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Review of Seven 2011 Estuary Proposals submitted for the U.S. Army Corps of Engineers' Anadromous Fish Evaluation Program

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Background

This report contains the ISRP's review of seven proposals for research in the Columbia River Estuary. These projects are proposed for implementation through the Corps' Columbia River Fisheries Mitigation (CRFM) Program, specifically the Anadromous Fish Evaluation Program (AFEP). ISRP review of projects under this program was directed in the 1998 U.S. Congress Senate-House conference report for the fiscal year 1999 Energy and Water Development Appropriations bill. The ISRP's review responsibilities are also incorporated in the Council's 2009 Fish and Wildlife Program. This review was requested by the U.S. Army Corps of Engineers and Council staff in August 2010, pursuant to the ISRP's review charge.

This review is a follow-up to the ISRP's review of six of these seven projects conducted in January and February 2010 (ISRP 2010-6). In that preliminary review, we requested a response on a variety of concerns from five of the proposals. Because of time constraints with project implementation, the Corps, Council, and ISRP agreed that the projects should address the ISRP's concerns in 2011 proposals rather than respond immediately to the ISRP. Thus, this current review looks at not only the justification for future research implementation but also how the projects addressed the ISRP's concerns.

The ISRP reviewed each proposal using our standard criteria, that the project is based on sound science principles; benefits fish and wildlife; has clearly defined objectives and outcomes; and has provisions for monitoring and evaluation of results. To complete this and the earlier review, we followed our standard review process for Columbia River Fish and Wildlife Program proposals. At least three reviewers independently evaluated each proposal and provided comments, which were synthesized into a consensus recommendation.

In the February 2010 ISRP review of AFEP estuary projects we provided overall comments on the proposal set. Many of these comments on the review process and proposal content still apply and should be considered in designing future reviews of AFEP projects.

Table of proposals and ISRP Recommendations

Proposal #	Estuary Proposals	Proponents	ISRP Recommendation
EST-P-02-04	Evaluating Cumulative Ecosystem Response to Habitat Restoration Projects in the Lower Columbia River and Estuary, 2011	PNNL, NMFS	*Defer and review final report (see ISRP 2010-6)*
EST-P-09-1	Evaluation of Life History Diversity, Habitat Connectivity, and Survival Benefits Associated with Habitat Restoration Actions in the Lower Columbia River and Estuary, 2010	PNNL	*Meets Scientific Review Criteria (Qualified)*
EST-P-10-1	The contribution of tidal fluvial habitats in the Columbia River Estuary to the recovery of diverse salmon ESUs	NMFS	*Meets Scientific Review Criteria (Qualified)*
EST-05-P-07	Julia Butler Hansen National Wildlife Refuge: post-construction assessment of Fishes, Habitats, and Tide gates in Sloughs on the Mainland	USFWS	*Meets Scientific Review Criteria (Qualified)*
EST-P-02-01	Use of acoustic mobile tracking to evaluate timing, behavior, and fate of juvenile salmonid migrants through the lower Columbia River and estuary	NMFS	*Does Not Meet Scientific Review Criteria*
EST-P-02-01	A Study of Salmonid Survival and Behavior through the Columbia River Estuary Using Acoustic Tags	PNNL	*Meets Scientific Review Criteria (Qualified)*
EST-P-11-NEW	Juvenile Salmon Ecology and Restoration of Tidal Freshwater Habitats	PNNL and ODFW	*Meets Scientific Review Criteria (Qualified)*

ISRP Specific Comments for Each Proposal

1. Evaluating Cumulative Ecosystem Response to Habitat Restoration Projects in the Lower Columbia River and Estuary

Project Number: EST-P-02-04
Project Proponent: PNNL, NMFS

ISRP Final Recommendation: Defer and review final report (see *ISRP 2010-6*)

ISRP Final Comments

The proponents did not explicitly recognize the ISRP's recommendations concerning preparation of a final synthesis for review, although they do state that one of their objectives is to develop a summary report. Some additional material was provided. The matrix explaining the metrics obtained at each site was useful, as were comments about adaptive management and additional references.

