



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 2009-57)

December 22, 2009

To: W. Bill Booth, Council Chair

From: Eric Loudenslager, ISRP Chair

Subject: Qualification Review of Expanded Multi-Species Acclimation
Wenatchee/Methow (2009-001-00), a Columbia River Basin Fish Accord
Proposal

Background

At the Council's November 18, 2009 request, the ISRP reviewed documentation provided by the Yakama Nation to meet qualifications for the Accord project, *Expanded Multi-Species Acclimation in the Wenatchee/Methow Basins* (#2009-001-00). These qualifications were raised in the ISRP's initial review of the proposal, in which the ISRP recommended "Meets Scientific Review Criteria (Qualified)" ([ISRP 2009-10](#), March 31, 2009). Specifically, the ISRP found the project narrative adequate to understand the intent of the project, but not enough detail was provided to fully appraise any likely benefits to fish and wildlife. The ISRP recommended that the Yakama Nation provide additional information on four items before the project is implemented. On April 14, 2009, based on the ISRP review, the Council supported this project with the understanding that implementation of the action depend on the outcome of the proposed planning effort (objective 1) and future review by the ISRP and Council. The ISRP's review of the four items pertaining to the qualification is given below.

Recommendation

Meets Scientific Review Criteria (Qualified)

The ISRP provides the following recommendations on the proponent's responses to the four ISRP 2009-10 qualifications:

1. met the qualification for documentation of the current status of the resource (spring Chinook and summer steelhead) in the two subbasins;
2. did not meet the qualification for establishment of clear improvements to the viable salmon population (VSP) parameters for these focal species as a consequence of using long-term acclimation ponds;
3. partially met the qualification for monitoring design to evaluate any success; and
4. did not meet the qualification for integration of the principles from the Council's

2009 program, the HSRG findings, the Upper Columbia River Chinook and Steelhead recovery plan, the 2008 BiOp, and impending hatchery biological opinions.

Since the proponents plan to use existing hatchery production, subject to parallel NOAA BiOp evaluation, and existing ponds with minimal modification, the ISRP recommends that deficiencies in meeting these qualifications be addressed in contracting and future project review.

Specific ISRP Comments

1. Documentation of the current status of the resource (spring Chinook and summer steelhead) in the two subbasins

An adequate description was provided of the status of spring Chinook and steelhead in the Wenatchee and Methow subbasins.

2. Establishment of clear improvements to the VSP parameters for these focal species as a consequence of using long-term acclimation ponds

The response material did not describe quantitative improvement to VSP parameters that might be expected from the use of acclimation ponds. The immediate purpose of the ponds is to increase the abundance of hatchery-origin adult salmon (coho and spring Chinook) and steelhead, and the ultimate goal is to increase the subsequent numbers (abundance) of natural-origin adult salmon and steelhead. Another goal is to reduce straying of hatchery-origin adults and to expand the spawning distribution of adult salmon and steelhead. Quantitative improvements to the VSP parameters *abundance* and *spatial structure* that might be anticipated were not provided by the proponents. The proposed action has the potential to improve these VSP parameters, but uncertainty in the size of any effect precludes prediction at this time. The ISRP emphasizes that scientifically sound project implementation necessitates an experimental framework that includes estimates of the benefit(s) and uncertainty of the use of acclimation ponds.

3. Monitoring design to evaluate any success (especially since the proponent acknowledges not much is known about whether this strategy will improve the status of the species)

Protocols for monitoring in-pond growth and survival; survival to McNary Dam (an indicator of downstream migration survival); and smolt-to-adult survival (SAR) are generally adequate to assess those outcomes. The monitoring plan for the distribution of spawning adults, stray-rates, and subsequent improvements in VSP parameters was not sufficiently developed for ISRP review.

The project proponents anticipate monitoring the growth, survival, condition factor, and

survival following release. Some of the returning adult data will be collected by the project proponents, and other data will be collected under the auspices of Chelan and Grant PUD HCP obligations. The project proponents state that the overall affect of artificial production programs on VSP parameters for spring Chinook and steelhead will be coordinated by the hatchery evaluation under the habitat conservation plan (HCP), and that the individual effect(s) of fish released from the acclimation ponds may not be discernable.

The proposed in-pond growth estimate would measure weekly fish growth, over the acclimation period (up to 10 weeks). The ISRP advises that weekly growth estimates may not be necessary and may impose handling-related stress. An estimate based on two measurements, the first when fish are transferred to the ponds and the second just before release, is probably sufficient. The ISRP continues to consider the predation assessment as problematic. The proposal did not clearly explain how this estimate would be used and how data would be collected to calculate the “estimated consumption for an individual predator (Ec).”

The proponent’s comments regarding steelhead residualism (G.1.5) were not specific enough, and the ISRP’s request for a response was misinterpreted. The ISRP was concerned that steelhead juveniles released from the acclimation ponds would not leave the tributary streams, thereby competing with naturally produced salmon and steelhead. The proponent appeared to evaluate steelhead that elected to remain in the acclimation pond, rather than emigrating. The ISRP’s question is whether ecological interactions between naturally-produced and hatchery salmon and steelhead in the stream differ between hatchery release strategies (acclimated versus direct-release).

