



Independent Scientific Review Panel
for the Northwest Power & Conservation Council
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Memorandum (ISRP 2010-22)

June 23, 2010

To: Tony Grover, Director, Fish and Wildlife Division, Northwest Power and Conservation Council

From: Eric Loudenslager, ISRP Chair

Subject: Response Request for Willamette Bi-Op Habitat Restoration (#2009-012-00)

Background

At the Council's June 1, 2010 request the ISRP reviewed the Oregon Watershed Enhancement Board's project titled *Willamette Bi-Op Habitat Restoration* (#2009-012-00). This 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. As stated in the proposal document titled *Willamette River Habitat Protection and Restoration Program 2010-2015*:

The 2008 Willamette Project Biological Opinions (NMFS 2008, USFWS 2008) include Reasonable and Prudent Alternatives (RPAs) for the Action Agencies to carry out habitat restoration actions and establish a comprehensive habitat protection and restoration program to address effects of the federal Willamette River Basin Flood Control Project (Willamette Project). The Willamette Project includes 13 multi-purpose dams and reservoirs as part of the Federal Columbia River Power System, as well as 42 miles of bank protection projects. The Biological Opinions created the Willamette Action Team for Ecosystem Restoration (WATER) as a coordination body (RPA1.1 through 1.4 and 2.1). The WATER group consists of "technical experts from applicable state agencies and the Tribes" along with the federal Action Agencies.

The specific RPA addressed by this proposal is RPA 7.1.2, which requires the Action Agencies to "develop and carry out a comprehensive habitat restoration program." That program is the subject of this proposal, the Willamette Habitat Protection and Restoration Program (hereinafter referred to as the "Program"). This Program is designed to combine ongoing state-led habitat protection and restoration efforts in accordance with the directions of the Biological Opinion.

The ISRP's review follows below.

Recommendation

Response Requested

Additional details are needed for the ISRP to conduct a scientific review.

The narrative provides a clear description of the planning process, and it is based on a sound conceptual foundation. However, the proposal lacks project-specific scientific details and sufficient description of restoration activities by location. We also request a summary of what has been learned from the existing habitat projects that would be folded into this new umbrella project. In order for the ISRP to evaluate the scientific merits of the proposal, we need:

- (1) 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;
- (2) 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), and;
- (3) 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.

Once we have this information, the ISRP can give the scientific feedback needed for proceeding to the next steps.

Summary

The Oregon Watershed Enhancement Board's Habitat Technical Team (OWEB HTT) has prepared an umbrella proposal for multiple habitat restoration projects focusing on the mainstem Willamette River and lower reaches of its major tributaries. The narrative provides a clear description of the planning process. The ISRP is especially pleased that the proposed work builds on the Willamette River Basin Planning Atlas, which is one of the Pacific Northwest's most thorough landscape analyses and future modeling exercises. We are also pleased that several of the principal architects of the Willamette Planning Atlas will be involved on the Restoration Review Team. However, the proposal lacks detail with regard to specific restoration activities and locations, and for this reason we are requesting a response.

In many respects the proposal is similar in organization to the recent Upper Columbia BiOp Habitat proposal submitted by the Upper Columbia Salmon Recovery Board (UCSRB). In the Willamette BiOp Habitat proposal, priority restoration sites are to be identified, specific action plans developed, and the plans are to be reviewed by a Restoration Review Team (RTT) whose mission is to ensure that the work is scientifically sound, well integrated with other projects, and adequately monitored. Providing strategic direction and improved coordination to the projects

that will be funded makes sense, but one aspect of the proposal that is of concern to the ISRP is the assumption of technical review responsibilities for future projects by the RTT. This group contains scientists and managers who are well qualified to perform this function; however, little information was provided on the review criteria (e.g., will the reviews be based on scientific merit or other criteria as well?), how potential conflicts of interest will be avoided (i.e., review team members prioritizing projects in which they themselves have a direct interest), and how results of reviews will be reported and disseminated, and to whom. It was unusual to see a BPA employee listed as an RRT member, as BPA's role is more traditionally one of contract administration. The ISRP would like more details about the review process and how potential conflicts of interest with regard to project prioritization and funding will be handled, and, in connection with the discussion below, to what degree the RTT will function as an independent review group.