As noted in the earlier review it is hoped that methods for obtaining the measurements will be given in the final report, as the revised proposal still does not include details on methods. The ISRP should not have to refer to Roegner et al (2009) to obtain methods information.

2. Evaluation of Life History Diversity, Habitat Connectivity, and Survival Benefits Associated with Habitat Restoration Actions in the Lower Columbia River and Estuary, 2010

Project Number: EST-P-09-1
Project Proponent: PNNL

ISRP Final Recommendation: Meets Scientific Review Criteria (Qualified)

ISRP Final Comments

The proponents provided reasonable responses to our earlier comments and concerns in a specific format. The links to reports were provided as we requested, and the ISRP was impressed with the quality of the 2009 Progress Report that included adequate descriptions of methods, analysis, and presentations of summary data. The ISRP also appreciated the matrix explaining relationships between subprojects.

The proposal might well fit into the "umbrella" project category as the proponents plan on coordinating their work with the Expert Regional Technical Group – although it is not clear if the latter group will be vetting P-02-04 – perhaps they will be using the results of P-02-04. Qualifications can be addressed in contracting, annual reports, and future proposals.

Qualifications

a. The concept of life history diversity is the cornerstone of this project, and although the ISRP requested a complete explanation of how the proponents were going to develop the life history diversity indices this was not provided. Their definition of life history diversity would have more scientific credibility if it were based on the scientific literature (e.g. Neville et al 2006 - Landscape attributes and life history variability shape genetic structure of salmonid populations in a stream network. Landscape Ecology 21:901–916).

b. Details on laboratory studies need to be provided, as well as a description of key components to be measured such as "a range of physiological metrics."

c. Provide information on methods, analyses, and summary results in any subsequent submissions. At present, the information is given in the 2009 Progress Report and its absence in the proposal makes it difficult to see how the data and future work fit together.

3. The contribution of tidal fluvial habitats in the Columbia River Estuary to the recovery of diverse salmon ESUs

Project Number: EST-P-10-1
Project Proponent: NMFS

ISRP Final Recommendation: Meets Scientific Review Criteria (Qualified)

ISRP Final Comments
The proponents have provided generally thorough responses to ISRP comments. Many new and important details are now provided on methods, as requested. A few shortcomings remain, however, notably concerning coordination or relationships with other studies. These qualifications can be addressed in contracting, annual reports, and future proposals.

Qualifications

a. Provide criteria for juvenile salmon habitat availability. The proponents state, "Based on the earlier estuary studies, we have formulated criteria for juvenile salmon habitat availability that would theoretically preclude overlap with large aquatic predators (but not necessarily avian predators)." The criteria were not evident in the proposal.

b. Provide cited references in proposals and response documents. References in the response document are not provided.

c. Provide fully the explanation of relationships with other projects (AFEP, FWP, BiOp, etc). Proponents seem unaware their feeding data are to be used in project EST-P-09-01.

d. The ISRP noted that in 2011, life cycle modeling would be used to explore the sensitivity of "adult returns" (i.e., the real bottom line, of the various ESUs related to estuary restoration). It is very unfortunate that a project of this scope will not address contaminants. It is known that some ESUs are more exposed to contaminants than others. With the various ESUs determined in this project, it is very important to add contaminant exposure information for the various ESUs, or at least to save samples of the fish for possible later contaminant analyses. An economical way to conduct the work would be to collaborate with other researchers, notably Lyndel Johnson at NOAA (involved in LCREP Project 2003-007-00). Contaminants are a "wild card" and can confuse any habitat restoration work that is attempted.

