

## Memorandum

---

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees and Priest Rapids Coordinating Committee Hatchery Subcommittee Date: April 18, 2019

From: Tracy Hillman, HCP Hatchery Committees Chairman and PRCC Hatchery Subcommittee Facilitator

cc: Larissa Rohrbach, Anchor QEA, LLC

**Re: Final Minutes of the March 20, 2019 HCP Hatchery Committees and PRCC Hatchery Subcommittee Meetings**

---

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCP) Hatchery Committees (HCs) and Priest Rapids Coordinating Committee Hatchery Subcommittee (PRCC HSC) meetings were held in Wenatchee, Washington, on Wednesday, March 20, 2019, from 9:00 a.m. to 3:30 p.m. Attendees are listed in Attachment A to these meeting minutes.

### Action Item Summary

#### Joint HCP-HCs and PRCC HSC

- Tracy Hillman will review aspects of the Independent Scientific Advisory Board's *Review of Spring Chinook Salmon in the Upper Columbia River* under HCP-HCs' purview (Item I-A). *(Note: this item is ongoing.)*
- Greg Mackey will continue researching broodstock composition and mating strategies for conservation programs, focusing on spring Chinook salmon at the Methow Fish Hatchery (FH) (Item I-A). *(Note: this item is ongoing.)*
- Mike Tonseth will coordinate with Andrew Murdoch (Washington Department of Fish and Wildlife [WDFW]) to present pre-spawn mortality modeling results for spring Chinook salmon at an upcoming HCP-HC meeting (Item I-A). *(Note: this item is ongoing.)*
- Catherine Willard will update the genetics section of the *Monitoring and Evaluation (M&E) Plan for PUD Hatchery Programs (Update to the 2017 Plan)* based on the genetics panel recommendations and will append the recommendations from the panel to the plan (Item I-A). *(Note: this item is ongoing.)*
- Kirk Truscott will discuss with Colville Confederated Tribes (CCT) biologists whether elemental signature analysis could differentiate natural-origin Okanogan spring Chinook salmon from other natural-origin Chinook salmon during broodstock collection at Wells Dam for Methow FH programs (Item I-A). *(Note: this item is ongoing.)*

- Brett Farman will discuss with Charlene Hurst and Mike Tonseth the potential use of a multi-population model for estimating the proportionate natural influence (PNI) for the Nason and Chiwawa spring Chinook salmon programs. *(Note: this item is ongoing.)*
- Brett Farman will inform the HCP-HCs of the publication date for public review of the Methow River Steelhead Environmental Assessment (Item II-F). *(Note: this item is ongoing.)*
- Brett Farman will inform the HCP-HCs on the publication date for public review of the Section 10 permits for the unlisted Chinook salmon bundle (Item II-F). *(Note: Larissa Rohrbach distributed an email from Farman and draft permits for the Section 10 programs to the HCP-HCs and PRCC HSC on March 28, 2019. This item is complete.)*
- Mike Tonseth will ask Michael Humling (U.S. Fish and Wildlife Service [USFWS]) and Charlie Snow (WDFW) to estimate the number of Methow returns that are likely to return to Winthrop National Fish Hatchery (WNFH) to inform a translocation discussion during the April 17, 2019 HCP-HCs meeting. (Item I-A) *(Note: this item is ongoing.)*
- Mike Tonseth will revise and redistribute the *2017 Out-planting Surplus Methow Composite Spring Chinook Salmon Adults* memorandum for review and discussion during the April 17, 2019 HCP-HCs meeting. (Item II-A)
- Mike Tonseth will confirm with Andrew Murdoch that Wenatchee Spring Chinook DNA sampling of the 2018 to 2023 returns is still consistent with the original Relative Reproductive Success (RSS) Study extension agreement and provide an update to that extension. (Item I-A) *(Note: this item is ongoing.)*
- Mike Tonseth will convene a Joint Fisheries Parties meeting to discuss marking to identify hatchery x hatchery returns from fish used to backfill the Nason and Chiwawa conservation programs. (Item I-A) *(Note: this item is ongoing.)*
- Larissa Rohrbach will add sizing of upper Columbia River conservation programs as a periodic agenda item (Item I-A). *(Note: this item is ongoing.)*
- Tracy Hillman and Larissa Rohrbach will maintain the following list of outstanding topics for consideration in HCP-HCs and PRCC HSC meetings prior to development of the 2020 Broodstock Collection Protocols (Protocols). (Item I-A) *(Note: this item is ongoing.)*
  - Use of age-3 males in broodstock
  - Use of alternative, non-random mating strategies
  - Establishing ranges around broodstock collection targets
  - Source for Chiwawa spring Chinook salmon broodstock
- Tracy Hillman and Larissa Rohrbach will help the HCP-HCs and PRCC HSC identify co-authors and opportunities to make revisions to the Protocols in advance of 2020 deadlines (Item I-A). *(Note: this item is ongoing.)*
- Greg Mackey will send suggested language on broodstock protocols for the Douglas PUD coho salmon program to Keely Murdoch and Cory Kamphaus (Yakama Nation [YN]) for

approval and to Mike Tonseth for inclusion into the 2019 Protocols by end of day March 20, 2019 (Item II-A). *(Note: language was incorporated into the 2019 Protocols that were distributed by Larissa Rohrbach on March 21, 2019.)*