The RTT's mission is very similar to the ISRP's and could appear to supplant the ISRP's traditional project review role. Although the proposed approach offers the potential to increase project selection and monitoring efficiency, there is also a potential for overlap, redundancy, dueling science, and added process and costs for review if the review functions of the RTT and ISRP are not clearly articulated from the project's inception. The Fish and Wildlife Program has some other long-term habitat restoration projects that take a similar approach to that proposed for the Willamette and the Upper Columbia where the project has a general habitat restoration plan summarized in a proposal, receives a general fund from BPA to implement the plan objectives, and then has its own review team evaluate specific projects to implement the plan. These ongoing Program projects include the Grande Ronde Model Watershed, the Lower Columbia River Estuary Partnership, and the Water Transactions Program.

The ISRP periodically reviews these projects as part of the Council's standard project review and selection processes, for example, the FY 2007-09 and Categorical reviews. The ISRP has suggested some general review principles for these projects in the past including that the project proponents use project selection criteria that has been reviewed by the ISRP, monitoring is conducted, and results are reported. However, because of their scope and scale these projects are difficult to review in the standard review process, and the ISRP has not conducted a specific programmatic review of this umbrella project selection and implementation approach to determine whether it efficiently results in individual projects that benefit fish and wildlife and meet the standards of the ISRP's review criteria. This is a programmatic issue beyond just this Willamette project that deserves a policy level discussion, especially since the use of this approach seems to be increasing with the recent submittal of the Willamette, Upper Columbia, and CREST Estuary proposals. Such a discussion could result in agreement on the elements needed in umbrella habitat proposals (e.g., multi-year action plans, agreed upon prioritization criteria, comprehensive M&E plans); articulation of local review team's responsibilities and qualifications; and the ISRP's (and Council's) review approach.

We assume this Willamette proposal (program) will be subject to periodic ISRP review in the relevant Categorical and Geographic reviews. As part of future review processes, the ISRP will be especially interested in reports produced by the HTT and RTT covering program progress, monitoring results, and details on upcoming projects.

ISRP Comments

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

This is a well-written proposal from a highly competent team for a comprehensive programmatic approach to prioritization of funding efforts to restore native fish and wildlife habitat in the Willamette River mainstem and its floodplain. The problem statement is clear and provides a useful overview of the extent to which the river has been altered by 150 years of human development. The proposers describe the need for improved coordination and integration between federal, state, and private organizations with regard to restoration efforts. The OWEB, through its Strategic Investment Partnership, is already funding “more than a dozen” projects designed to increase mainstem complexity and floodplain connectivity, and other organizations have likewise attempted to improve fish and wildlife habitat on the floor of the Willamette Valley. This proposal addresses the requirements of RPAs in the 2008 Biological Opinion, although the specific RPAs themselves should be listed in the narrative. The problem statement also mentions that “at least two of the highest priority projects each year from 2011 through the term of the Biological Opinion” will be completed. It would help if several of the highest priority projects were described, since quite likely they have already been identified.

In keeping with the ISRP’s tradition of asking “What has been learned from restoration efforts so far?” there should be a concise summary of ongoing habitat complexity and floodplain reconnection projects in the area, especially those that have been undertaken by OWEB. Where possible this should include key findings from implementation and effectiveness monitoring activities.

