



Independent Scientific Review Panel
for the Northwest Power & Conservation Council
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Memorandum (ISRP 2010-23)

June 28, 2010

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

From: Eric Loudenslager, ISRP Chair

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

Background

This is the ISRP's final review of the Columbia River Estuary Study Taskforce (CREST) Estuary Habitat Restoration proposal (#2010-004-00). The intent of this proposal is to continue CREST's effort in developing, designing, and constructing on-the-ground habitat restoration actions to 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*.

The ISRP reviewed an early version of the proposal and found that it did not meet scientific review criteria ([ISRP 2010-9](#)). A response was requested in the form of (1) a revised proposal and (2) a point-by-point response to the ISRP concerns. On May 21, the Council forwarded CREST's response to us and requested our review.

ISRP Recommendation

Does Not Meet Scientific Review Criteria

Summary comments

The ISRP appreciated the response summary provided by the proponents including page numbers where the proposal was revised and the attachments with specific engineering plans for projects at Fort Columbia and Otter Point. However, significant revisions of the proposal itself were not evident and the response failed to provide an adequate level of detailed ecological information regarding the two proposed projects and additional unspecified projects extending through 2018. Project selection criteria, estimation of biological benefits, and methods and study designs for individual and cumulative project monitoring and evaluation remain deficient.

The role of CREST seems to be primarily one of coordination and assisting in getting subcontracts for engineering companies to develop plans/designs for opening up dikes, installing culverts, and other bioengineering aspects of estuary restoration. They do have some internal capacity for ecological work as evidenced by their presentation at the Science-Policy meeting in Astoria, September 2009. However, their management capability is clearly emphasized once again in the response. As such, different indicators, in addition to scientific criteria, may be needed to evaluate CREST proposals.

The ISRP is also concerned the proposed procedures for scientific review of CREST projects bypass the ISRP process, and as the proponents state, their projects will continue to be vetted by Estuary Partnership Science Workgroup (EPSW) for technical merit and BPA Expert Regional Technical Group (ERTG) for assignment of survival benefits. In the current instance, the request is to implement two projects that have yet to be reviewed by either the EPSW or ERTG.

Comments

The ISRP asked that CREST provide a response and revision to seven specific concerns. Our review below is organized by those concerns.

1. Clarification of the specific role of CREST in the process of BPA-funded habitat restoration.

CREST has an impressive record of getting habitat restoration projects initiated and coordinating with others in the region. However, the ISRP did not find any evidence in the proposal (or reports cited in the proposal) that results or benefits for juvenile salmonids have come about from any of these projects. The role of CREST seems to be primarily one of coordination and development of subcontracts for engineering companies to develop plans/designs for opening up dikes, installing culverts, etc. They do not lead these efforts but rely on other entities to do the M&E. The organization clearly acts as a well-placed coordinator and broker of habitat restoration projects, and they are clearly successful at finding sites, locating and leveraging funds, managing projects, and contracting out engineering and biological sampling. But much of their activity is not science, and it is difficult to assess their program using scientific criteria.

The success stories need some documentation to be credible. The ISRP noted that CREST staff gave a presentation at the Astoria Science-Policy meeting (September 2010) on results of one of their projects, but this is not cited in the response.

2. More details on the two projects mentioned in the cover letter by Mr. Maslen (Fort Columbia Tidal Reconnection and Otter Point Restoration)...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.

The response gives further information on the two projects in Appendices D and E, which are environmental engineering designs/plans, but these documents lack fish monitoring protocols and details of how such projects will be evaluated for ecological response, except at the primary production level (vegetation surveys).

