Northwest Power and Conservation Council

January 7, 2010

DECISION MEMORANDUM

TO: Council Members

FROM: Mark Fritsch, project implementation manager

SUBJECT: Council decision on Project #2008-458-00, *Upper Columbia Kelt Reconditioning Program*, a Columbia Basin Fish Accord project.

PROPOSED ACTION: The Council staff recommends that the Council support the project for implementation with a subsequent performance check in 2014.

BUDGETARY/ECONOMIC IMPACTS

The total amount associated with this Accord project equals $5,661,448 (e.g., ranges from $512,500 to $675,961 per year[1]) in expense funds for Fiscal Years 2008 through 2017. A contract (#41804) associated with the project has been executed and reflects a performance period of March 1, 2009 to February 28, 2010 at $675,961. In addition, a contract request (CR-126983) associated with the project has an anticipated start date of March 1, 2010 and an end date of February 28, 2011.

BACKGROUND

In 2008-2009, the Bonneville Power Administration, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation (the "Action Agencies") signed agreements with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO), the Confederated Tribes and Bands of the Yakama Nation (YN), and the Columbia River Inter-Tribal Fish Commission (CRITFC). The agreement with these Tribes and CRITFC is referred to as the Three Treaty Tribes MOA. The Action Agencies also signed agreements with the Confederated Tribes of the Colville Reservation (CCT), the Shoshone-Bannock Tribes (SBT), and the states of Idaho, Montana, and Washington. These agreements are known as the Columbia Basin Fish Accords.

As set forth in the guidance document outlining the review process for the Accords, the Council recognizes Bonneville's commitment to Accord projects. The Accords do not, however, alter the

[1] This range includes the anticipated 2.5-percent annual inflation adjustment, beginning in Fiscal Year 2010.

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Council's responsibilities with respect to independent scientific review of project proposals or the Council's role following such reviews. As with all projects in the Fish and Wildlife Program, Accord projects are subject to review by the Independent Scientific Review Panel (ISRP), and the Council provides funding recommendations based on full consideration of the ISRP's report and the Council's Program.

On November 4, 2008, the Council received from Bonneville a Columbia Basin Fish Accord proposal from the Yakama Nation, #2008-458-00, *Upper Columbia Kelt Reconditioning Program*. The project's goal is to enhance the abundance and life history diversity of naturally produced steelhead in the Upper Columbia River (UCR) by taking advantage of their unique ability to repeat spawn (i.e., iteroparity). The project proposes to recondition post-spawned steelhead (kelts) in captivity under a long-term treatment program (6 to 10 months), monitor their condition and reproductive state, release them to spawn naturally, and track their post-release contribution to natural spawner abundance. Natural-origin steelhead kelts will be collected from hatchery broodstock that are live-spawned and at locations known to encounter kelts, such as UCR hydroproject fish bypass systems, tributary smolt traps, and weirs. Half of the kelts collected would be released immediately, without reconditioning, to serve as an in-river control group and to gauge natural rates of repeat spawning.

On December, 12, 2008 the ISRP provided a review (ISRP document 2008-15) of the proposal and found additional detail was needed. The ISRP provided a recommendation of "Response Requested - Does Not Meet Criteria."

On May 8, 2009 staff from the Council, Bonneville and Yakama Nation (YN) discussed the proposal and the process for addressing the ISRP's concerns. As a result of the meeting, the YN requested clarification on June 26, 2009, from the ISRP about how best to divide up the anticipated kelts among treatment and control groups given their limited availability, variable tank survival rate during reconditioning through time of release, and low return rates to Bonneville in subsequent migrations. The YN also requested input on the experimental design where the YN's design preference is to focus solely on the "long-term" treatment – dispensing with the "short-term" treatment to maximize returning sample size and statistical power.

The ISRP responded to the YN on August 3, 2009. The ISRP emphasized the importance of having a control stream and establishing endpoints that will serve as the data for comparison between treatments and reference sites. In addition, the ISRP stated that once the treatments are defined, then treatment strategies benefits can be determined through power analysis (ISRP 2008-15A Update).