The focal species identified in the proposal include Chinook salmon, steelhead, bull trout, and Oregon chub. The proposers may also wish to add Pacific lamprey to the list of focal species, as considerable attention is being given to recover this species in the Willamette subbasin and there is mounting evidence (from Carl Schreck and others) that adult and juvenile lampreys make extensive use of mainstem habitats. Also, some consideration should be given to impacts of habitat restoration on non-native species, especially predators such as sunfishes, perch, and bass. Reductions in non-native species abundance could be added as a biological monitoring metric. The discussion of limiting factors for focal species in the narrative, with actions that would address these factors, was well done. Adding information about the effectiveness of current projects in improving limiting factors would benefit the proposal.

The extensive list of existing and potential partners (pages 16-19) is a good argument for program coordination and integration. While the ISRP appreciates the productive working relationships OWEB has developed with agencies and organizations charged with managing the Willamette River’s hydrology and ecology, we wonder why the proposal (especially since the river has a long history of water quality problems in the early days) does not give greater emphasis to restoring water quality in reconnected floodplain habitats. Neither the EPA nor Oregon DEQ are mentioned as major program partners, yet many of the projects are likely to be located on lands with a very long history of agricultural and urban development, and which are known to be significant sources of anthropogenic chemicals. Much of the human population in

Oregon lives in the Willamette Valley as evidenced by the distribution and discharges of Wastewater Treatment Plants (WWTPs) into the Willamette River and its tributaries. Initial evidence has been developed indicating that pharmaceuticals and personal care products from WWTPs are finding their way into rivers and then into fish. Other industrial and agricultural contaminants have been shown in fish to reduce somatic growth, reduce lipid stores, and modify swimming, anti-predator and foraging behavior. Additional understanding of these accumulations and their effects on fish and the aquatic food web (community structure) is urgently needed. We feel a stronger link with ongoing water quality programs is justified in this project, and, for example, distance downstream from WWTPs and other point sources of contaminants (water quality) may be important in an overall assessment of the success of restoration projects. Contaminants may be considered a “wild card” when attempting to understand the food web and wildlife-habitat relationships, and as such, can potentially confound restoration effectiveness if not considered.

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

The objectives were adequately detailed in general terms and the overall strategy of establishing a connected series of “anchor habitats” is consistent with current scientific belief. The work elements and methods, however, were incompletely presented in the proposal. There was a description of work done under Project 1992-068-00 (Willamette Basin Wildlife Mitigation) on pages 31-32 and OWEB’s Special Investment Partnership (SIP)-funded projects on pages 33-34. These activities appear to represent the type of work that will be carried out under this proposal. Further information on project principles and general location is provided in Attachments C and D; however, these attachments do not provide any details on work elements or methods. These attachments do represent a worthwhile general template/roadmap for work to be done, but do not present any specifics about how the principles in Attachment C would be applied in making project selections. There also are no details provided about methods of project implementation at a particular site (which is what the ISRP is used to reviewing). For example, proposers can refer to our review of floodplain reconnection actions in the lower Wenatchee River¹ (Project 2007-325-00) – a project with similar objectives – to get a feeling for the level of detail the ISRP generally requires for a scientific review. Our ability to judge the technical adequacy of this proposal would be greatly enhanced if detailed plans for two to three high priority sites were presented. These plans should lay out the background and justification for the projects, the target species to be benefited, the methods used to achieve the objectives for the sites, the implementation schedule, and the monitoring plan. This level of detail would enable the ISRP to determine whether the project meets scientific review criteria.

For both Chinook and steelhead, it is suggested that limiting factors can be addressed by improving substrate recruitment through “peak flows and substrate supplementation,” increasing mainstem habitat complexity by reconnecting high flows to the historical floodplain, protecting habitat through conservation acquisitions, and protecting and restoring aquatic habitat function at the mouths of tributaries. The Willamette Planning Atlas will be used as a spatial template to identify opportunities for increasing “non-structural capacity of flood water,” restoring natural

¹ For an example of the level of detail needed by the ISRP, see our review of the Wenatchee Complexity Project at <http://www.nwcouncil.org/library/isrp/isrp2010-13.htm>

riparian communities and their function, and increasing channel complexity and native floodplain forest. More details should be provided on how these objectives will be achieved (and in what time frame) and how they are explicitly linked to fish population recovery. The approach used in developing the Atlas should be useful in the review and project selection process for assessing which proposed projects would potentially provide the greatest benefits for habitat. However, we are not sure how the Atlas in its present form can be used to project potential habitat benefits from individual projects (as opposed to long-term development strategies) assuming they are successful.

