Northwest **Power** and **Conservation** Council



September 30, 2014

**MEMORANDUM**

**TO:** Committee members

**FROM:** Mark Fritsch, project implementation manager

**SUBJECT:** Follow-up review action for accord Project #2008-458-00, *Steelhead Kelt Reconditioning*

## BACKGROUND:

Presenter: Mark Fritsch, project implementation manager, and Keely Murdoch and Matt Abrahamse, project leads, Yakama Confederated Tribes

Summary: Council staff recommends that the Fish and Wildlife Committee recommend to the Council that the condition placed on this project has been addressed. This recommendation is conditioned that the YN and Bonneville address the questions raised as part of annual report and future reviews.

Relevance: The proposed action will address a condition placed on the project, as part of the Council's project review of January 12, 2010 and the Research, Monitoring and Evaluation and Artificial Production Project Review on June 12, 2011. The funding associated with this accord project totals $5,184,948 in expense funds for Fiscal Year 2008 through 2017. The Fiscal Year 2014 expense budget for the project is $454,086 and has a performance period of February 1, 2014 to January 31, 2015.

Workplan: There are no 2014 division workplan tasks linked directly to this presentation.

Background: 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). This project assists in satisfying commitments under the 2008 Federal Columbia River Power System Biological Opinion (BiOp)[1]. 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.

On January 12, 2010, based on the current level of science and the needs for answers, the Council recommended that the proposal proceed with implementation as reviewed to provide information to the current debate on the reproductive viability of reconditioned kelts. This recommendation for implementation was conditioned on the understanding that the project will have a performance check in 2014. This recommendation was reconfirmed on June 10, 2011 as part of the Research, Monitoring and Evaluation and Artificial Production Project Review by conditioning the project with a need to have the ISRP review a results report in 2014.

On July 7, 2014 a submittal was received from the Yakama Nation and Bonneville intended to address the above recommendations as outlined above. The submittal was titled *Upper Columbia Kelt Reconditioning Program Update, 2014 ISRP Check-In.*

On August 13, 2014 the ISRP provided their review (ISRP document 2014-9). The ISRP found the progress report *meets scientific review (qualified)*.

The ISRP states that the project has achieved many milestones in the kelt reconditioning and has the ability to make important contributions to protect and restore this life history diversity of the naturally produced steelhead in the Upper Columbia River. That said the ISRP qualified their review to ensure previous questions and concerns be addressed in future proposals and reports.

The benefit of reconditioning kelts remains to be determined and the ISRP's extensive review continues to challenge and encourage the

[1] Under Reasonable and Prudent Alternative (RPA) Action 42.4 of the BiOp the Action Agencies committed to *Implement Conservation Programs to Build Genetic Resources and Assist in Promoting Recovery (RPA 42.2 UCR Steelhead-Fund kelt reconditioning* for Entiat/Methow/Okanogan - For Upper Columbia Steelhead: Fund a program to recondition natural origin kelts for the Entiat, Methow and Okanogan basin including capital construction, operation and monitoring and evaluation costs

Yakama Nation and the region to address the questions asked in their qualification.

- *The prior recommendation, by the ISRP, to establish methods to assess how kelt reconditioning may benefit population growth, abundance, spatial structure, and diversity still needs to be addressed.*
- *Some modeling and a power analysis need to be conducted to clarify how many juvenile and $F_1$ adults should be sampled to detect meaningful differences in the breeding and reproductive success of HOR, NOR, and reconditioned NOR females.*
- *Methods to assess the fat levels, maturation timing, fecundity, egg size, and gamete viability of the project's reconditioned kelts need to be developed and implemented. The fate of non-maturing or skip-repeat reconditioned fish also should be disclosed.*
- *Viable plans are needed to monitor the homing and straying rates of reconditioned kelts released by the project.*
- *Experiments are needed to discover the best geographic locations and times of year for release of the project's reconditioned fish.*

As is evident by these questions, the Yakama Nation and Bonneville would need to expand the intent and scope of the existing project to achieve these additional benefits and the ISRP is aware of this limitation. In addition, the qualifications raised by the ISRP are intended to strengthen the project implementation as it relates to the importance of the RPA for the BiOp. The questions raised by the ISRP should be addressed as part of the annual reports and future reviews within the current scope and budget of the project.

