



**Independent Scientific Review Panel**  
for the Northwest Power & Conservation Council  
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**Memorandum (ISRP 2010-29)**

**August 25, 2010**

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

**From:** Eric Loudenslager, ISRP Chair

**Subject:** Final Review of Willamette Bi-Op Habitat Restoration (#2009-012-00)

## **Background**

At the Council's July 22, 2010 request the ISRP reviewed response documents for the Oregon Watershed Enhancement Board's project titled *Willamette Bi-Op Habitat Restoration* (#2009-012-00). This project is a new start and is intended to be a comprehensive, programmatic approach to prioritizing and funding efforts to restore native fish and wildlife habitat in the Willamette River and its floodplain below the major federal hydro projects. The response documents were provided to address our June 23, 2010 review of their initial proposal ([ISRP 2010-22](#)). We raised three major concerns with the proposal. Our review below is organized by those concerns.

## **ISRP Recommendation**

*Meets Scientific Review Criteria (Qualified).*

The project proponents have prepared a thoughtful response to the ISRP's questions, and we conclude that the proposal now meets scientific review criteria with a qualification: the M&E plan needs to be developed in greater detail. We were pleased to see the proposal modified to incorporate an experimental restoration approach where possible (p. 15 of the response letter) and an expanded description of the water quality monitoring efforts (pp. 17-18). The importance of close coordination with Oregon DEQ and other toxics researchers cannot be over-emphasized. Researchers examining potentially toxic compounds could benefit from using some of the same study areas that are likely to be identified in this project.

Within the first year of the project, the proponents should submit a fully fleshed out monitoring program to the ISRP for review, including procedures for implementation, status and trend, and effectiveness monitoring at relevant spatial scales. They should also identify specifically how this project will inform adaptive management. The ISRP is fully cognizant of the inherent difficulties in monitoring large rivers and that the full details of an M&E program are sometimes difficult to provide in the limited space available in a proposal. The proponents have made a good start at developing a meaningful M&E program for the Willamette Basin. They state in

both the response letter and revised proposal "... the two monitoring approaches we have developed have not been fully cross-walked, nor have the scales been 'rolled up to judge program effectiveness.' More specifically, we have not attempted to equate our broad-scale land use monitoring ('slices') with specific biological objectives at the Site, Reach, or River scales as presented in Table 4." The fully fleshed out M&E program should address these issues, and more detail and clarification of the metrics and methods presented in Table 4 should be provided.

The ISRP would also like to see a progress report, including a summary of restoration site evaluation and prioritization, implementation results, and initial project effectiveness monitoring, late in year 2 or early in year 3, of this 5-year project. We recommend OWEB coordinate with regional BiOp restoration programs in Columbia River estuary (e.g., CREST Estuary Habitat Restoration Project 2010-004-00<sup>1</sup>), as there is spatial overlap of the lower Willamette River and Columbia River estuary in the Portland area and it will be important for these umbrella restoration projects to work together.

### **ISRP Comments**

- (1) The June 2010 ISRP review asked for a more complete description of how existing habitat projects have been implemented and how successful they have been in the mainstem Willamette River, including biological responses, if known.*

In the July 21 cover letter from Ken Bierly, Deputy Director, OWEB, there is a brief history of habitat restoration efforts in the mainstem Willamette River in the past 30 or so years. From early efforts, few projects were implemented and most have not been maintained. More recently, properties have been acquired on behalf of land trusts and were detailed in the attachments. This information was helpful. One of the sites – Green Island – was visited by the ISRP during the Wildlife Categorical Review. In the response, the project proponents report that after seven years of vegetation work and removal of flood control levees, they are now observing an increase in channel complexity. No quantitative information was presented on fish community responses to habitat modifications. Several other projects were described, but they do not yet have effectiveness monitoring results.