- Mike Tonseth will email a final draft of the 2019 Protocols to Larissa Rohrbach for distribution to the HCP-HCs and PRCC HSC by end of day March 21, 2019 (Item II-A) *(Note: the 2019 Protocols were distributed by Rohrbach via email on March 21, 2019.)*
- HCP-HCs and PRCC HSC representatives or alternates will vote by email whether to approve the 2019 Protocols by end of day March 22, 2019 (Item II-A). *(Note: the 2019 Protocols were approved by the Wells, Rock Island, and Rocky Reach HCs and the PRCC HSC Parties by email on March 22, 2019.)*

### **Wells HCP Hatchery Committee**

- Greg Mackey will provide a revised version of Douglas PUD's draft 2019 M&E Implementation Plan for HCP-HC approval by email (Item I-A). *(Note: This item is ongoing)*

### **RI and RR HCP Hatchery Committee**

- Mike Tonseth will email the Hatchery and Genetic Management Plans (HGMPs), biological opinions (BiOps), and permits that give direction on marking spring Chinook salmon in the Chiwawa and Nason conservation and safety-net programs to Larissa Rohrbach for distribution to the HCP-HCs and PRCC HSC and filing on the Extranet site (Item IV-A). *(Note: Relevant documents were distributed and filed by Rohrbach on March 21, 2019.)*
- Mike Tonseth will confirm the timeline for tagging juvenile Chiwawa spring Chinook salmon in 2019 (Item IV-A).
- Brett Farman will ask Amilee Wilson and Craig Busack (National Marine Fisheries Service [NMFS]) to clarify the intent of the direction provided in NMFS BiOps for marking Chiwawa and Nason conservation program juvenile spring Chinook salmon (Item IV-A)

### **PRCC Hatchery Subcommittee**

- Tracy Hillman will ask the PRCC to provide specific instructions in writing regarding what they want the PRCC HSC to do with the White River spring Chinook salmon hatchery memorandum (Item V-C). *(Note: Hillman sent an email to the PRCC Chair regarding this topic.)*
- PRCC HSC representatives will submit a list of minimum data or information needs for making a decision on the White River spring Chinook salmon hatchery program to Tracy Hillman (Item V-C).

## Decision Summary

- The Wells, Rocky Reach, and Rock Island HCP-HCs and PRCC HSC approved the 2019 Broodstock Collection Protocols as follows: WDFW approved via email on March 21, 2019, and Chelan PUD, Douglas PUD, Grant PUD, YN, CCT, USFWS, and NMFS approved via email on March 22, 2019. (Note: the Wells HCP-CC also approved the 2019 Protocols on March 26, 2019, and the final version was distributed to the committees on March 28, 2019.)

## Agreements

- There were no agreements discussed during today's meeting.

## Review Items

- Larissa Rohrbach sent an email to the PRCC HSC on February 21, 2019, notifying them that the draft Priest Rapids Hatchery M&E Implementation Plan is available for 30-day review with comments and edits due to Todd Pearsons by March 25, 2019 (Item V-A).
- Larissa Rohrbach sent an email to the HCP-HCs and PRCC HSC on February 7, 2019, notifying them that the updated meeting protocols, distribution lists, and draft Conflict of Interest Statement of Agreement (SOA) are available for review (Item II-B).
- Larissa Rohrbach sent emails to the HCP-HCs and PRCC HSC on March 28, 2019, notifying them that the draft NMFS Section 10 Permits for the Takes of Endangered and Threatened Species are available for review with comments due to Emi Kondo (NMFS) by April 15, 2019.

## Finalized Documents

- Larissa Rohrbach distributed the final 2019 Wells HCP Action Plan, approved by the Wells HCP-Coordinating Committee, to the HCP-HCs on March 22, 2019.
- Larissa Rohrbach distributed the final 2019 Protocols, approved by the HCP-HCs, to the Wells Coordinating Committee Chair and copied the PRCC facilitator, on March 22, 2019, for approval by the Wells HCP-CC (Item II-A).
- Larissa Rohrbach distributed the final Wells HCP Annual Report, approved by the Wells HCP-Coordinating Committee, to the HCP-HCs on March 28, 2019.

