



**Independent Scientific Review Panel**  
for the Northwest Power & Conservation Council  
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**Memorandum (ISRP 2009-54)**

**December 21, 2009**

**To:** W. Bill Booth, Chair, Northwest Power and Conservation Council  
**From:** Eric Loudenslager, ISRP Chair  
**Subject:** Response Review of Accord proposal, Basinwide Supplementation Evaluation – Phase I (2009-009-00) - Objective 1

## **Background**

At the Council’s March 26, 2009 request,<sup>1</sup> the ISRP reviewed the Columbia River Inter-Tribal Fish Commission’s (CRITFC) Accord proposal, Basinwide Supplementation Evaluation – Phase I (#2009-009-00). The proposal tasks include actions that support recommendations from the Ad Hoc Supplementation Workgroup (AHSWG) for implementation of a basinwide evaluation of the long-term effects of supplementation on productivity of natural anadromous salmonid populations in the Columbia River Basin. We released our review May 22, 2009 ([ISRP 2009-19](#)) and requested a response on the first objective listed below and found the other three objectives met scientific review with specific qualifications.

The four specific project objectives for the first year (Phase I) of the 10-year project are:

- Objective 1. Use Dual-Frequency Identification Sonar (DIDSON) to estimate natural escapement of spring Chinook salmon above Castile Falls, Klickitat River
- Objective 2. Complete development of mark-recapture likelihood model which incorporates tag loss
- Objective 3. Perform relative reproductive success study of NO versus HO salmon in population associated with an ongoing supplementation project
- Objective 4. Perform relative reproductive success studies of NO versus HO salmon in four to five reintroduced salmon populations [Phase I]

On June 9, 2009, the Council recommended that for Objective 1, CRITFC provide additional information that clearly describes the linkage of the DIDSON escapement monitoring to the approved Klickitat River Anadromous Fisheries Master Plan and addresses the issues raised by the ISRP regarding the suitability of sonar as a monitoring tool, for subsequent ISRP and Council review. For the other three objectives, the Council recommended these objectives be

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<sup>1</sup> On an administrative note, the integrated project combines three projects previously identified separately under the Columbia Basin Fish Accords (Accords 2008), whose tasks are found within one or more of the integrated Project Objectives. In November 2008, we reviewed the supplementation monitoring component of the proposal and requested a response on a few issues. Our May 2009 comments on proposal Objective 4 incorporated our evaluation of CRITFC’s response to those issues

implemented with the condition that the responses and the qualifications identified by the ISRP (ISRP 2009-19) be addressed as part of contracting and be reflected in future reviews.

On November 11, 2009, CRITFC submitted a response to our concerns on Objective 1 and also provided feedback on the other three objectives. On November 12, the Council requested that we provide a recommendation regarding the response to Objective 1 but also anticipated feedback on the response to the other three objectives.

The ISRP's review of the CRITFC response follows below.

### **ISRP Recommendation**

The ISRP finds that Objective 1 – Use Dual-Frequency Identification Sonar (DIDSON) to estimate natural escapement of spring Chinook salmon above Castile Falls, Klickitat River – *Meets Scientific Review Criteria (qualified)*.

Qualification: Review of DIDSON results should be conducted by the ISRP in three years if long term parallel implementation with the new counting system in the Klickitat subbasin is being considered, or if further testing of DIDSON for adult abundance estimation elsewhere in the Columbia River basin is anticipated.

### **ISRP Specific Comments**

#### ***Objective 1. Use Dual-Frequency Identification Sonar (DIDSON) to estimate natural escapement of spring Chinook salmon above Castile Falls, Klickitat River***

The proponents have done a good job of clarifying the issues surrounding their initial use of DIDSON technology in the Klickitat River. The justification for future specific use in the Klickitat River and/or as an adult salmon/steelhead counting technology for supplementation monitoring elsewhere in the Columbia River basin is not clear. Concerns are that 1) relocating the DIDSON detector to the upstream end of the Castle Falls Fishway would limit the estimate of escapement to the upper basin of the Klickitat; 2) when discussing the discrepancy between DIDSON and redd count estimates due to spawning behavior of outplanted spring Chinook the proponents state that the DIDSON is foreseen to be operating only during the current and coming one to two years. Elsewhere it is stated that the DIDSON would be available to operate in parallel with the new counting system, projected to come on-line no sooner than 2011.

The monitoring scenarios mean either using the DIDSON for a limited time, making it difficult to assess its accuracy and precision, or using two methods over the long term to determine spawner indices that will likely result in different escapement estimates. Furthermore, if the DIDSON is operated for the long term, its estimates will be susceptible to confounding due to the proposed, but uncertain, outplanting of spring Chinook. The ISRP believes that alternative fish enumeration and sampling methods used in the Klickitat River need to be fully considered in order to avoid discrepancies in estimates of returning adults. Insufficient detail was provided in this proposal to make that judgment.

Nevertheless, the proponents express confidence that the DIDSON will provide reliable counts of passage at the Castile Falls Fishway. They have provided documentation that the DIDSON can be used successfully to count fish passage events elsewhere in the Basin. If successful the DIDSON detection system provides a method to collect important escapement information that would be useful for the Klickitat in the short term. Long term implementation should be assessed in three years.

Using DIDSON in the Klickitat River at this time is not part of a broader examination of DIDSON application for monitoring adult salmon escapement as a component of basinwide supplementation monitoring. If expanded application of DIDSON technology is envisioned for other locations, appropriate experimental designs for sufficient evaluation of this experimental approach need to be developed and reviewed. Successful testing and application of the DIDSON counter may enhance the M&E components of this and other subbasins.

***Objective 2. Complete development of mark-recapture likelihood model which incorporates tag loss***

The proponents have addressed ISRP concerns by placing the proposed work in context with other related work. The ISRP looks forward to publication of the B-H likelihood methods.

***Objective 3. Perform relative reproductive success study of NO versus HO salmon in population associated with an ongoing supplementation project***

The ISRP has no suggestions for this objective.

***Objective 4. Perform relative reproductive success studies of NO versus HO salmon in four to five reintroduced salmon populations [Phase I]***

The ISRP appreciates the magnitude of the task involved in running power analyses for the very large number of possible scenarios. Nevertheless, power analyses for a limited number of feasible scenarios would be informative and should be conducted. We understand that some information may be lacking to inform the choice of what scenarios are feasible, but as that information becomes available, power analyses should be conducted.