



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 2010-14)

May 24, 2010

To: Bruce Measure, Chair, Northwest Power and Conservation Council

From: Eric Loudenslager, ISRP Chair

Subject: Review of two Columbia River Inter-Tribal Fish Commission Accord Proposals, Produce Statistically Valid Harvest Estimates (2008-508-00) and Increase Zone 6 Tribal Fishery Monitoring (2008-502-00)

Background and Summary

This memo contains the ISRP's review of two Columbia River Inter-Tribal Fish Commission (CRITFC) Accord Proposals, Produce Statistically Valid Harvest Estimates (2008-508-00) and Increase Zone 6 Tribal Fishery Monitoring (2008-502-00). The ISRP provides the review of these proposals together because both were submitted by CRITFC, involve tribal harvest monitoring, and one proposal will inform the other. The Council requested our review on April 26, 2010.

This is an ISRP response review for the Harvest Estimates proposal (2008-508-00). This project intends to determine and formalize statistically valid sampling protocols for tribal harvest estimates throughout the Columbia River Basin. On August 26, 2009, we released our review of the initial proposal and requested a response asking for (1) a summary of the programs that use the escapement estimate data, (2) the sampling criteria those programs require for robust analysis, and (3) a survey design that will be adequate to determine if the creel census meets the program needs (see [ISRP 2009-37](#)). Our detailed review of the adequacy of the response to these three issues follows below. In sum, we recommend that the proposal, augmented by the response, meets scientific review criteria (qualified).

This is our first look at the proposal, Increase Zone 6 Tribal Fishery Monitoring (2008-502-00). The proposal is intended to "improve the reliability of catch estimates for Zone 6 tribal fisheries by increasing the collection of tribal catch data through increased sample rates and the use of new data collection methods. Tribal catch estimates are required in real time to properly manage fisheries for conservation and to fairly share the harvestable component of upriver runs between treaty and non-treaty fisheries." This project is intended to supply additional sampling and analytical support to the Harvest Estimates proposal, while information from the Harvest Estimates may be used to improve the sampling efforts carried out under this proposal. The Zone 6 proposal is also intended to supply information to another CRITFC proposal, Genetic Assessment of Columbia River Stocks (2008-907-00). Our detailed review of the Zone 6 monitoring proposal follows the response review of the Harvest Estimates proposal. In sum, we

found that the proposal does not provide enough detail to evaluate the actions proposed, and thus we request a response.

Response Review: Produce Statistically Valid Harvest Estimates (2008-508-00)

ISRP Recommendation

Meets Scientific Review Criteria (Qualified)

Qualified: This proposal addresses the assessment of the creel census methodology currently used to produce Zone 6 treaty catch estimates and the development of methodology for estimating precision of catch estimates. The details provided in the proposal, and the response, do not adequately address the four long-term objectives stated in the proposal abstract. Furthermore the response does not provide sufficient detail to determine whether the effort being given to assessment of the methods is actually sufficient to establish conclusions about precision and bias in the estimates, or an evaluation of whether the 20% rate of sampling is being achieved. However, the ISRP agrees that, “documentation of current methods and estimating precision of current estimates is a logical place to start” as stated in the proponent’s response. The proposal meets scientific criteria for the first year but a new proposal is requested for subsequent project activities.

ISRP Comments

In our initial review we noted that the overarching goal of the project is to be applauded; however, the description of specifically what is to be accomplished in the first year was not sufficiently detailed. We requested a response that demonstrates that the survey of the creel census methodologies in the first year would be adequate to address whether this program meets the intended design requirements.

We provide comments associated with the three issues for which we requested responses.

1. A summary of the programs that use the escapement estimate data

The response indicates that the catch estimates from this project are provided to the Technical Advisory Committee (TAC) for in-season management and are used in post-season run reconstructions, which use additional data such as coded wire tag (CWT) recoveries and genetic stock identification (GSI) from biological sampling, for stock specific harvest estimates.

The focus of this proposal is the assessment of the creel census methodology used to produce Zone 6 treaty catch estimates and development of estimates of precision for catch estimates. The assessment will involve observation of four fishery monitors to determine error rates for species and run identification and counts. The scope is limited to “boat to tote” data without consideration of other factors that could bias estimates and affect precision.

The response does not adequately identify the connections between this project, the users of the catch data, and the TAC. The response would more helpful if further information was provided on the existence of TAC protocols for gillnet fishery sampling to help put the proposal in context.

2. The sampling criteria those programs require for robust analysis

According to the project proponent the in-season management and post-season run reconstruction programs do not have specified criteria for the accuracy or precision of the treaty catch estimates. A specification of data standards used for in-season management decisions and run reconstruction appears warranted.

3. A survey design that will be adequate to determine if the creel census meets the program needs

The project scope is limited to documenting the existing survey design, evaluating historical data, and developing estimates of precision for Zone 6 treaty catch estimates. This project does not collect data but rather evaluates the creel census, which samples the catch per unit effort as the fish are landed. Factors such as the selectivity of gillnet gear, catch per unit effort (CPUE) reporting biases, fishery monitor biases when being observed, and others are not included in the project. The response would be improved by a more complete description of exactly how the surveys of CPUE are done.