On August 19, 2009 the Council received a response from YN (via Bonneville) intended to address the concerns raised by the ISRP in their previous reviews; and on September 28, 2009 the ISRP provided their final review (ISRP document 2009-39). The ISRP continued to find that the proposal does not meet review criteria and stated the following.

> *The proposal does not meet review criteria because the overall assumed benefits to steelhead NOR abundance (or other VSP criteria) has not been established, the specific objectives in the proposal are inconsistently described, and the evaluation methods are not sufficiently detailed to determine the ability to measure any benefit that might occur.*

> *The ISRP believes that if further consideration is given to kelt reconditioning as a recovery strategy the appropriate beginning point is a review of iteroparity in UCR steelhead leading to simulation and recruitment analysis that includes historical and current rates of iteroparity, potential benefits of using reconditioned kelts, and the effect of altering the rates of iteroparity on steelhead life-history. This would serve the important function of identifying the potential benefit to steelhead VSP metrics that would need to be produced using kelt reconditioning as a recovery strategy and quantified during implementation. This background effort has not yet been completed.*

On December 16, 2009 Council received YN's response to the ISRP. The response thoroughly addressed the concerns raised by the ISRP. While troubled by the ISRP's conclusion, YN believes the proposal can shed new light on the reproductive success of reconditioned kelts after release. YN views the proposal as an opportunity to supply additional steelhead to the spawning grounds and that these fish, marked so they can be identified, can contribute significantly to major steelhead reproduction studies described below.

The proposed work is based on the belief that long-term kelt reconditioning can work and is motivated by a recognition that few alternatives exist for UCR steelhead. YN readily acknowledges the limitations of previous studies, including whether reconditioning contributes to productivity of the natural populations and agrees that more evaluation into the propagation technique is required. However, the existing study in the Yakima River has demonstrated a significant survival increase for long-term reconditioned kelts compared to in-river controls. They also note that this study has documented successful homing, spawning behavior, mate selection, and egg deposition. Thus, while it may be true that the fundamental questions of reproductive success and productivity in the wild are unanswered, YN proposes to answer those questions in collaboration with other RRS studies in the upper Columbia.

The YN, based on the feedback received from the ISRP, have rewritten the objectives[2] associated with the proposal as follows.

Objective 1:	*Recondition UCR steelhead kelts using long-term methods at existing facilities.*
Objective 2:	*Evaluate kelt survival and effectiveness of reconditioning methods.*
Objective 3:	*Collaborate with ongoing M&E studies to document the reproductive success of kelts released from the reconditioning program.*

ANALYSIS

The ISRP is not able to provided a favorable review of the proposal because the assumed benefits have not been established (e.g., NOR abundance, VSP criteria). The ISRP remains uncertain whether this fish culture technique can rehabilitate steelhead kelts that reproduce successfully in the natural environment. In addition, the ISRP found inconsistencies in the objectives, felt that evaluation methods lacked adequate detail, and believe that the iteroparous life history pattern needs to be analyzed in the context of a recovery benefit to steelhead.

[2] The general objective of this project is to test whether the abundance of naturally produced UCR steelhead on natural spawning grounds can be increased through the use of long-term reconditioning methods.

The ISRP indicated that kelt reconditioning is an attractive proposition; however the ISRP is concerned about the ecological and life history diversity issues raised by reconditioning.[3]

Recognizing that the ISRP wants all the uncertainties answered and/or the documentation of the benefits of kelt reconditioning in place before implementation of kelt reconditioning as a broad-scale steelhead recovery tool, Council staff feels that this project could contribute significantly to ongoing studies of reproductive success of reconditioned kelts. Council staff bases its conclusions on the following:

- This project by collaborating with other PUD funded studies will address some of the remaining uncertainties regarding the reproductive success of long-term reconditioned kelts. As with most new techniques, replication over time, perhaps in several locations, is desired to get reliable estimates of reconditioned kelt contributions to natural spawning populations (2006, ISRP review of 2007-2009 proposals).