- (2) The June 2010 ISRP review asked for details about the objectives, work elements, methods, and metrics. In particular, more detail about the specific criteria that will be used to prioritize projects. Attachment C provides a generic description of the principles that will be used in selecting projects, but a more descriptive list of the attributes of proposed projects that will be assessed by the Restoration Review Team is required for the ISRP to judge the approach (an effective way to communicate this information might be to present specific plans for two to three highly ranked candidate sites as an example of the process and criteria that will be applied in judging projects).*

The ISRP appreciates that additional information about prioritization was provided in the response letter, although there was some vagueness about the role of the River Design Group in final site selection (on page 4 of the letter, the RRT criteria for site selection are listed, but on page 7 it is stated that River Design Group will help locate priority sites). Attachment C in the

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<sup>1</sup> See <http://www.nwcouncil.org/library/isrp/isrp2010-23.htm> for the ISRP's response to the recent CREST proposal.

revised July 21 update remains unchanged from the original June 3 version. Attachment F provides the score sheet from one review of the Harkens Bend restoration site. From inspection of the score sheet it appears the reviewer rates each category as “o” or “+”, and these are totaled for the project/reviewer score. No explanation of the basis of the decision for each ranked attribute is provided in the report – does the process simply involve totaling the plusses and zeroes or are numerical rankings involved? Page 10 of the response letter explains that the SIP program began with the LCREP criteria, which they understood to be reviewed and approved by the ISRP. The LCREP criteria were included in an explanatory attachment in the response review in the 2007/2009 proposal review. Those criteria did not receive the level of review and scrutiny of a stand-alone review similar to the ISRP review of water transaction priority criteria (ISRP 2003-1<sup>2</sup>). The RRT have not used the numeric rating used by LCREP and have modified the criteria. The criteria appear similar to those employed in the Grande Ronde Model Watershed effort. It would have been helpful to see rating sheets for sites that were rejected because of low scores, and any other notes that help explain why these sites were not selected.

Specific comments on the measurements presented in Table 4 are given below.

### **Objective 2- Restore channel morphology and complex aquatic/riparian habitats**

Processes: Channel formation and maintenance, channel migration, flood plain connectivity.

The metrics and methods proposed in this objective (stream flow at the site level and channel length at reach scale) do not fully capture habitat complexity, channel migration, and flood plain connectivity. For example, how will changes in width, depth, backwater development, large wood capture, hyporheic flow, and channel shifts be assessed? How will increased floodplain connectivity be determined? More comprehensive metrics and methods need to be developed to fully capture the intent of the objective.

### **Objective 3. Protect, restore, and enhance habitat for native fish species**

Processes: Aquatic species migration and colonization (population dynamics).

*Question: Is the restoration project area used by native fish species?*

At the site scale, what does “spot check” fish abundance mean? Will the spot checks be done other than during smolt migration? At the reach scale, the BACI experimental approach needs more discussion. How will BACI be applied? How will reaches be selected? Will BACI only be used for changes in fish distribution? What about changes in habitat? Is it reasonable to expect to find comparable control reaches and by what criteria will they be selected?

*Question: Is there a change in relative abundance of warm water native species?*

Explain more clearly how “Fish species relative distribution in “slices” would be accomplished. Are the proponents considering other warmer water species such as pikeminnow and suckers or just Willamette chubs?

*Question: Did the restoration project increase appropriate habitat for native cold water species?*

The only metric given for the Site level is water temperature. What about other habitat metrics?

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<sup>2</sup> <http://www.nwcouncil.org/library/isrp/isrp2003-1.htm>

*Question: Did the restoration project improve and/or increase habitat for native fish?*

This question seems redundant with previous and following question. The only metric given for the site level is turbidity? Again, what other habitat metrics could be informative?

*Question: Did the restoration project provide or increase appropriate habitat for native warm water species?*

Why is water temperature the only proposed metric?

*Question: Has the restoration program improved connectivity of mainstem refuge habitats?*

This question deserves additional explanation. How will habitat connectivity be measured and what is a desirable or appropriate level of connectivity for salmon and chubs? Specifically, how will “Spatial distribution of cold water refuge habitats” be determined? What is the method of “Measurement using the slices?”

### **Objective 5: Facilitate flow/landscape interactions – anchor habitats where channel forming and flood flow processes operate**

Processes: River hydrology, sediment transport, nutrient input and cycling.

*Question: Have the projects (either protection or restoration) allowed frequent flooding?*

Flooding should not be the sole criterion for assessing the intent of objective 5. Metrics and methods for this important objective clearly need further development. Wetlands creation and expansion needs to be included.

