



Independent Scientific Review Panel
for the Northwest Power & Conservation Council
851 SW 6th Avenue, Suite 1100
Portland, Oregon 97204
isrp@nwcouncil.org

Memorandum (ISRP 2010-9)

April 15, 2010

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

From: Eric Loudenslager, ISRP Chair

Subject: ISRP Review of CREST Estuary Habitat Restoration proposal (#2010-004-00).

Background

As requested by the Council on March 8, 2010, the ISRP reviewed the Columbia River Estuary Study Taskforce (CREST) Estuary Habitat Restoration proposal (#2010-004-00).

As described in the proposal abstract:

CREST seeks to continue developing, designing and constructing on-the-ground habitat restoration actions that benefit threatened and endangered salmonid species in the Lower Columbia and Estuary, specifically the 2008 BiOp RPA 37, *Achieving Habitat Quality and Survival Improvement Targets*. This proposal represents a lower river/estuary wide effort to restore mainstem and tidal habitats, acknowledging the interconnected landscapes that comprise the lower river and estuary ecosystems...The restoration actions will benefit threatened and endangered salmonid species in mainstem and tidal habitats that promote diverse estuarine life histories. The project will result in an ecosystem-based habitat restoration program, guided by adaptive management principles, and focused on the improved survival of juvenile salmonids. In the past six years, BPA project dollars have supported and leveraged seven CREST habitat projects that resulted in 86 acres restored and over 18 linear miles of shoreline reconnected or enhanced.

This new project has a close relationship to ongoing work by CREST funded under Grays River Watershed Restoration, Project 2003-013-00 that is due to be closed out in May/June, 2010. The Grays River Watershed Restoration Project focuses on the upper Grays River basin, above tidal influence. The 2008 BiOp prioritizes habitat projects that are in tidally influenced areas of the tributaries. CREST's new habitat project, #2010-004-00, is focused from the mouth of the Columbia River to Bonneville Dam, including the tidally influence areas of the tributaries.

Recommendation

Response requested

The proposal in its current form does not meet scientific review criteria. A response is requested in the form of (1) a revised proposal and (2) a point-by-point response to the ISRP concerns summarizing how the concerns are addressed and citing where in the revised proposal the concerns are addressed.

The following items are needed for an adequate response:

1. Clarification of the specific role of CREST in the process of BPA-funded habitat restoration.
2. More details on the two projects mentioned in the cover letter by Mr. Maslen (Ft. Columbia Tidal Reconnection and Otter Point Restoration). Until the projects have actually been designed, the ISRP cannot determine their technical and scientific merit or whether the projects may benefit Columbia River Basin Fish and Wildlife. A revised proposal for the above two projects could be paired with a document that describes CREST's role in a restoration plan for the entire estuary over the next decade. This comprehensive proposal should (1) deal with the proponent's vision(s), goals, and objectives for the estuary, (2) review accomplishments to date in terms of meeting the goal of restoring 16000 acres, and (3) provide a blueprint for future work.
3. A summary of the analyses completed by the estuary BiOp science group and the ERTG that evaluate the merit of the proposed activities (in 2, above) and a cross-referencing of the proposed work with the analyses.
4. An explanation of the specific methods that CREST uses to identify and prioritize habitat restoration projects. There is a need to demonstrate how the scientific prioritization criteria will be applied to the landscape in general, not just individual projects. How will these criteria be evaluated at multiple sites to decide which sites should be developed into protection and restoration projects? It is not evident from the proposal that recent advances in classifying and mapping estuary habitats (see presentations at the Astoria science/policy exchange www.nwcouncil.org/fw/program/2009spe/Default.asp) have been incorporated into a long-term approach to identify where protection and restoration should be implemented to achieve the three primary objectives.
5. Specific examples of the significance and consistency of proposed BPA-funded CREST projects with regional programs and how coordination will be achieved.
6. An explanation of how the limiting factors described in the Lower Columbia River and Columbia River Estuary Subbasin Plan and RPAs in the 2008 BiOp will be specifically addressed. The three primary objectives: (1) increase the availability of preferred habitat; (2) increase the macro-detritus food web; and (3) increase habitat connectivity, need to be developed in a quantitative form. The proponents need to elaborate on the quantitative connection hypothesized between these ecosystem attributes and the survival and capacity of different life-stages and species of salmon in the estuary.

7. Further details on monitoring methods for the two specific projects mentioned in 2 (above). Who will actually decide on the methods? Will the methods be extracted from Roegner et al. (2009), and what is the role of the ERTG in selecting them? Details are requested on the design of the BACI analyses. If cause-effect relationships are being sought, before and after monitoring will require randomization of sites and attention to sample sizes in a power analysis.

ISRP Comments:

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

The ISRP concluded that the proposal would be improved by further information on the science and technology behind the proponent's objectives, particularly those for the two projects (Ft. Columbia Tidal Reconnection and Otter Point Restoration) slated for funding. Specific examples of the significance and consistency of proposed BPA-funded CREST projects with regional programs and how coordination will be achieved are also required.

The ISRP appreciates that a priority focus for the 2008 BiOp is tidally influenced areas of the tributaries. CREST and their partners apparently have an estuary-wide goal of restoring 16,000 acres by 2010 (Corbett and Sink 2009 Astoria Science-Policy presentation, <http://www.nwcouncil.org/fw/program/2009spe/Default.asp>, based on LCREP Management Plan and EPA Strategic Plan). It would be useful to learn if the proponents think the opportunities in the lower 46 miles of the estuary (where they have been working for the past six years) are exhausted.