Initial Review: Increase Zone 6 Tribal Fishery Monitoring (2008-502-00)

ISRP Recommendation

Response Requested (Does Not Meet Scientific Review Criteria)

The proposal does not provide enough detail to evaluate the actions proposed. Objectives need to be defined, and the proposal should be clearly focused on the gillnet fishery with a better connection with the related proposal 2008-508-00.

Summary

A key assumption made in the proposal is that additional sampling of catch data is necessary, but this assumption has not been justified. Other objectives such as beginning to sample PIT tags and including samples from other fisheries, such as dip nets, rods, etc, are also insufficiently justified.

A possible procedure might be to wait until the results from project 2008-508-00 are available for review, assuming implementation. The reviewed results might lead to a recommendation to increase the sampling effort to estimate catch, but on the other hand, perhaps the catch estimation program as it now exists is sufficient.

A response should include detailed information on:

1. What survey sampling techniques will be investigated? What criteria will be used to select among competing techniques?
2. How will the desired sample size be determined? An illustration of the protocol to be used with realistic data should be included.
3. How will randomization be used in sample selection?
4. What strategies will be used to reduce sources of bias?
5. How will catch reporting be conducted, monitored, and evaluated? What recent reviews and recommendations on catch reporting have been used to inform this proposal?
6. How will efforts be divided among gill net, dip net, rod, and other fishery methods?
7. What number and percentage of PIT tag detections are sufficient to determine feasibility of PIT tagging?
8. How will the PIT tag portion of the report be evaluated?
9. Does a target monitoring rate of 20% result in estimates that are precise enough to be useful?

ISRP Comments

1. Technical Justification, Program Significance and Consistency, and Project Relationships (sections B-D)

Timely and accurate catch data is essential when ESA-listed populations are harvested in mixed-stock fisheries. Fisheries regulation depends on real time harvest assessment as the proponent notes. Currently tribal catch estimation uses creel survey techniques for ceremonial, subsistence, and commercial fisheries. Estimating total catch by commercial gillnet fisheries is difficult

because of the challenge of obtaining representative catch data for a port sampling scheme with many dispersed ports. The proponent states that the challenge is increasing due to changes in management goals and expansion of tribal fisheries due to increased abundance of returning adults.

The proposal gives a good description of the tribal fisheries in Zone 6. Clearly this is a complex combination of mixed gear fishing on multiple stocks and species, which presents a challenge to fisheries managers.

The proposal states that the “effort” in CPUE is determined by interviewing a sample of fishers to determine the number of nets deployed. The catch is recorded as it is landed with the majority occurring at night or early morning. The CPUE is estimated for the period of time since the nets were last inspected. Estimates of total daily effort use aerial net counts during each fishing period and the average catch/net-hour estimate. It is not clear if using aerial net counts, taken presumably during daylight, is appropriately used with catch recorded at night or early morning.

The project is proposed to support additional sampling effort used in conjunction with Project 2008-907-00, Genetic Assessment of Columbia River Stocks. However, it is not clear that the current catch estimates lack precision or accuracy so it may be that additional sampling effort is not required.

This proposal states that, “Project 2008-508-00 will describe the relationship between sampling effort and statistical power of derived catch estimates.” Until these results from project 2008-508-00 are available it is unclear if improvements in the reliability of catch estimates for Zone 6 tribal fisheries due to increased sample rates and the use of new data collection methods as proposed in this project (2008-502-00) is necessary.

The proponent states that recovering PIT tagged fish in the catch may be useful in a number of ways. This PIT tag feasibility study may inform future efforts if sufficient PIT tagged fish are recovered in the catch. However, the proposal does not provide enough information to evaluate the scientific merit of this element.

2. Objectives, Work Elements, and Methods (section F)

Objectives are briefly stated in general terms. Associated work elements are provided without sufficient detail to be assessed. Stating that subcontracts will be provided to perform enhanced total catch monitoring and to assess feasibility of collecting PIT tags does not provide sufficient detail for scientific evaluation.

It is not clear if the target of observing at least 20% of the total effort in at least 20% of the time open to fishing for each fishery and gear type is based on statistical justification or is a policy recommendation. More details are requested on what the objectives of PIT tagging are. A summary of information gained through discussions with others involved in designing sampling plans for PIT tag detection should be included.

3. M&E (section G, and F)

Proposed monitoring and evaluation of the project is not adequate. In addition to knowing whether fisheries are monitored and catch estimates are generated it is also necessary to assess the quality of the monitoring and estimated catch. Did the target monitoring rate of 20% result in estimates that are precise enough to be useful? What strategies were used to reduce bias in the estimates? What sources of bias were not addressed? Were data reported promptly and accurately? How will the PIT tag portion of the study be evaluated? Were all feasible methods of sampling tribal fisheries for PIT tags considered? Were the criteria used to select a PIT tag recovery method appropriate? Was PIT tag sample size adequate to provide data with sufficient precision?

The catch data are in themselves an M&E product and as mentioned above their statistical veracity is yet to be determined. The proposal would be improved by a fuller explanation of the relative role of project 2008-508-00 and the TAC of the PSC in any revisions of the sampling program. In Section G the proponent states, “The U.S. v. Oregon Technical Advisory Committee will review the total catch estimates and provide input on any needed modifications.” A workshop to help develop sampling methods in Zone 6 might be worthwhile.