### **Objective 6: Contribute to a net increase in aquatic and riparian habitat**

*Question: Have the projects (either protection or restoration) outpaced the development of habitats by other forces?*

This is a large scale question that needs additional explanation in the proposal. At the reach and river scale, the proponents should define what is meant by “functioning” habitat and how adequate ecological functioning will be identified. How will habitat “development by other forces” be determined and compared to habitat improvements from projects to answer the question posed?

*(3) The June 2010 ISRP review asked for some site-specific details about the BiOp RM&E plan. Table 4 is a good general start, but it would help if monitoring plans for two to three candidate sites were presented. These could include monitoring protocols tailored to individual sites and indicate how these results would be rolled up to judge program effectiveness at larger spatial scales.*

Proponents edited Table 4 and added explanatory text to Section F: Measuring and Monitoring Results; however, they did not respond to our request for site specific protocols at two or three sites. The process of rolling up data from sites (or slices) according to a GRTS design, to focal areas (anchor habitats), and finally to the river network could have been explained more completely. The relationship of M&E efforts associated with OWEB restoration actions to other BiOp M&E work in the Willamette subbasin was not made completely clear (e.g., what provisions are being made for data sharing?). The ISRP would like to see a comprehensive

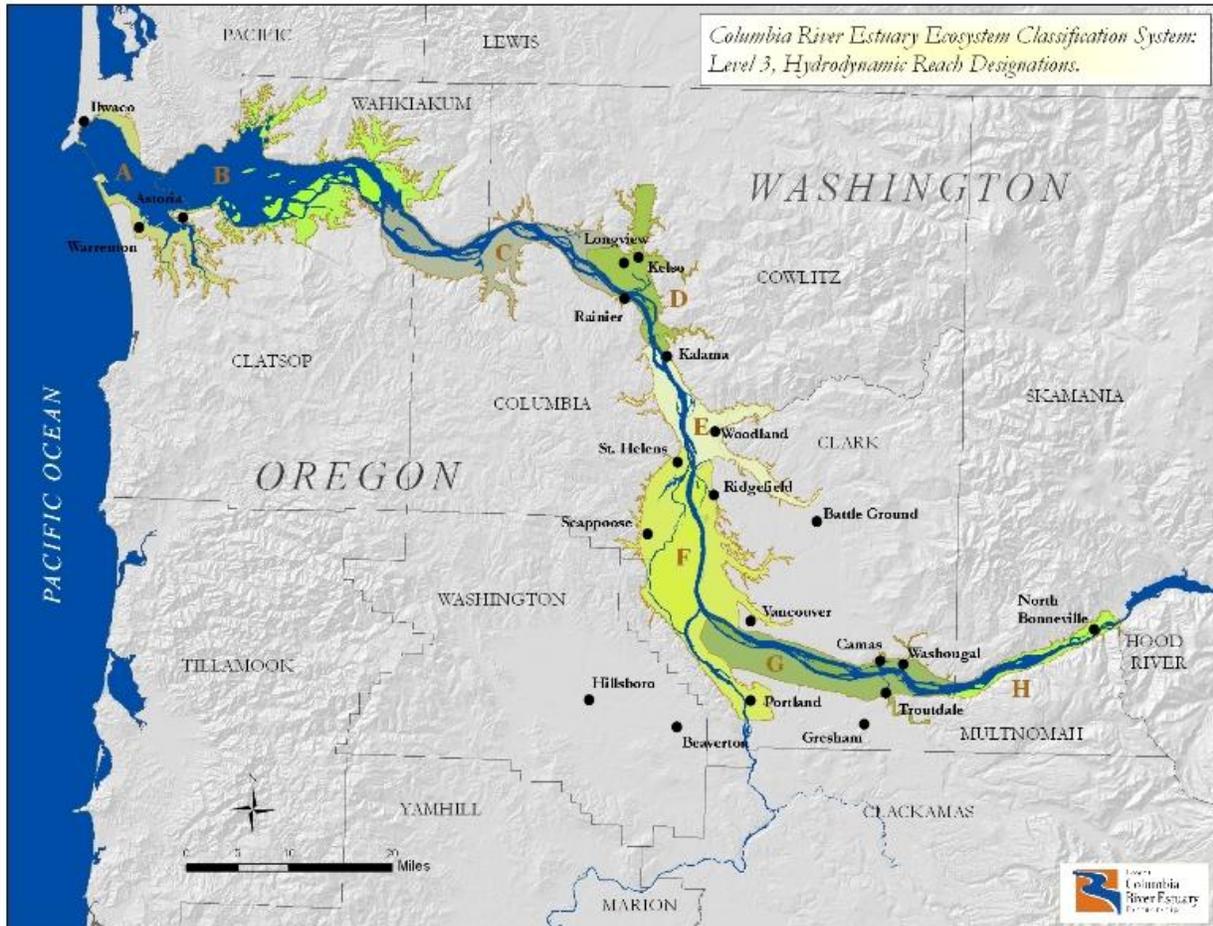
summary of project-related M&E (as detailed above), emphasizing what lessons have been learned that can be translated into improved site selection and restoration implementation, included in an interim progress report mid-way through this 5-year project (see ISRP Recommendation above).