The proponents’ evaluation of adult spawner distribution will compare adult distributions using PIT tag detection in tributaries and coded-wire tag (CWT) recoveries from carcasses during spawning ground surveys. The proponents will conduct surveys at one location (Wolf Creek), and additional surveys will be implemented as a part of the Public Utility District’s (PUD) HCP monitoring and evaluation plans.

A critical concern of the ISRP is whether the numbers of individuals tagged and the subsequent number of tag recoveries are sufficient for a robust statistical analysis. The data presented by the proponents were insufficient for the ISRP to arrive at a conclusion. The proponents propose to contrast the estimates of spawner distribution and stray-rate from the acclimation ponds to reference conditions. The ISRP agrees that this is the appropriate procedure. However, the actual evaluation described on page 41 of the proposal may not be informative because all three of the evaluations involve comparing the results of fish released from acclimation ponds to those released using other methods in previous years. For a robust analysis, the proponents need to address yearly variation due to environmental conditions within the tributaries, the mainstem Columbia River, migration corridor, the estuary, and the ocean because interannual variation in these habitats may obscure differences between the success of different release strategies (acclimation versus direct stocking from trucks).

4. Integration of the principles from the Council's 2009 program, the HSRG findings, the Upper Columbia River Chinook and Steelhead recovery plan, the 2008 BiOp, and impending hatchery biological opinions

The proponents' descriptions of the Hatchery Scientific Review Group's (HSRG) findings and recommendations and status of the Hatchery Genetic Monitoring Plan (HGMP), which will be reviewed by NOAA for a biological opinion on the artificial production programs within these subbasins, were insufficient for the ISRP to arrive at a conclusion on the consistency of the proposed action with the overall recovery programs within the Wenatchee and Methow subbasins. The proposal narrative states:

The Project will use existing PUD hatchery program fish. The hatchery programs require development of HGMPs, which are currently being prepared and submitted to NOAA. Hatchery actions will be consistent with best management practices that are reflected in the HSRG guidelines reflected in the Council's 2009 Fish and Wildlife Program. As stated in the draft HGMPs, while the HSRG recommendations are not binding, the principles of the recommendations are considered in the development of the HGMPs. Upon approval of the HGMPs, NOAA will prepare and issue biological opinions for the hatchery programs. Adult returns from the proposed acclimated released will be managed as described in revised HGMPs consistent with HSRG recommendations.

Without access to the HGMPs and a comparison with the HSRG recommendations the ISRP cannot evaluate consistency among the proposed action, HSRG recommendations, and the Council's Fish and Wildlife Program.

5. Other ISRP Comments

References provided in the revised proposal (starting on Page 11) were of limited value in assuring the potential benefits of acclimation ponds. The ISRP concludes that the scientific evidence presented in these references in support of the benefits of the acclimation ponds is cursory. In an effort to improve the project, the ISRP offers some examples. First, a key reference used to demonstrate the benefits of better survival and better homing with an acclimation pond is Isaksson (1978). That study, while adequate in its context, was conducted in a tiny, very unproductive Icelandic stream (observed by a member of this review) less than one mile from the ocean. The stream contains no wild salmon and essentially no wild salmon habitat or natural holding water. Fish released without acclimation likely would not residualize in the stream or return to that stream as adults, i.e., no homing, which would also indicate no survival of unacclimated fish. This situation bears little resemblance to the Methow or Wenatchee, where fish stocked directly into the river would not have to choose whether to residualize or migrate to the ocean. The Methow and Wenatchee subbasins are much larger, more diverse watersheds with areas of excellent rearing habitat.

Similarly, Johnson et al (1990) indicated only that trucking caused problems for fish, not that acclimation ponds would necessarily improve survival or homing. References to

Tipping (1998, 2008) similarly addressed specialized, minor aspects of the problem, e.g., comparisons of earthen versus asphalt-bottomed ponds. None of the literature cited seems to clearly show the benefits of acclimation over a range of conditions. A somewhat more moderate assessment of acclimation ponds for rearing salmon was provided by Tipping (2004, as referenced in the proposal). In this reference, claims for benefits of acclimation were modest, especially for steelhead. These modest conditions appear to be most appropriate for the earlier ISRP recommendation for a “test of concept.”

The project proponents expressed interest in ISRP’s specific comment that not all relevant reports were included in the initial proposal (Yakama Nation cover letter p. 8). Two relevant references are:

Spaulding, J. Scott. 1990. Habitat use, growth, and movement of Chinook salmon and steelhead in response to introduced coho salmon in the Wenatchee River, Washington. M.S. Thesis, Idaho State University, Pocatello.

Hillman, T.W., and J. W. Mullan. 1989. Effect of hatchery releases on the abundance and behavior of wild juvenile salmonids. Pages 266-285 *in* Summer and winter ecology of juvenile Chinook salmon and steelhead trout in the Wenatchee River, Washington. Final Report to Chelan County PUD, Don Chapman Consultants, Boise.

The ISRP’s question about whether acclimatization of hatchery fish is compatible with wild fish goals was not directly addressed in an ecological context in the response letter of November 6, 2009. The ISRP continues to recommend specific studies designed to test the effects of acclimatized hatchery fish on wild Chinook salmon (both juveniles and adults) in the Wenatchee and Methow basins.