Based on the ISRP review and extensive comments the Council staff recommends that the Fish and Wildlife Committee recommend to the Council that the condition placed on this project has been addressed. This recommendation is conditioned that the YN and Bonneville address the questions raised by the ISRP be addressed within the current scope and budget of the project as part of annual reports and future reviews.

More Info: RMECAT-2008-458-00

# YN Upper Columbia Steelhead Kelt Reconditioning Project

## Program Update

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# Project Accomplishments

Matt Abrahamse
Project Biologist

# Project History

- Upper Columbia River (UCR) steelhead are listed as Threatened under the Endangered Species Act
- Proposal developed for recondition of post-spawned UCR steelhead (kelts)
- November 4, 2008 YN and BPA proposed project to NPCC

# Project History

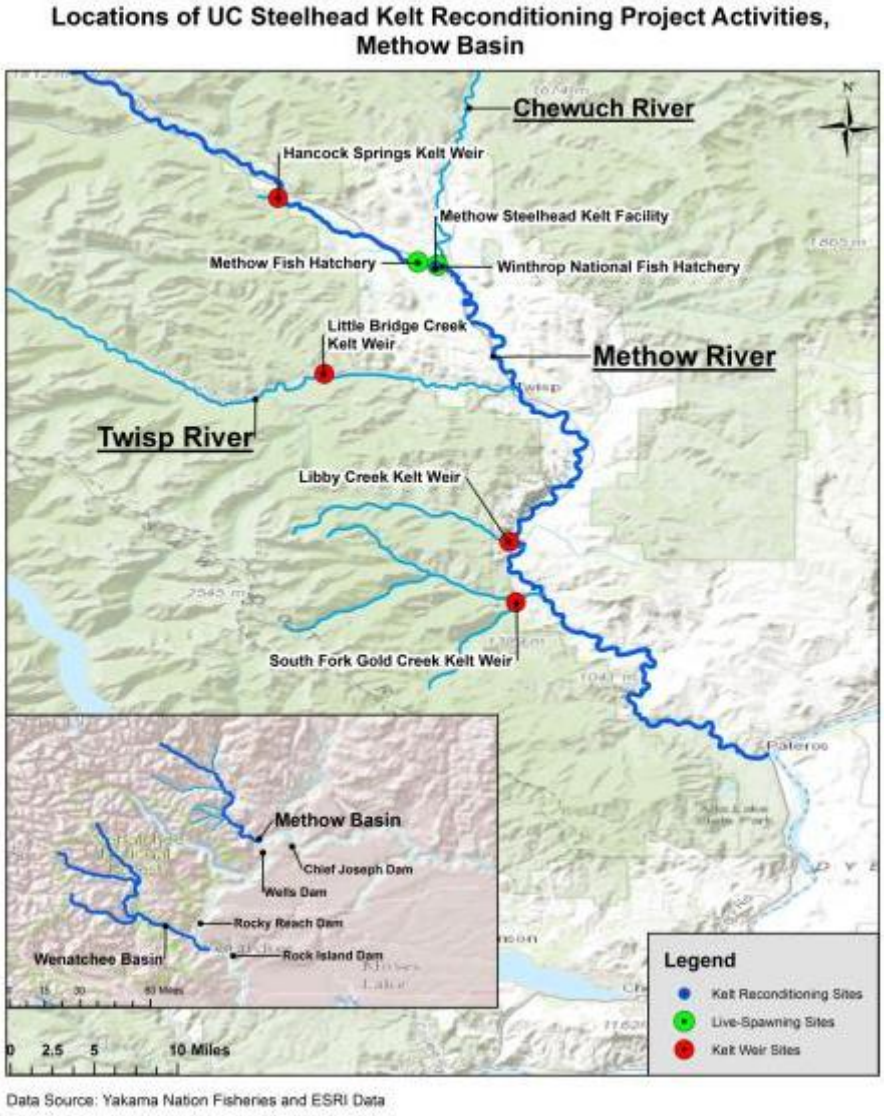
- January 13, 2010, NPCC recommend project proceed:

  *"Based on the current level of science and the needs for answers, the Council recommends that the proposal proceed with implementation as outlined above to provide information to the current debate on the reproductive viability of reconditioned kelts."*

- Performance check-in 2014

# Project Objectives

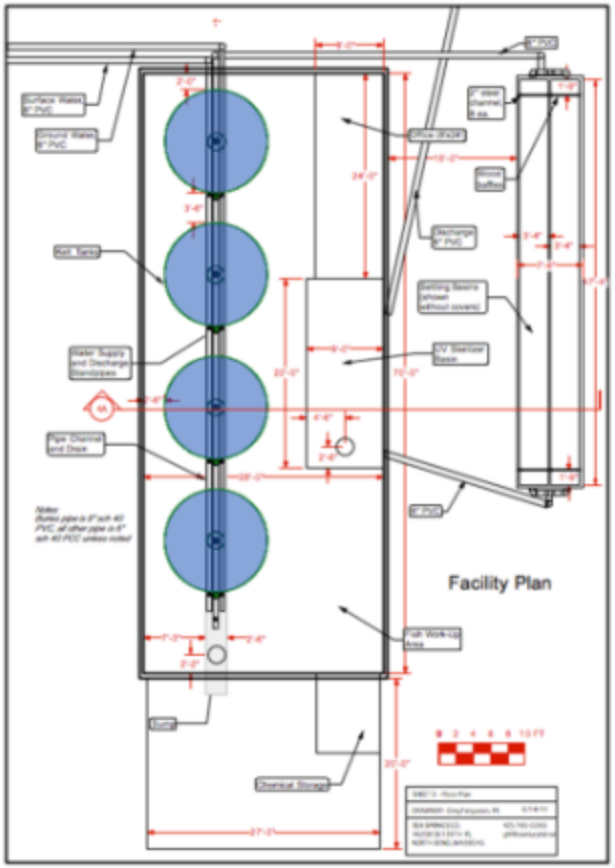
- The general objective of the project is to test whether the abundance of naturally produced Upper Columbia steelhead on natural spawning grounds can be increased through the use of long-term kelt reconditioning methods.
  - **Objective 1**: Recondition UCR steelhead kelts using long-term methods at 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 project




# Project Area

Locations of Methow basin steelhead kelt reconditioning facilities and activities

# Facility Design and Construction




- Agreement to construct the facility Winthrop NFH
- The Methow Steelhead Kelt Facility (MSKF)
- Constructed in 2011

