an impact.

The appendices summarizing past data were very illuminating, but the data already collected deserve further analyses to assist development of the decision framework and proposed activities. The data and analyses presented in Appendix A suggest that a closer look and further analysis is warranted. For example:

1. It is not clear if the data in the Figures includes both wild and hatchery fish – this must be clarified, and a separate analysis applied to each.
2. Figure A7 on adult Chinook and juveniles should be re-analyzed as Beverton-Holt recruitment curves with a focus on regimes, for example stratified by PDO shifts. If the relationship still appears linear this suggests the system is under-seeded, that is, not at capacity.
3. Figure A8 appears non-linear as it should if Beverton-Holt recruitment applies. This figure suggests capacity is ~ 1000 adults. A re-analyses into regimes of productivity could be informative. Fig A9 is a function of the number of spawners, and appears to show adult returns in the regime shifts as '77 to '89, '90 to '99, 2000-2004. The same pattern may exist for outmigrants. These data may already inform an estimate of allowable harvest (see Ricker 1975 Appendices) as well as assist in defining the limiting life stage for both species.

ISRP General Comments

The questions below were asked in our earlier reviews and the proponents have responded, demonstrating progress in all iterations. Our comments regarding the most recent response are provided below after each question.

1. What management decisions will these data inform?

Management objectives have not been entirely clarified in this iteration of the proposal. The proponents explain the escapement goal for wild spring Chinook of 1,377 fish was derived by the USFWS (Appendix C) and further state there is no escapement goal for steelhead. The proposal states that it is current Tribal policy that wild steelhead will not be harvested, but that this policy could change if the overall health of the steelhead population reaches a point where some harvest could be sustained. Have numerical thresholds for population abundance been established which will allow for some Tribal catch of wild steelhead?

2. Will the data, including PIT-tag data, be sufficiently precise to adequately manage risk and provide confidence in decisions made? Evidence of data adequacy should be provided.

Appendix B provides some statistical rationale for number of PIT-tagged fish released. The data will be used for juvenile survival rates both within and outside the Deschutes subbasin and should be useful additions to databases on this topic.

It is not clear what the ultimate value is for the effort at qualitative documentation of the species assemblage in one pool and one riffle section in each of the five lower reaches in the Warm Springs River. The justification that this will, “allow a comparison of the distribution richness of assemblages of fishes and may be useful in detecting presence of non-native species” is not compelling.

Justification for sampling 50 juveniles of each species each week should be provided. Why is sampling 50 fish sufficient, but not excessive?

The target goal presented on page 40 for estimating trap efficiency is not clear. Justification is necessary, including why 5% precision in Table 7 is the target.

3. Will the GRTS-based sampling design be adequate given the physical constraints in the study area?

The proponents did an excellent job of describing how they arrived at a method for sampling in the canyons, and the ISRP is comfortable with the technique that was selected. The proposal states that sampling will occur from June to September, and quite likely this sampling window will experience a significant decline in streamflow over summer. Hopefully fish visibility will not change so much that early summer surveys underestimate juvenile abundance, but with the quality assurance controls in place the visual technique seems quite sound.

ISRP Comments and Recommendation Specific to Each Objective

For continuity of the review discussion across numerous reviews, organization of the objectives below is based on earlier proposals and responses.

Project Goal 1. Continue and improve annual life stage monitoring of wild spring Chinook salmon and steelhead in the Warm Springs River Basin and Shitike Creek.

Objective A) Juvenile Outmigration Monitoring

ISRP 2011-13: Response Requested

The ISRP encourages project proponents to develop a set of criteria for establishing when improvements in juvenile outmigration can be clearly linked to habitat restoration efforts. It will be important to develop a protocol to partition restoration effects from other factors such as

cyclic weather changes (PDO regime shifts, *El Niño/La Niña* cycles) in order to measure restoration effectiveness.

PIT tagging and juvenile outmigration data will support life history and growth rate studies and include out-of-subbasin sampling. It is not entirely clear how the data will be used in cohort-run reconstruction for harvest management considerations.

Some details are missing in the length at age verification task. It is not clear how collection of scales will be randomized or why 50 fish of each species will be collected. The selected number of scales to be collected is not random; rather it is unknown until proportion of scale samples in each length group is known. It is not clear that the intense effort at age verification is warranted. Are the benefits worth the effort?

Objective B) Collect tissue samples for genetic analysis of *O. mykiss* in the Warm Springs River drainage

ISRP 2011-11: This objective was dropped from the project.

Objective C) Summer rearing snorkel surveys

ISRP 2011-13 - Response Requested

Snorkel and electrofishing surveys have been described in good detail. It would be helpful to establish visibility criteria based on turbidity measurements that would be used to determine when snorkeling surveys would be suspended.

Objective D) Spawning ground (redd) surveys

ISRP 2011-13: Response Requested

Methodological concerns were addressed, and a better description of the work was provided. Redd surveys have been expanded to the canyon reaches, and a method of comparing surveys in non-canyon reaches was presented. A method of comparing data from kayak and foot surveys was also developed. As with the snorkel surveys, it would be helpful to establish visibility criteria based on turbidity measurements that would be used to determine when redd surveys would be suspended.

Using a rotating panel design to identify redd distribution in multiple reaches is a good approach. Also, efforts at quality control of data collection are a positive feature of the redd enumeration effort.

Objective E) Enumerate adult escapement into Shitike Creek and the Warm Springs River

ISRP 2011-11: Meets Criteria

Objective F) Estimate harvest of Chinook salmon and Steelhead in the Deschutes Basin

ISRP 2011-11: Not Applicable

Project Goal 2. Provide management and co-management direction of the fisheries resources in the Deschutes River Basin

Objective A) Cooperate in Deschutes River Basin Fisheries Management Activities

ISRP 2011-11: Meets Criteria

Objective B) Provide co-management and assistance with fish handling at the Warm Springs National Fish Hatchery

ISRP 2011-11: Not Applicable