4. Julia Butler Hansen National Wildlife Refuge: post-construction assessment of Fishes, Habitats, and Tide gates in Sloughs on the Mainland

Project Number: EST-P-05-07
Project Proponent: USFWS

ISRP Final Recommendation: Meets Scientific Review Criteria (Qualified)

ISRP Final Comments
The proponents significantly revised the proposal by adding much more detail to the study design and methods: increased from a 6 page proposal to a 23 page proposal, provided a photo-map of the project area, and added a link to a report presenting the 2007 and 2008 pre-construction data base.

The proposal would be improved by further details about how the densities are going to be assessed with both methods (seines and trap nets), as fish density is the key variable for the project. There are problems with the sampling methods if, as described, density of fish outside the sloughs is going to be measured with seines and density inside the sloughs are going to be measured by trap net. The qualifications can be addressed in contracting, annual reports, and future proposals.

Qualifications

a. Further details on rationale and design of the PIT tag studies are needed.

b. The proposal would be improved by further details about how the densities are going to be assessed with both methods (seines and trap nets), as fish density is the key variable for the project. There are problems with the sampling methods if, as described, density of fish outside the sloughs is going to be measured with seines and density inside the sloughs are going to be measured by trap net.

c. Rationale for limiting post-monitoring studies to two years is needed. The ISRP has concerns about the adequacy or duration of this time frame.

d. Information on the methods used to describe habitat in the sloughs is required.

5) Mobile Tracking: Use of acoustic mobile tracking to evaluate timing, behavior, and fate of juvenile salmonid migrants through the lower Columbia River and estuary
6) Fixed Array: A Study of Salmonid Survival and Behavior through the Columbia River Estuary Using Acoustic Tags

Project Number: EST-P-02-01
Project Proponent: 1) NMFS and 2) PNNL

ISRP Final Recommendation:

- NMFS mobile tracking – Does Not Meet; only minor change from previous proposal
- PNNL fixed array – Meets Scientific Review Criteria (Qualified)

ISRP Final Comments

Neither of the proposals identified coordination between the two studies, but presumably this is implicit as they are both work on detecting JSAT tags in the estuary.

NMFS
The proponents chose not to respond to the ISRP questions on a point by point by basis. The revised proposal appeared very similar to the original document, and in general there was minimal effort put into responding. Progress was noted by adding "2010" to the new narrative. One response was provided under Objective 1, namely modification of spacing distance for tracking transects – 61 m is proposed which "…will allow 100% overlap between successive routes" (proponent's wording).

PNNL
Most of the comments have been addressed satisfactorily. However, important statistical data especially on sample sizes are mentioned as forthcoming from the UW statistical group. This should be provided in the study design section of the proposal. This qualification can be addressed in contracting, annual reports, and future proposals.

Qualification

Provide an updated statistical design to the proposal/study plan as soon as it becomes available.

7. Juvenile Salmon Ecology and Restoration of Tidal Freshwater Habitats

Project Number: EST-P-11-NEW
Project Proponent: PNNL and ODFW

ISRP Recommendation: Meets Scientific Review Criteria (Qualified)

ISRP Final Comments

This is a well-prepared proposal and the proponents should be complimented for providing a wealth of detail on methodology to help the ISRP evaluate the proposed restoration work. Attention to several statistical matters concerning sample size was particularly appreciated. There are a few questions regarding study protocols – these qualifications can be addressed in contracting, annual reports, and future proposals.

Qualifications

1. Confirmation of the study site chosen as the focus for the work is needed. Footnote 1 indicates the restoration projects are to be determined as are monitoring methods, yet the proposal clearly describes re-channelization work to be done at Sandy River delta.

2. The proponents make the assumption that an increasing proportion of native fishes (decreasing proportion of non-native fishes) is beneficial for salmonids. What is the hypothesized mechanism or rationale?

3. For determining residence time using PIT tags the proponents state: “For fish known to have traversed the area (i.e., detected both upstream and downstream), average residence time will be computed as the arithmetic average. What about time totally out of the study area?

4. Confirmation is needed that project EST-P-02-04 has developed a plan or framework to carry out this new project that will perform the sampling needed to determine the responses to the restoration projects.