- The uncertain benefits of kelt reconditioning will be addressed in a coordinated and systematic way by ongoing kelt reconditioning projects currently funded by Bonneville Power (Project Number 2007-401-00[4]). The intensive salmonid monitoring infrastructure in the Upper Columbia (ISEMP, PUD M&E Plans, Okanogan Basin Monitoring and Evaluation Plan (OBMEP), and BOR research in the Methow River) affords a unique opportunity to monitor the post-release movement, survival, and reproductive success of the kelts reconditioned by this project.

- Questions concerning the reproductive success of reconditioned kelts and effect on the productivity of natural populations will be addressed through collaboration with on-going and planned studies being implemented by WDFW and NMFS within the next two years in the Wenatchee and Methow river basins. These relative reproductive success studies – required under the conditions of Douglas's and Chelan's HCPs and by the FCRPS BiOp – have the goal of directly measuring the relative reproductive success of hatchery and natural-origin steelhead in the natural environment. The studies will incidentally provide critical information on the ultimate success of reconditioned kelts from this project and their contribution to productivity of the steelhead populations in the Columbia Cascade Province.

[3] The disconnect has recently manifested itself as a potential review item for the ISAB as it relates to aspects of the steelhead iteroparity life history type and strategies to restore it in inland Columbia River populations.

[4] Project # 2007-401, *Kelt Reconditioning and Reproductive Success Evaluation Research.* This project combines two previously independent steelhead kelt contracts (#2000-017-00 and #2003-062-00). This project is a collaborative study to investigate approaches to increase adult steelhead returns by utilizing the kelt life stage. Approaches range from low intensity/cost such as collect and transport kelts, to high intensity/cost methods including holding and feeding for kelts for several months. An additional directive of the project, which was the focus of project 2003-062-00, is to directly evaluate relative reproductive success of three variants of steelhead Oncorhynchus mykiss (natural-origin, hatchery-origin, and reconditioned kelt) across two ESUs of interest as listed in the BPA Request for Studies released in 2003.

- The proposed project takes advantage of existing hatcheries and M&E facilities to the greatest extent possible and will be carried out in coordination with many entities. Kelt collection will be conducted at Wells Hatchery, tributary smolt traps in the Wenatchee and Methow basins, and in juvenile bypass facilities at Rocky Reach, Rock Island, and Priest Rapids dams. Collected kelts will be reconditioned at Entiat NFH by agreement with the USFWS, at a site on the Wenatchee River, or at another suitable site. Collaborators include the mid-Columbia PUDs (Douglas, Chelan, and Grant counties), WDFW, NMFS, and the Columbia River Inter-Tribal Fish Commission (CRITFC).

- The project proposes to recondition natural-origin, ESA-listed broodstock at Wells Fish Hatchery that otherwise have been killed (for virology sampling) at the time of spawning. This represents an opportunity to develop and test a relatively novel application of reconditioning. It also affords an opportunity for natural-origin spawners to contribute reproductively both to the hatchery program and, after reconditioning, to the natural population to which they belong. Without this project, all natural-origin broodstock will continue to be lethally spawned at the hatchery.

This proposal uses acceptable scientific methods. It applies common fish culture techniques to natural/wild populations while circumventing many of the domestication and other concerns often associated with artificial production. By proposing to recondition already-spawned natural-origin steelhead, it is consistent with the HSRG recommendations on hatchery reform that called for limiting hatchery influence in natural production areas by physically removing as much as 90% of returning adult hatchery steelhead before they can spawn (HSRG 2009). Currently, reconditioning kelts in the UCR has sufficient promise for ESA-listed natural steelhead populations to warrant further development and evaluation as a recovery tool.

Based on the current level of science and the needs for answers, Council staff recommends that the proposal proceed with implementation as outlined above to provide information to the current debate on the reproductive viability of reconditioned kelts. This recommendation for implementation is conditioned on the understanding that the project will have a performance check in 2014 or next categorical review, as outlined by the ISRP review.

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