# Kelt Collection

## Our biggest challenge

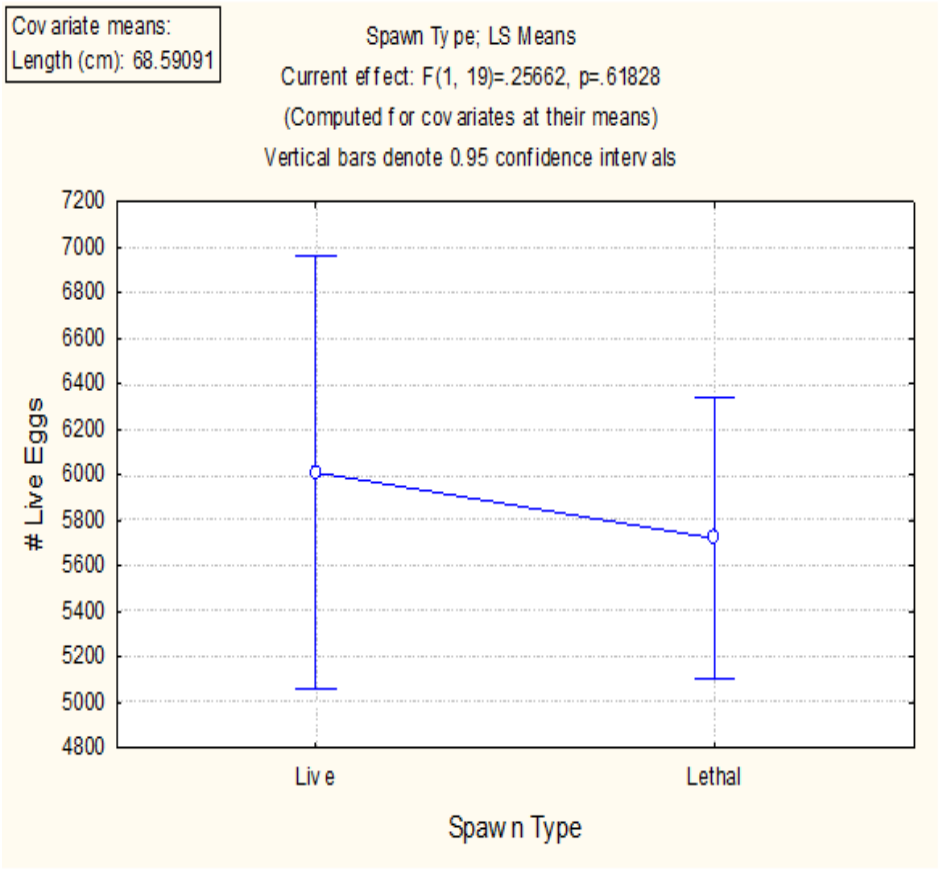
- Live spawning
- Tributary trapping
- Main stem dam trapping

# Live Spawning - Background

- Traditionally broodstock euthanized prior to spawning
- Live-spawning allows reconditioning
- Efficacy needed to be evaluated

# Live Spawning - Background

- Study in conducted in 2011
  - Lethal vs live spawn
  - No difference
- Agreement with USFWS in 2012
- Agreement with WDFW in 2014



# Live Spawning - Results

| | 2012 | 2013 | 2014 |
|---|---|---|---|
| **Winthrop NFH (USFWS)** | 18 | 8 | 33 |
| *Mortalities* | 2 | 0 | 3 |
| ***SUB-TOTAL*** | 16 | 8 | 30 |
| | | | |
| **Methow Hatchery (WDFW)** | | | 14 |
| *Mortalities* | | | 1 |
| ***SUB- TOTAL*** | | | 13 |
| **TOTAL** | **16** | **8** | **43** |

# Kelt Trapping - Background

- Modifications to Twisp River weir

- Temporary traps

- Chelan PUD's Rock Island Dam bypass facility

# Tributary Weirs

- Designed for kelts
- Little Bridge Creek
  - Tested in 2012
  - Continued 2013 and 2014.
- South Fork Gold Creek and Hancock Springs
  - 2013 and 2014

# Tributary Weirs

| SITE | MALE | | FEMALE kelt | | FEMALE pre-spawn | | TOTAL |
|---|---|---|---|---|---|---|---|
| | HOR | NOR | HOR | NOR | HOR | NOR | |
| 2012 | | | | | | | |
| Little Bridge | 11 | 4 | 1 | - | - | - | 16 |
| 2013 | | | | | | | |
| Little Bridge | - | 2 | - | 1 | - | - | 3 |
| Hancock | - | 3 | - | - | - | - | 3 |
| SF Gold | - | 2 | - | - | - | - | 2 |
| 2014 | | | | | | | |
| Little Bridge | 5 | 14 | 3 | 1 | - | - | 23 |
| Hancock | 10 | 4 | 4 | 1 | - | 3 | 22 |
| SF Gold | - | 12 | - | 1 | - | 1 | 14 |

# Tributary Weirs

- Effective
- NOR females rare
- Likely will contribute small # of kelts
- Project could increase NOR females