The ISRP found that some of the added material indicated what can be done in general terms for a restoration plan but did not provide specific details including their vision, goals, and specific objectives. A response to the ISRP's comment about a long-term comprehensive plan was not given – the proponents propose to rely on others' work (NOAA Estuary Module and BiOp documents). It appears that CREST's contribution to restoration of 16,000 acres of tidal wetland will be 1214 acres, and 854 of these are at one site – Hungry Harbor. It is not evident who will restore (or how) the remaining acreage. The biological benefit of restoration of 1214 acres is not described (the proposal does not actually provide sufficient statement that the 1214 acre restoration will be completed by 2018). Monitoring plans rely on Roegner et al. (2009). For example, “The monitoring approach CREST and our partners employ is Before/After/Reference/Impact, the statistical design recommended in Roegner et al (2009). What results is frequently a ‘pass/fail’ evaluation of project effectiveness, based on quantitative field data. Sample sizes may be random or targeted, depending on site conditions and project objectives/hypothesis.”

The engineering designs for the Fort Columbia Tidal Reconnection project are the work of subcontractors following WDFW criteria for fish use. Involvement of CREST is at arm's length. A concern at Fort Columbia is the fact that flood impacts of the proposed culvert have not been adequately addressed by previous modeling and was not in the scope of this contract. A concern at Otter Point is water quality. In addition to reduced habitat complexity, the Lewis and Clark River is listed for fecal coliform on the state's 303(d) inventory of impaired water bodies. The Otter Point Restoration project is apparently planned without evaluation criteria but with an assumption of fish use following restoration – a supportable assumption. However, information on benefits to fish in survival terms need to be included in the proposal. Monitoring is recommended by the subcontractors, but it is not a task for CREST as far as can be understood.

Protocols for monitoring and evaluating the effectiveness of management programs should be specified. Development of indicators may be a worthwhile approach (see the ISRP report, Input on Evaluation of Regional Coordination Projects, ISRP 2007-14).

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.

The proponents have received no scientific “feedback” to date from the groups they propose to coordinate. A response is expected in July 2010. It is unclear to the ISRP how the proposal to initiate the restoration precedes the analysis of ecological affects and benefits to fish and wildlife.

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.

The ISRP found that criteria for estuary wide selection of restoration sites were not given in the response. CREST is involved with other agencies developing such criteria (e.g. the Estuary Partnership’s Restoration Prioritization Framework and the University of Washington and U.S. Geological Survey’s Columbia River Estuary Ecosystem Classification (CREEC)) but does not have sole responsibility for the task. However, the ISRP thinks that CREST does have opportunities to provide leadership for a long-term scientific approach to estuary restoration. At present, the proponent’s roles are primarily facilitation and coordination.

The Work Elements in the revised proposal still do not contain a level of detail that enables the ISRP to evaluate the potential of this proposal/project(s) to provide benefits to juvenile salmonids. How CREST applied the Restoration Prioritization and CREEC tools to select the upcoming projects identified in Table 2 (page 11) of the proposal narrative needs to be included in the proposal. The proposal needs inclusion of more ecological information, over and above affirmations that the proponents are aware of specific conditions and methods.

*For example, “WE 184 – Install Fish Passage Structure
Critical habitats along the Lower Columbia River and Estuary are isolated from fish use as a result of inadequate water passage structures. The Fort Columbia project will restore connectivity by replacing a perched, impassable structure with an un-gated structure to 96 acres of historic tidal and floodplain wetlands. Additional projects have been identified and are in the feasibility stage.”*

There are no specific tasks linked to this Work Element which could be done to monitor fish use/presence before or after construction other than general statements in the Monitoring and Evaluation section that follows:

“In general, CREST evaluates monitoring needs according to a two-tier approach: extensive versus intensive. Extensive monitoring of a few key metrics will broadly cover most projects, whereas select project types may be chosen for intensive monitoring when data on that project type is deemed by CREST and the project reviewers to be deficient or complementary to other studies. As an example, the Fort Columbia Tidal Reconnection site is being monitored extensively for fish species composition and timing, fish size structure, presence/absence of adult fish, landscape change, channel morphology, channel flow volume, hydrology, water temperature, dissolved oxygen, and salinity. Intensive monitoring is proposed with a PIT-tag array, evaluation of habitat type and area, use of habitat types, winter/summer biomass sampling and flux export to test the hypothesis that the project will benefit out-of-basin stocks and increase macrodetritus availability in the estuary.