According to the proposal, several million dollars have already been spent by the Willamette National Forest on habitat restoration and bull trout reintroductions, yet with this and other efforts “the sum of our conservation efforts in the Willamette has – to date – been insufficient to halt the decline of native species” (pg 15). This statement suggests that previous attempts to coordinate and integrate restoration activities have largely failed. It would be helpful for the proposal to explain why the sponsors feel the new approach would succeed where previous efforts have been unsuccessful.

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

The coordinated approach to the difficult task of protecting and restoring mainstem habitat in large rivers via a skilled science-based watershed stewardship group that has carefully pre-screened priority projects must be applauded. From the outset, however, it was clear that an experimental management approach (using carefully designed treatment-control sites) was not the focus of this project, whereas the ISRP believes such an approach would be appropriate for mainstem Willamette River adaptive management. The proposal does not supply enough detail regarding how monitoring would take place in the event of a very large disturbance, such as the February 1996 flood. An inability to address the effect of catastrophic events on restoration effectiveness could be a potential weakness unless contingency monitoring plans are specified. A response is requested that explains the monitoring strategy in more detail, and considers an experimental management approach with statistical procedures that address environmental variability. Where appropriate, biological metrics that relate to overall project goals should be more completely described (i.e., fish recruitment response).

As previously mentioned, Table 4 gives a good overview of the metrics, methods, and frequency of measurement for each of the six habitat objectives and also indicates the spatial scale at which each measure will be applied. Some justification for sampling frequency is needed. It would also be useful to see an example of how these procedures would be applied to high priority sites. The technique of dividing sites into 100-meter slices and rating each slice’s ecological potential and social constraint is very intriguing, and the ISRP is looking forward to seeing the results of this type of approach. However, it was not clear how the attributes for the slices in Figure 4 were selected (as opposed to other data that might be obtained from aerial photos). More details were needed on how slice attributes would be translated into actual physical habitat units and projected fish response, including field verification of assumptions in the models, and how this information would be used to track trends in restoration effectiveness.

It appears that remote sensing will be used to characterize a number of site conditions. Although aerial photography is mentioned for objectives 5 and 6, we suggest that proposers consider additional use of LiDAR for some applications, which is capable of detecting change in high resolution and also has the capability of resolving vegetation coverage. High resolution LiDAR may already be available for some locations along the Willamette River mainstem.

Under objective 3 (protect, restore, and enhance habitat for native fish species), we recommend that the water quality monitoring effort be expanded to include chemical analyses of focal species (and possible sediments) to detect potential contamination of newly-reconnected habitats. Spatial distribution of anchor habitats and the distance separating them may not be entirely adequate to assess habitat connectivity because, among other factors, the quality of habitats separating anchor habitats may have a profound influence on species access to these habitats. Anchor habitats that are relatively close essentially may be isolated due to poor quality of the intervening habitat (e.g., a serious water quality problem).

4. Overall Comments - Benefit to F&W

This proposal has a solid conceptual foundation and has the potential for improving core habitat conditions in an often-overlooked and highly altered part of the subbasin – the mainstem. The work would build on a number of existing projects and has a strong scientific team. Although the project identifies four focal species, the ISRP feels the target species list can be expanded to include other native fishes, including Pacific lamprey. The coordination of restoration efforts through this program could result in substantial improvements in the efficiency and effectiveness with which restoration actions are implemented on the Willamette mainstem. However, more detail on the implementation of the program is required in order for the ISRP to complete a technical review.