



Independent Scientific Review Panel

for the Northwest Power & Conservation Council
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Memorandum (ISRP 2011-16)

June 29, 2011

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

From: Eric Loudenslager, ISRP Chair

Subject: Review of Shoshone-Bannock Tribes' Supplementation, Monitoring, and Evaluation Program (#2008-905-00)

Background

At the Council's April 1, 2011 request, the ISRP reviewed a revised proposal for the Shoshone-Bannock Tribes' Supplementation, Monitoring, and Evaluation Program (#2008-905-00). The proposal is called for in the Columbia River Fish Accords. The revised proposal is available at <http://www.cbfish.org/Proposal.mvc/Summary/229>. The proposal states that numerous populations of salmon and steelhead are at demographic risk of extinction, and the proposal's purpose is to determine the utility of supplementation as a potential recovery tool. The project goals are to assess the use of supplementation to augment natural populations, evaluate effects on survival and fitness, and track relative reproductive success. They plan to compare fish population response over time in treatment (supplemented) versus control (un-supplemented) streams and in reference to baseline data.

An earlier proposal was submitted and reviewed as part of the Categorical Review for Research, Monitoring and Evaluation and Artificial Production projects ([ISRP 2044-b](#), pages 274-276). In that review, the ISRP recommended that the proposal did not meet scientific review criteria and suggested that the project proponents "*provide a more comprehensive proposal that describes and justifies the proposed monitoring and evaluation. Planning for this project would benefit from coordination with the Columbia River Hatchery Effects Evaluation Team project. The proposed program should be reviewed as part of the Lower Snake River Compensation Plan (LSRCP) and the Crystal Springs Step Review. The program needs to identify criteria, metrics, and methodology that will be used to evaluate success or failure of the supplementation.*" The ISRP also provided additional comments to be addressed in a revision.

The ISRP's review of the revised proposal follows below.

Recommendation

Response Requested

The ISRP requests that the Shoshone-Bannock Tribes prepare a detailed, standalone narrative describing the proposed supplementation program along with monitoring and evaluation activities (re-writing the problem statement portion of the TAURUS proposal form). The specific request includes the following items:

1. Provide a succinct and clear presentation of the artificial production actions that are proposed – species and number of eggs, smolts, size of smolts, and adults to be used in production for each location.
2. Quantify (range is appropriate) the specific conservation and harvest objectives in terms of adult fish from the planned artificial production. The plan should specify adult return and productivity levels of natural Chinook salmon that identify thresholds for the program's success or failure. These goals should describe and consider efforts to improve salmonid survival such as habitat restoration while also recognizing the length of time likely needed for such actions to have a beneficial effect.
3. Provide evidence that the habitat in the watersheds used for artificial production activities is of sufficient quality to support the proposed re-introduction and supplementation effort. The supplementation goals should be justified with an evaluation of habitat capacity to support the releases, as specified by the Council's Program (see C.3.a. page 18-19).
4. Identify uncertainties in the program assumptions, explain how the monitoring and evaluation actions will address those uncertainties, and provide a decision framework for modifying or terminating the projects based on analysis of the monitoring data.
5. Identify the infrastructure improvements that are proposed through this proposal versus those proposed through the Crystal Springs Hatchery Master Plan.
6. Review how well spring Chinook and steelhead supplementation have worked at other locations as a justification for why it might work in Panther Creek, Yankee Fork, and the South Fork of the Salmon River.
7. Describe the proposed transition from existing hatcheries to the Crystal Springs Hatchery. The plan should describe how it complements other efforts in the Lower Snake River Compensation Plan (LSRCP). It also should demonstrate integration and coordination with the Columbia River Hatchery Effects Evaluation Team project (CRHEET), to the extent feasible considering the CRHEET project is in development.

8. Discuss the involvement of the Shoshone-Bannock Tribes in the Idaho Supplementation Studies (ISS), and how project 2008-905-00 will provide information on supplementation that the ISS will not. The ISS was initiated in the early 1990s to address the question of whether supplementation could be used to improve the abundance of depressed salmon and steelhead populations. The ISS is nearing the final stages of data collection and will be in the analysis phase soon. The ISRP needs to more clearly understand why this new supplementation evaluation project is needed.