Project relationships are described, and the close working relationship between CREST, the Estuary Partnership Science Work Group, other projects, and outreach efforts is appreciated. The proposal describes many relationships to other nearby projects with fairly good detail. This seems to be a very strong attribute of CREST – coordinating extensively with others doing similar work in the estuary and doing lots of outreach.

Working relationships between some of the other key researchers in the estuary should also be described. For example, major effort is being put into tracking salmonids in the estuary by NMFS projects (e.g., 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, <http://www.nwcouncil.org/library/isrp/isrp2010-6.pdf>). Are CREST staff coordinating evaluation of restoration projects to see if tagged fish are using restored habitats?

On an editorial note, the proponent's citation of Levy, D.A. and Northcote, T. 1981 Fish utilization of Fraser estuary marshes, *Estuaries* 4, 263, is incorrect. This journal did not publish the paper. In addition, citations for Levy and Northcote (1982), Kareiva (2000), and Cameron et al. (2009) are not given.

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

The ISRP concluded that the proposal would be improved by inclusion of more specific objectives. The objectives given are very general. This is a plan to develop a plan.

The proposal would be improved if the objectives of the proponent's specific projects were tied into the overall goal for estuary restoration (16,000 acres). Do they fit into a science-based selection process or are they chosen mostly on opportunities? (see Palmer 2009 for some commentary on this issue). Where are the projects located relative to other habitats that have been restored?

The proponents need to explain the specific methods that CREST uses to identify and prioritize habitat restoration projects. The proposal briefly describes a two-tier review of CREST-selected projects by other groups (the Estuary Partnership and the Expert Regional Technical Group (ERTG)). It is not clear how CREST fits into the processes of project selection or review. For example, Task 2 (design projects), this task includes only vague references to methods that are insufficient explanation for scientific review, e.g., a "streamlined design process" and "standard professional practice." Another example, Task 3 (implement projects), CREST subcontracts others to implement their selected projects. The proposal would be improved by an explanation of what CREST's role is when BPA contracts implementation of habitat projects recommended by the Estuary Partnership and the ERTG. Task 4 (monitor and evaluate projects) refers to information in section G. The proponents provide a numbered list of work elements, yet no specific methods for any of these work elements are provided, which makes a science review difficult.

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

Monitoring is to be conducted using methods in Roegner et al. (2009), and site-specific metrics will be selected based on individual project goals and expected outcomes. The proposal would be improved by further details on specific monitoring methods, statistical power analyses in relation to BACI design, and data management. The proponents state that specific plans for M&E will be developed and reviewed by the Estuary Partnership and the ERTG. Will these groups re-review the Roegner et al. (2009) methods or choose methods from the document? What specific methods will be used for the Ft. Columbia Tidal Reconnection and Otter Point Restoration projects?

The proposal would be improved by documentation of monitoring work done to date on previous projects involving the proponents. Some insight into monitoring was provided by CREST's presentation at the Astoria Science-Policy meeting ("Project level effectiveness monitoring in the estuary and response in fish communities" www.nwcouncil.org/fw/program/2009spe/Default.asp), but it is not clear if a report is prepared by CREST for each project.

The ISRP looked for documentation for several of the completed or in-progress projects to look at results and documented benefits for fish habitat. Reports were found for two of them (Grays River # 2003-013-00 and Gorley Springs #2003-013-00 (same project?)). For Grays River, PNL

was contracted to do the reports, and two of them were very brief ('05 and '08-'09 annual reports). Each had only 3 or 4 pages of text and mostly consisted of photos, maps, and engineering drawings (Herrera Engineering). No data were given on fish numbers before and after habitat improvements. For the Gorley Springs project, details on the results were also lacking. CREST personnel authored several of the reports, but they were of the same format as for the Grays River project. Anchor Environmental did the engineering drawings. It seems that CREST may primarily get "on-the-ground" highly engineered habitat restoration work done by subcontracting to others and then monitors the response to improvements.

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

The ISRP recognizes that the restoration projects proposed are driven by the BiOp for particular salmonid species. However, there is also the larger issue of an overall management plan for the estuary and how work done with this plan will benefit fish and wildlife. The proposal would be improved if the proponents were able to set their proposed work in the context of the 16,000-acre goal mentioned above. They describe 11 geographically separate restoration projects that they are involved with by management or contract arrangements, and there are likely others. How do all these projects fit together and has contemporary scientific methodology on landscape ecology (e.g., Simenstad et al. 2000) been applied?

While the framework for the rationale and planning of habitat restoration is generally well done, the proposal stops far short of providing any specifics including actual locations to restore, a specific study design, or measurable objectives with metrics specified (as the criteria in Appendix A recommend). The proposal only provides discussion about following general plans, implementing 1-2 projects per year following criteria, and coordinating with other groups.

In addition the monitoring of past projects implemented by CREST and documentation of their benefits to fish or wildlife could be improved (see above). ISRP is concerned that monitoring details for the restoration work in the present proposal were insufficient.

References

Palmer, M.A. 2009. Reforming watershed restoration: science in need of application and applications in need of science. *Estuaries and Coasts* 32(1):1-17.

Simenstad, C.A., Hood, W.G., Thom, R.M., Levy, D.A., and D.L. Bottom, 2000. Landscape Structure and Scale Constraints on Restoring Estuarine Wetlands for Pacific Coast Juvenile Fishes p.597-630 in Weinstein, M.P. and D.A. Kreeger (Eds) *Concepts and Controversies in Tidal Marsh Ecology*. Springer Netherlands DOI 10.007/0-306-47534-0_28.