*(4) Other comments*

The proponents have reasonably addressed the question in the ISRP preliminary review. Some of the specific detailed requests were not answered but can be taken up again in a follow-up progress report in year 2 or 3. The proponents make clear that the association between habitat restoration in the Willamette River mainstem corridor and VSP status of at-risk salmonids in this subbasin is poorly defined and understood, and evaluation of this successes or failures of the project with respect to listed species will require extended time. It is entirely reasonable that the actions to acquire and then reestablish normative floodplain functions will lead to improved habitat complexity and will enhance fish and wildlife generally. Whether these actions improve the ESA status of listed species will require long-term evaluation.

The ISRP is aware of the work of Carl Schreck and his colleagues on the life cycle of Pacific lamprey in the Willamette River, particularly the observation that adult lamprey hold in the river for extended periods (often a year or more) before spawning. Their work has shown that certain types of habitat structure, e.g., submerged logs, provide resting areas for adult lamprey. Given that this project will encourage the development of multi-aged riparian forests in some Willamette River sites, increases in channel complexity, floodplain reconnection, and riparian forest restoration would seem to be entirely consistent with the life history needs of this poorly understood species. The project proponents may wish to coordinate their restoration plans with CRITFC and other organizations seeking to recover Pacific lamprey in the Willamette subbasin.

At present, several large umbrella projects are being initiated in the Columbia River Basin, including the Willamette BiOp, Upper Columbia BiOp, and Columbia River estuary CREST projects. In the case of the Willamette BiOp and CREST projects, there is the possibility of some spatial overlap that could potentially lead to duplication of effort or projects that may not be compatible. The following map has been used to define sectors of the Columbia River estuary for CREST restoration purposes. It seems likely that the overlap of the Willamette BiOp and CREST (sector F) project areas in the vicinity of Portland will require joint restoration planning.



How do the areas of restoration potential postulated by the Atlas relate explicitly to anchor habitats in this proposal? How will the two be formally linked?

In the review of the original proposal, the ISRP recommended monitoring non-native species that use salmon and chub habitat. While the proponents concur with the ISRP’s concern about non-native fishes, they stated that “Our proposal is to protect and restore habitat; we will leave species management to others.”

The ISRP was not referring to species “management” per se, but to assessing distribution and abundance of non-native (and native) predators which could be an important limiting factor in some habitat types. There seems to be an implicit belief among biologists engaged in aquatic restoration that if habitat for native species is restored, then non-native fish problems will be taken care of. This often-made assumption is undoubtedly true in many cases, but it is not universal, especially if non-natives are abundant in a system and/or have nearby refugia or sources for recolonization. One can imagine that improvements in backwater habitats that might favor chubs would also provide more suitable habitat for bass and other warmer water predators.

The proposed work seems by intent very salmon (and chub)-centric, for understandable reasons related to BiOp concerns. Nevertheless, the proponents should consider adopting more of a “fish community” perspective, with emphasis on salmon and chubs, especially in view of the diversity of fishes in the Willamette River and the possibility that many native and non-native predators could impact target species.