Review Summary

The Shoshone-Bannock Tribes supplementation program has been underway for a number of years through funding from a variety of sources, including the LSRCP in recent years. A reasonable description of past efforts was provided. The intent of this proposal is to provide additional funding for the program to facilitate full participation in operations, maintenance, monitoring and evaluation. The effort to supplement Chinook and steelhead within the Salmon River subbasin is consistent with Fish and Wildlife Program, LSRCP, U.S. v. Oregon, and the Salmon River subbasin plan. However, the program should also be consistent with the principles and guidance provided by the Council's Fish and Wildlife Program and its Artificial Production Review ([NW Power Planning Council Document 1999-15](#)).

The problem statement in the proposal raises substantial concern that the anticipated artificial production effort and supplementation goals may be incongruous with habitat conditions in the identified watersheds and unachievable based on empirical observations on the outcomes of similar efforts elsewhere in the Snake and Columbia River basins. The proponent states: *The Tribes recognize the long list of studies that have documented survival difference between hatchery and natural fish and risks associated with supplementation. However, our supplementation program is different in the fact that there are almost no natural fish returning to our treatment streams (except South Fork) and the hatchery x natural impacts are minimized or non-existent. Our program is developed around re-establishing populations in areas where there are no natural fish.*

The goal of a reintroduction program must be to establish a self-sustaining natural population. Habitat improvements need to have proceeded to a point where there is a reasonable likelihood of success. None of the spring Chinook reintroduction efforts in the Columbia River Basin, including spring Chinook in the Hood, Umatilla, and Clearwater Rivers, have yet achieved self-sustaining natural populations, even though most can document that hatchery-origin spring Chinook will spawn and produce progeny and that some of these survive to adult life-stages. Similarly, slow progress has been observed with coho salmon in the Umatilla, Yakima, Wenatchee/Methow, and Clearwater rivers.

It is unclear to the ISRP what specific circumstances in these selected streams would result in success of the proposed re-introduction and supplementation effort where others preceding it in other localities in the region have not. A critical uncertainty in salmon re-introduction efforts

is whether the habitat from spawning gravel to the ocean and back is adequate to support a salmon population. Discussion and evaluation of this life-cycle based production regime is needed in the proposal to determine whether re-introduced salmon have a reasonable chance of developing a self-sustaining population.

The ISRP has not been convinced by the proposal that reestablishing spring/summer Chinook salmon or steelhead using hatchery stocks from the existing programs is likely to provide sufficient conservation benefit to the listed MPGs/ESUs. This concern is consistent with the comments from the ISRP on the Yankee Fork spring Chinook component of the LSRCP spring Chinook program and the Crystal Springs Hatchery Master Plan. For example, in the Yankee Fork the natural-origin returns would need to increase 38-fold (from 13 to 500) to achieve the threshold viability abundance. Any effort to use artificial production to achieve that improvement needs to also 1) identify the habitat improvements that will enhance survival of each salmonid life stage, 2) provide some assurance that habitat improvements will take place, 3) provide a schedule for achieving the goal, and 4) confirm that the stocks used in production will be recognized when evaluating viability at the MPG scale. For the Yankee Fork and Panther Creek spring Chinook populations, it is not clear that replicating existing (largely) segregated hatchery stocks at Sawtooth and McCall Hatcheries will contribute to MPG viability.

An alternative that the Shoshone-Bannock Tribes may want to consider is developing artificial production at these locations with the primary objective of creating terminal harvest opportunities to meet tribal harvest goals. These programs would need to be conducted with protocols that would ensure they do not interfere with restoration of adjacent independent populations to viable status. As the Tribes continue habitat rehabilitation efforts in Yankee Fork and Panther Creek, along with appropriate monitoring, they could consider active re-introductions when habitat and fish survival conditions improve sufficiently to allow a self-sustaining natural population. The ISRP would be pleased to review this planning document and to meet and discuss the plan with the proponents.

