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 2010-15) **May 25, 2010**

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

From: Eric Loudenslager, ISRP Chair

Subject: Final Review of BiOp USGS and ODFW Proposal *Understanding the influence of predation by introduced fishes on juvenile salmonids in the Columbia River Basin: closing some knowledge gaps* (#2008-719-00)

Background

At the Council's April 29 request, the ISRP reviewed the joint U.S. Geological Survey and Oregon Department of Fish and Wildlife's revised proposal titled *Understanding the influence of predation by introduced fishes on juvenile salmonids in the Columbia River Basin: closing some knowledge gaps* (#2008-719-00). This proposal is intended to meet research needs described in the 2008 Biological Opinion for the Federal Columbia River Power System (BiOp), specifically, Reasonable and Prudent Alternative (RPA) 44: develop strategies to reduce non-indigenous fish. In addition, the Obama Administration's Adaptive Management Implementation Plan (AMIP; page 18) calls for enhanced research on salmon predators and invasive species.

On January 19, 2010, the ISRP reviewed an initial version of the proposal and found that it did not meet scientific review criteria (ISRP 2010-4). Consequently, the ISRP asked for a response to include a revised proposal after the rationale for the study has been more thoroughly crafted; appropriate literature reviewed and used; study designs for the four objectives well defined; and methods explicitly described (including specific sample locations, sample sizes, and statistical methods used to test hypotheses and analyze data). The USGS and ODFW responded to our request with a revised proposal. Our review of that revised proposal follows below.

ISRP Recommendation

Meets Scientific Review Criteria (Qualified)

The qualification is that the project proponents may need to revise the study design for Objective 4 if insufficient numbers of smallmouth bass are collected by angling from tailrace areas in order to make dietary comparisons to forebay areas and alternate methods need to be attempted (see comments below for Objective 4).

ISRP Comments

Overall Comments - Benefit to F&W (all proposal)

The proponents have done a thorough job of revising the proposal to adequately address the ISRP's recommendations and comments. The revised proposal of April 2010 eliminated several objectives from the earlier proposal of January 2010 that were ambiguous in purpose and direction. The resulting more focused proposal is a considerable improvement. The proposed study is now focused strictly on two objectives: (1) the contribution of juvenile shad to the diet of non-native (and potential salmonid) predators during the late summer and fall, and (2) evaluation of suspected smallmouth bass "hot spots" in the forebay areas of McNary, John Day, and The Dalles dams, and the potential for predation on salmonids by small-mouth bass at these specific locations. Predation potential at these hot spots is compared to tailrace areas not thought (based on catch data from the Pikeminnow Program) to be hot spots for smallmouth bass predation on salmonids. The proponents also clarified that the diet analysis was not intended to be an in-depth food web analysis.

This information should prove useful for evaluation of the impacts of non-native fishes on salmon recovery potential in the Columbia River Basin.

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

The Technical Justification and rationale are much improved with a more comprehensive development of the issues, and the main pertinent references have been included to support and justify the two objectives. A plausible rationale was provided to justify the proposed research to examine the effects of juvenile American shad on non-native predator diets and non-native predator condition factors. A plausible rationale was also provided to justify a new look at the significance of smallmouth bass predation on juvenile salmonids and the need to examine the potential for reducing local problematic populations by targeted removals.

The significance of this project for addressing regional programs has been expanded by indicating how aspects of the proposed research has been called for by the Independent Scientific Advisory Board in their recent report on non-native species impacts (ISAB 2008-4) and by the Northwest Power and Conservation Council in their 2009 Amendments to the Fish and Wildlife Program. Relationships to other similar ongoing projects have also been more clearly described. In particular, this project may benefit from interactions with other relevant ongoing projects being conducted by the two agencies. These potential linkages are well described in the revised proposal.

Objectives, Work Elements, and Methods (section F)

The objectives and methods sections have been significantly revised and improved.

Original Objective 1 has been re-stated and the methods expanded providing a good level of detail addressing ISRP recommendations. One issue that was not addressed was the potential for electrofishing to alter stomach contents as the trauma from electrofishing can result in regurgitation of stomach contents. This may be unavoidable, but no literature was provided clarifying this issue. Especially vital is the focus on the second order effects and interactions of

the American shad on non-native predator growth and condition through its proportions in the diets of the predators in late season (the management implications for shad will be informed by the results).

Original Objective 2 has been re-focused to "Evaluate the physiological condition of smallmouth bass, walleye, and channel catfish during the late summer and fall in three reservoirs of the lower Columbia River" and the telemetry and bioenergetics modeling have been deleted which follow ISRP recommendations and comments. The methods for Objective 2 have also been expanded and appear to be state of the art for the physiological metrics planned – somatic energy content, proximate analysis to determine lipid and ash content of predator carcasses, and numerous blood chemistry indicators of nutritional status. The proposed calibration of results of the Distell Fatmeter method with conventional proximate analysis and the use of blood parameters is appropriate and necessary because such calibration has not to our knowledge been conducted. It would have been useful to describe in a bit more detail the results to date of this energy meter in experimental situations with live fish.

Original Objective 3, to determine predatory impacts of channel catfish has been dropped.

Original Objective 4 was to "Evaluate the response of smallmouth bass to localized removal." and was revised to become new Objective 3, which is to "Describe and compare relative density and diet of smallmouth bass between sites perceived to be 'hot spots' and sites nearby." The rationale for this objective was provided and is helpful, but the angling from the dam component of the Northern Pikeminnow Management Program could be better explained (the proponents assume that reviewers are familiar with the dam angling component of the Northern Pikeminnow Management Program). Angling from the dams as a method for collecting small mouth bass is not known to be particularly effective, and if not enough smallmouth bass are caught by angling in the tailrace areas, will the diet comparisons be able to be made between tailrace and forebay areas? Will the study design need to be altered to remedy this? Because of the greatly different habitats of the forebay and tailrace, it may be difficult to compare catch per unit effort (CPUE) estimates in a direct way between the two areas. These topics should be addressed in future proposal submissions.