

PRCC Hatchery Subcommittee Meeting
Wednesday, May 16, 2018
Grant PUD Wenatchee Office and via Conference Call
Meeting Summary

PRCC HSC Members

Matt Cooper, USFWS
Brett Farman, NOAA (via phone)
Peter Graf, GPUD (alt)
Keely Murdoch, Yakama Nation
Todd Pearsons, GPUD
Mike Tonseth, WDFW

Other Participants

Bryan Ishida, YN
Rod O'Connor, GPUD
Deanne Pavlik-Kunkel, GPUD
Elizabeth McManus, Facilitator (via phone)
Andy Chinn, Facilitator (via phone)

Decisions

- A. Approved the April 2018 meeting summary as amended (pending CCT approval)

Actions

1. There were no action items during this meeting.

I. Updates and Meeting Summary Review

- A. Fall Chinook Work Group** – Ongoing repairs at Priest Rapids Dam continue to result in operations in the lower half of the operating range. This will likely last another month or so.
- B. April 2018 Meeting Summary** – HSC members approved the April 2018 meeting summary as amended (pending CCT approval).
- C. HCP** – *Note: See Appendix A for summary of joint HSC-HCP discussion during May HCP meeting.*

II. White River Rotary Smolt Trapping

- A. Results from Modified Trapping Work** – YN staff described results to-date from the addition of the 2.4 meter trap to smolt trapping operations on the White River. With the persistent challenge of low juvenile fish abundance in the White River, YN deployed the second rotary trap so supplement the existing 1.5 meter trap. In 2017 both traps were in the water concurrently for 113 days, 79 of which both traps were operating simultaneously. The YN presentation is available [here](#).
 - For fish processing, Trap A is pulled across the river and connected to Trap B. Previously Trap A work was done by boat but YN decided that from a safety standpoint it was better to pull that trap over to Trap B.
 - Cone speed on both traps is relatively slow. There is an inverse relationship between river volume and cone speed; as the river lowers and becomes more channelized, velocity increases.
 - The 2018 M&E report will include trapping numbers for both spring 2017 and fall

2017.

B. Next Steps

- YN is available to discuss results of White River rotary trapping whenever HSC members think it would make sense.

III. Wrap Up and Next Steps

A. Next Meeting: June 20, 2018 *Note: Due to HSC members' availability in June this meeting will likely be cancelled.*

B. The draft 2019 GPUD hatchery M&E implementation will be circulated for 30-day review. If there are no major concerns, approval will be handled via email.

C. Potential Agenda Items:

- TBD

Meeting Materials

The following documents were provided to HSC members in advance of this meeting:

- May meeting agenda
- March 2018 PUD Hatchery Progress Report
- Final 2108 broodstock collection protocols
- Nason Creek Rotary Trap summary
- White River Rotary Trap summary

Appendix A: Joint HCP-HC/PRCC HSC

A. Proposed Expanded Sampling at the Off-Ladder Adult Fish Trap (Andrew Murdoch)

Andrew Murdoch shared the presentation Estimating Escapement at Various Spatial Scales Using PIT (passive integrated transponder) Tags (Attachment B), which Sarah Montgomery distributed to the Hatchery Committees following the meeting. Andrew Murdoch summarized that expanded sampling at the OLAFT at Priest Rapids Dam could benefit other HCP Plan species (except sockeye), would provide real-time escapement monitoring for broodstocking and adult management purposes, and would provide estimates of run escapement by population and origin at various spatial scales for monitoring and management purposes. The majority of the information Andrew Murdoch presented is included in the presentation slides. Questions and comments are included below.

Slide 1: Regarding similar work in other basins, Todd Pearsons asked what types of models are used in the Snake, Willamette, or Deschutes rivers for studying steelhead. Andrew Murdoch said in the Snake River, three models are used to estimate steelhead escapement because there is less information available compared to the upper Columbia River. For example, there are not spawning ground surveys in the Grande Ronde River, and in the Snake River, hatchery fish are not PIT-tagged and wild fish are. In other places, it is difficult to make the analysis more consistent due to run timing. Some locations also have issues with maintaining PIT tag infrastructure in the water, or with vandalism.

Slide 6: Catherine Willard asked what sampling is currently being performed at the OLAFT. Andrew Murdoch said captured fish are scanned with ultrasound, scanned for coded wire tags, scale samples are taken, and some caudal fins are clipped for genetic sampling. Origin, sex, and age are also recorded for each fish that is PIT tagged. Mike Tonseth said this sampling is consistent with what is performed at Dryden Dam and Wells Dam. Keely Murdoch asked if all species of fish are scanned with ultrasound, particularly coho salmon. Andrew Murdoch replied that coho salmon are not examined with ultrasound, but other species are. He said ultrasound is sometimes used to determine the difference between spring- and summer-run Chinook salmon, and also used to determine gender for fish used for broodstock.