If a decision is made to pursue terminal harvest as the primary purpose, rather than supplementation, then monitoring efforts should reflect this change. They should use the ISAB hatchery monitoring report ([ISAB 2000-4](#)), ISRP metrics report ([ISRP 2008-14](#)), and the LSRCP monitoring as guidance on the appropriate metrics and level of effort. Monitoring should focus on harvests and stock identification to avoid taking many fish outside the hatchery stock. They would also need to monitor for strays into other Salmon River tributaries. A terminal harvest program would still require development and use of a local hatchery brood stock.

Comments

1. Purpose, Significance to Regional Programs, Technical Background, and Objectives

The purpose and significance to regional programs was thoroughly described. However, supplementation and monitoring programs maintained by the Nez Perce Tribe should have

been described. Also, more information was needed on the proposed monitoring program for Panther Creek, including stocks present and habitat conditions. A monitoring program should be developed around past activities in the watershed, current conditions, and ongoing and proposed actions that will alter habitat and fish populations.

2. History: Accomplishments, Results, and Adaptive Management

The detailed history of two decades of efforts with Chinook in the Yankee Fork was helpful to reviewers, but it did not include a summary of what has been learned and where and when critical bottlenecks in Chinook survival occur. For example, what has been learned about adequacy of instream survival of fish to the smolt stage? What has been the benefit of eyed egg releases? Why was use of ponds for rearing discontinued? How many juveniles used the ponds after restoration activities? A description of habitat restoration activities and the targeted life stage would be useful as a means to evaluate whether supplementation and habitat rehabilitation efforts might contribute to a sustainable natural population.

A more comprehensive review of possible factors (or hypotheses) affecting steelhead in the Yankee Fork would be useful. The consistent, low survival rates of juvenile steelhead in the Yankee Fork should be examined. Is low survival related to summer rearing, winter rearing, or both? Identification of life stages at which bottlenecks occur is an important step in planning supplementation and habitat restoration activities.

The proposal notes that almost no natural fish return to the treatment streams (except the South Fork). This suggests that supplementation goals may be difficult to achieve. A review of neighboring supplementation efforts and their successes and failures would be useful for highlighting limitations and for identifying remedies and improvements that can be implemented under this proposal.

3. Project Relationships, Emerging Limiting Factors, and Tailored Questions for Type of Work (Hatchery, RME, Tagging)

The Program should describe how it integrates with supplementation activities in the Salmon River by the Nez Perce Tribe and how the Crystal Springs facility would be utilized. There was surprisingly little mentioned about the proposed Crystal Springs Hatchery.

The stated goals of the Program are to assess the use of supplementation to augment natural populations, evaluate effects on survival and fitness, and track relative reproductive success. Evaluation of ongoing supplementation projects in the region suggests they are unable to demonstrate the benefits that were proposed in the Master Plans and in programs such as the LSRCF. The Shoshone-Bannock Tribes' supplementation plan needs to identify and propose possible approaches for improving the likelihood of successful supplementation and restoration of the natural populations. For example, habitat capacity and density-dependence appear to be an emerging factor that may limit production from supplementation efforts, especially in situations where freshwater habitat has been degraded.

The Shoshone-Bannock Tribes' supplementation program has been previously funded by several other agencies, and the proposal highlights that funding by the Council would facilitate full participation in operations and maintenance and monitoring and evaluation. New, otherwise unachievable actions resulting from the requested Council funding should be clearly identified.

4. Deliverables, Work Elements, Metrics, and Methods

A detailed, standalone plan is needed that describes the proposed supplementation program along with monitoring and evaluation activities. As stated in previous reviews, details are needed on the metrics, methods, and statistical framework that will be used to evaluate supplementation and population characteristics of natural salmonids. For example, although the proposal identified goals for release of eggs, smolts and adults, it did not identify goals for the performance of released fish, as required by the Council's 1999 Artificial Production Review. The program should incorporate a decision framework for modifying the program when goals are not being achieved or when otherwise appropriate.