PIT-tag arrays are proposed for both Fort Columbia and Otter Point, as we are frequently asked about off-channel habitat use in the estuary by downstream migrants from distant upriver stocks (e.g. mid-Columbia or Snake River). PIT-tag arrays at these locations will be an affordable way to address this question because any fish tagged elsewhere in the Columbia River Basin that enters the wetlands will automatically be registered by the array and later uploaded into PTAGIS (Passive Integrated Transponder Tag Information System). CREST staff will work to coordinate as much as possible with related research programs in the estuary (e.g. ACOE telemetry studies).”

From these statements the ISRP was unable to determine if CREST will be doing the monitoring or will be coordinating other agencies or projects. Will CREST be installing PIT tag arrays or using others’ data? If the proponents are doing the data collection themselves, sample locations, sample sizes, number of tags, and other technical details need to be provided.

5. Specific examples of the significance and consistency of proposed BPA-funded CREST projects with regional programs and how coordination will be achieved.

The ISRP found that, generally, the projects that CREST proposes to facilitate and/or coordinate are consistent with the BiOp and other regional programs but are described inadequately. For example CREST is working with BPA to estimate the number and type of restoration projects to be implemented and the anticipated survival benefit units. No detailed information is given, however. The proponents’ work will likely be consistent with approaches suggested in the NOAA Estuary Module (reference not provided), but they do not refer to the limitations of the Module (or at least its draft) (see [ISAB 2008-2](#)). This suggests CREST is not critically evaluating the pros and cons of various approaches, but rather is following the recommendations of science-based organizations.

However, the ISRP is concerned that proposed procedures for scientific review of CREST projects bypass the ISRP process, as stated in the last paragraph of the response: “all future CREST projects funded by BPA will continue to be reviewed through the

Estuary Partnership Science Workgroup for technical merit and BPA Expert Regional Technical Group for assignment of survival benefits. The Science Workgroup may recommend a project based on its overall ecological benefit and the ERTG will subsequently assign the proposed project a salmon survival benefit unit. This information will be evaluated by BPA staff in deciding whether or not to fund the project.”

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.

The ISRP found that no specific information was provided, and quantitative connection between ecosystem attributes and salmon survival was not hypothesized, except in a general way using inference. The proponents plan on relying on other entities to scientifically evaluate the benefits to fish and wildlife. See also comments in Number 2, above.

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.

The ISRP found that adequate detail was not provided – see comments in number 4, above.

The proposed minimum monitoring effort is one pre-project and two post-project years. For long-lived species such as Chinook salmon this short evaluation period is inadequate. Again, the ISRP concluded that CREST proposes to bypass the ISRP review process, as stated “CREST will include monitoring as a project action for Science Workgroup and ERTG review. Any suggestions from these groups or other research professionals will be considered. BPA will make final decisions related to funding monitoring efforts as part of annual contract negotiation.”

References

ISRP. 2007. Input on Evaluation of Regional Coordination Projects. ISRP 2007-14. Northwest Power and Conservation Council, Portland, OR.

ISAB. 2008. Review of the Estuary Recovery Module. ISAB 2008 -2. 16 p. Northwest Power and Conservation Council, Portland, OR.

ISRP. 2010. Response request for CREST Estuary Habitat Restoration Proposal (2010-004-00). ISRP 2010-9. Northwest Power and Conservation Council, Portland, OR.

Roegner, G.C., H.L. Diefenderfer, A.B. Borde, R.M. Thom, E.M. Dawley, A.H. Whiting, S.A. Zimmerman, and G.E. Johnson. 2009. Protocols for monitoring habitat restoration projects in the lower Columbia River and estuary. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-97, 63 p.