Slide 14: Regarding the escapement model, Pearsons asked what the funding source was. Andrew Murdoch said the Bonneville Power Administration (BPA) funded the PIT-tag array and model development and WDFW continues to work on the model using other funds. Andrew Murdoch said the website is useful for tracking how many fish have escaped to each basin.

Slide 23: Regarding carcass recovery bias and female overrepresentation, Greg Mackey asked if females are overrepresented in absolute terms. Andrew Murdoch said females are overrepresented relative to males. Females are more likely to be captured after spawning due to post-spawning behavior. He said larger males are also more likely to be captured than smaller males, but this can be predicted and incorporated into the model.

Slide 26: Hillman asked if Andrew Murdoch has considered using unadjusted fish-per-redd counts to estimate spawning escapement, then compare those to the modeled results. Andrew Murdoch said the run escapement is always much higher than the spawning escapement. Hillman suggested using adjusted and unadjusted fish-per-redd counts to estimate spawning escapements, and then calculate the size of the bias of the unadjusted estimate to the adjusted estimate. Andrew Murdoch said this is a similar method to the one used in the model. He said they corrected the carcass data for bias and estimated the number of fish per redd based on the number of spawners. Pearsons asked why the model does not focus solely on female counts, which drives production. Andrew Murdoch said males need to be included for reporting purposes and for calculating the percent natural influence (PNI). Pearsons said it would be helpful to move away from using data with a high carcass recovery bias, because it adds so much error. Pearsons suggested that a tighter estimate could be determined using just females. Andrew Murdoch noted that a major benefit of using the OLAFT for this work would be to look at the entire spring-run Chinook salmon evolutionarily significant unit (ESU) in the upper Columbia River. Sampling at Tumwater Dam, for example, does not account for the entire Wenatchee Basin population. He said a sampling scheme farther downstream helps to estimate population size and structure at the level needed for making adaptive management decisions. Tonseth noted this method would help with hatchery effectiveness monitoring. It can provide a better estimate of PNI, which is a permit condition, and provide a better estimate of adult returns so hatchery fish excesses can be managed.

Slide 27: Keely Murdoch suggested that coho salmon also be added to the cost estimate for plan species.

Peter Graf asked what the costs presented represent. Andrew Murdoch said the costs cover operation of the OLAFT and analysis. This includes data management and reporting as well.

Graf asked why spring-run Chinook salmon in particular should be added to the OLAFT sampling. He said work is already funded at Tumwater Dam for spring-run Chinook salmon. Andrew Murdoch said sampling and analyzing the entire upper Columbia River ESU of spring-run Chinook salmon would be efficient and help gain a larger perspective on the population. He asked if there is a potential negative impact to the population from increased sampling and handling at the OLAFT. Pearsons asked how this method addresses a monitoring and evaluation (M&E) need that is not currently addressed. Andrew Murdoch said the alternative would be increasing effort at existing facilities, such as running both ladder traps at Wells Dam. He said handling the fish lower in the river at Priest Rapids Dam would be less impactful than at Tumwater Dam, for example, because Tumwater Dam is closer to spawning grounds and therefore more disruptive.

Catherine Willard said, from the Chelan PUD perspective, it would be helpful to discuss a concurrent plan for how M&E activities at Tumwater Dam, Dryden Dam, and Wells Dam would change with implementation of the OLAFT activities. Keely Murdoch agreed and said the discussion influences management of hatchery programs across the upper Columbia River.

Mackey asked if this model will be presented in a journal or white paper. He noted the the Hatchery Committee should review a technical document on the model. Andrew Murdoch said yes, he is working on writing a paper about the model and the original developers are also working on a manuscript.

Tonseth said the overall goal of this proposal is to increase the quality of data sources from sampling and analysis procedures and reduce potential effects from activities on listed fish species.

Pearsons asked if the costs presented in Slide 27 are in addition to the funding provided by BPA. Andrew Murdoch said yes, the funding from BPA is used to maintain infrastructure (arrays). Hillman asked what the next steps for the Hatchery Committees are regarding this topic.

Andrew Murdoch said there is uncertainty as to how the recreational fisheries and M&E at Tumwater Dam would be worked out, so that should be discussed. He also suggested increasing knowledge about life stage survival and understanding capacity limitations, especially density-dependence.

Pearsons asked if the model can be back-casted to estimate pre-spawn mortality. Andrew Murdoch said yes, to 2008. Pearsons asked if those data can be made available, particularly for Keely Murdoch and Mike Tonseth so they can work on the program size for spring Chinook conservation programs. Andrew Murdoch said yes, and while there is no explicit funding for this work, he will continue working on prespawn mortality data. This will include working with Jeff Jorgensen (NOAA) to predict pre-spawn mortality and its factors within the life-cycle modeling construct. He will also work to incorporate data from the relative reproductive success study into the model, to help determine escapement goals for each major spawning area and predict gaps that need to be filled with hatchery fish. He said working together to develop the upper Columbia River model will help gain more funding. He said the funding coming from BPA to WDFW is currently under one umbrella. Being able to use the upper Columbia Basin as a model for other basins would put the basin in a good negotiating place for gaining funding. He said there is a lot of potential for this method because it is realistic and the managers agree on using fisheries to manage returning adults. He said there is still much left to determine such as changes to activities at Tumwater and Wells dams, but this method has a lot of potential and even cost-savings. The Hatchery Committees representatives present thanked Andrew Murdoch for the presentation and said this should be discussed again at an upcoming meeting.