# Rock Island Dam

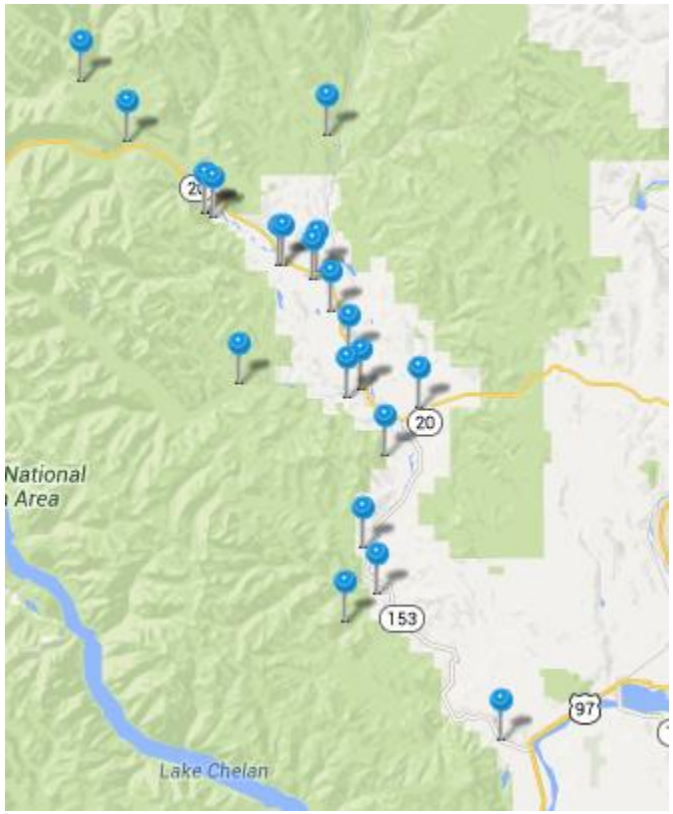
- Ability to collect kelts from Wenatchee, Entiat, Methow and Okanogan basins
- Trapping done by CPUD
- Transport to MSKF done by YN
- 26 kelts collected in 2014

# Reconditioning

- Feeding
- Treatment
- Survival
  - 2012 – 50%
  - 2013 – 60%
  - 2014 – 76%
- Mortalities

# Release and Tracking

- Releases by year:
  - 2012 – 2
  - 2013 – 5
  - 2014 – 58*
- Kelts released mid-Oct.
- Released at mouth of Methow
- Tracked via PIT tags



# Reproductive Success Study

- Ongoing WDFW and Douglas PUD study
- Inclusion of kelts allows documentation of reproductive viability
- Agreement with Wells HCP Hatchery Committee 2014
- Unique in the Upper Columbia River Basin

# Objective 1

*Recondition UCR steelhead kelts using long-term methods at existing facilities*

- COMPLETED
  - Facility built
  - Kelt sources developed
  - Feeding and treatment methods
- ONGOING
  - Reconditioning activities to continue

# Objective 2

*Evaluate kelt survival and effectiveness of reconditioning methods*

- ONGOING
  - Blood hormone monitoring
  - Track post-release movement with PIT array network
  - Survival to repeat spawn comparison

# Objective 3

*Collaborate with ongoing M&E studies to document the reproductive success of kelts released from the reconditioning program*

- ONGOING
  - Twisp RRS study

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# Addressing ISRP Qualifications

Keely Murdoch
Project Lead

# 1st Qualification

*"The prior recommendation, by the ISRP, to establish methods to assess how kelt reconditioning may benefit population growth, abundance spatial structure, and diversity still needs to be addressed."*

# 2nd Qualification

*"Some modeling and a power analysis need to be conducted to clarify how many juvenile and F1 adults should be sampled to detect meaningfull differences in the breeding and reproductive success of HOR, NOR, and reconditioned NOR females."*

# 3rd Qualification

*"Methods to assess the fat levels, maturation timing, fecundity, egg size, and gamete viability of the project's reconditioned kelts need to be developed and implemented. The fate of non-maturing or skip-repeat reconditioned fish also should be disclosed."*

# 4th Qualification

*"Viable plans are needed to monitor the homing and straying rates of reconditioned kelts released by the project."*

# 5th Qualification

*"Experiments are needed to discover the best geographic locations and times of the year for release of the projects reconditioned fish."*

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Questions?