B. Age-3 Males in Broodstock (Greg Mackey)

Greg Mackey said he performed a literature search on the use of age-3 males in broodstock and contacted staff at NOAA for additional information. He said he plans to discuss M&E data with Charlie Snow (WDFW) to assess how many age-3 males have been included in broodstock in recent years, then present the information to the Hatchery Committees. Todd Pearsons asked if it would be helpful to invite Craig Busack (NOAA) to participate in this discussion. He said Busack has previously worked on this topic with stakeholders helping with the Cle Elum

Supplementation Research of spring Chinook in the Yakima Basin, and he may have a helpful perspective. Andrew Murdoch recalled there was also a hatchery workgroup that gathered in Portland to discuss this topic. Mackey said he will continue gathering information for a more detailed discussion.

C. Optical Density Values and Bacterial Kidney Disease (Betsy Bamberger)

Betsy Bamberger shared a presentation titled The Challenges of Renibacterium salmoninarum Detection and BKD Management (Attachment C), which Sarah Montgomery distributed to the Hatchery Committees following the meeting. The majority of the information Bamberger presented is included in the presentation slides. Questions and comments are included below.

Regarding culling of fish with the bacteria, Todd Pearsons asked whether fish can recover and become healthy if successfully treated. Bamberger said yes; however, in some cases there is permanent loss of tissue functionality. In those cases, the fish is no longer diseased, but is maimed.

Regarding the Elliott et al. paper published in Journal of Fish Diseases in 2013, Pearsons asked which detection strategy performed better. Bamberger said the enzyme-linked immunosorbent assay (ELISA) test detected more diseased fish; however, in an ideal scenario, the various methods would detect the same percentage of diseased fish. Bamberger said the two polymerase chain reaction (PCR) methods had the highest concordance with percent diseased fish. Bamberger emphasized that detecting the bacteria does not mean a fish is diseased. Bamberger said Douglas PUD intends to perform ELISA and qPCR (quantitative polymerase chain reaction) testing, combined with gross examinations, on spring Chinook this fall. Greg Mackey said females will be examined during spawning, and lesions will be recorded, plus the females will be tested for the bacteria using ELISA and qPCR. Mackey said the eggs need to be culled in late August before they mature and suggested culture as a potential way to test for BKD. Bamberger said she will check on the potential for using culture to test for BKD, but she thinks it would take too long to grow the culture. Bamberger emphasized that there are many options to explore for managing BKD, and as programs change, it is important to be flexible with disease management strategies. She said using multiple strategies to detect BKD and make culling decisions will help manage against acting on false positives or false negatives. Hatchery Committees representatives present thanked Bamberger for her presentation and summarized that the next steps for this discussion depend on further input from WADDL.

D. NMFS Consultation Update (Brett Farman)

Brett Farman said Charlene Hurst sent the steelhead permits for the Wells program and Winthrop National Fish Hatchery program to applicants and received comments. Farman said Hurst will revise the permits and coordinate with USFWS on implementation terms, then the permits will be provided for review again.

Emi Kondo (NOAA) provided an update on the National Environmental Policy Act (NEPA) process for the Columbia River unlisted programs. She said the Environmental Assessment is

being reviewed internally, and she expects it to be provided to General Counsel in June and then to the applicants in July. After the applicants' review, the document will be available for public comment. She said if anyone has email distribution lists to use for the public comment notification, please send the lists to Hurst.

E. 2019 Hatchery M&E Implementation Plan (Todd Pearsons/Catherine Willard)

Todd Pearsons shared Grant PUD's draft 2019 Hatchery M&E Implementation Plan (made available to PRCC HSC representatives). Pearsons said it will be distributed for a 30-day review and discussed the revisions pertaining to the HCP Hatchery Committees.

Regarding Wenatchee summer-run Chinook salmon, there was a change to the field work outlined in the Implementation Plan to eliminate the data collected to inform the observer efficiency model. The data collection will still be consistent with what is already being collected in the Okanogan, Methow, and Chelan rivers. He said in 2014 to 2018, field data was collected to inform and develop an observer efficiency model and 2018 is the last scheduled year of data collection to inform the model. He said data collection will continue to be consistent with other basins where summer-run Chinook salmon surveys are conducted and there will be no interruption to the data time series.

Catherine Willard said Chelan PUD's draft 2019 Hatchery M&E Implementation Plan is similar and will contain the same change for Wenatchee summer-run Chinook salmon data collection. She said the Chelan PUD plan will also be provided for a 30-day review. Willard said the observer efficiency model has not been run yet, but there are enough data to inform the model then review the results.