## I. Welcome

### A. Review Agenda, Review Last Meeting Action Items, and approve the February 20, 2019 Meeting Minutes (Hillman)

Tracy Hillman welcomed the HCP-HCs and PRCC HSC and asked for any additions or changes to the agenda. Catherine Willard added the topic "Marking brood year 2018 Chiwawa spring Chinook salmon" to the Rock Island Hatchery Committee section of the agenda. The HCP-HCs and PRCC HSC representatives approved the revised agenda.

The HCP-HCs and PRCC HSC representatives reviewed the revised draft February 20, 2019 meeting minutes. Larissa Rohrbach said there were some revisions that the representatives then reviewed. The HCP-HCs and PRCC HSC representatives approved the draft February 20, 2019 meeting minutes as revised.

Action items from the HCP-HCs and PRCC HSC meeting on February 20, 2019, and follow-up discussions were addressed (*note: italicized text below corresponds to agenda items from the meetings on February 20, 2019 and March 11, 2019*):

#### *Joint HCP-HCs and PRCC HSC Topics*

- *Tracy Hillman will review aspects of the Independent Scientific Advisory Board's Review of Spring Chinook Salmon in the Upper Columbia River under HCP-HCs' purview (Item I-A).* Hillman said this item is ongoing. He said protocols will be updated as tools are developed for the 10-year comprehensive reports.
- *Greg Mackey will continue researching broodstock composition and mating strategies for conservation programs, focusing on spring Chinook salmon at the Methow Hatchery; Item I-A).* Mackey said this item is ongoing.
- *Mike Tonseth will coordinate with Andrew Murdoch (Washington Department of Fish and Wildlife [WDFW]) regarding presenting pre-spawn mortality modeling results for spring Chinook salmon at an upcoming HCP-HCs meeting (Item I-A).* Tonseth said this item is ongoing, pending acquisition of additional information to inform the model.
- *Catherine Willard will update the genetics section of the Monitoring and Evaluation Plan for PUD Hatchery Programs (2017 Update) based on the genetics panel recommendations and will append the recommendations from the panel to the plan (Item I-A).* Willard said this item is ongoing.
- *Greg Mackey will confirm with Betsy Bamberger (Douglas PUD) whether Douglas PUD will use the Washington Animal Disease Diagnostic Laboratory (WADDL) for in-season bacterial kidney*

disease (BKD) testing during 2019 broodstock collection and confirm that WADDL methods will provide ELISA [enzyme-linked immunosorbent assay] optical density test results (Item I-A).

Bamberger said this item will be discussed in today's meeting.

- *Kirk Truscott will discuss with Colville Confederated Tribe (CCT) biologists whether elemental signature analysis could differentiate natural-origin Okanogan spring Chinook salmon from other natural-origin Chinook salmon during broodstock collection at Wells Dam for Methow Fish Hatchery programs (Item I-A).*

Truscott said this item is ongoing.

- *Larissa Rohrbach will add sizing of upper Columbia River conservation programs as a periodic agenda item (Item I-A).*

Rohrbach said this item is ongoing.

- *Brett Farman will discuss with Charlene Hurst and Mike Tonseth the potential use of a multi-population model for estimating the proportionate natural influence (PNI) for the Nason spring Chinook and Chiwawa spring Chinook programs (Item II-A).*

Farman said this item is ongoing.

- *Brett Farman will inform the HCP-HCs of the publication date for public review of the Methow River Steelhead Environmental Assessment (EA) (Item II-F).*

Farman said this item is ongoing and it was further discussed in section II-F.

- *Brett Farman will inform the HCP-HCs of the publication date for public review of the Section 10 permit for the unlisted Chinook salmon bundle (Item II-F). (Note: Farman emailed Larissa Rohrbach on March 6, 2019 to inform the Committees that the UCR unlisted Chinook NEPA and HGMP bundle will be published within the week.)*

Farman said this item is ongoing and it was further discussed in section II-F.

### *Joint HCP-HCs and PRCC HSC Topics for Finalizing the 2019 Upper Columbia River Broodstock Collection Protocols*

- *Greg Mackey will forward Douglas PUD's suggested revisions describing broodstock and egg obtainment for the Douglas PUD Coho program (refers to Appendix K of the Protocols) to Keely Murdoch, Bill Gale and Matt Cooper for their review before inclusion in the Broodstock Protocols. (Item II-A).*

Mackey said this item is complete.

- *Mike Tonseth will add language to the Protocols that allows flexibility in the future to select for older males using alternative, non-random mating strategies (Item II-A).*

Tonseth said language has been added allowing flexibility for inclusion of age-3 males.

Mackey said proposals to change mating strategies should be discussed in future meetings with more thoughtful research, but timing was not adequate for the 2019 Protocols.

- Mackey will summarize numbers for Committee discussion and make edits to Protocols on the likelihood that all summer steelhead broodstock could be collected at the Wells Volunteer Trap in the spring to eliminate fall-collection for the MSN and Columbia Safety-Net (CSN) programs (Item II-A).

Mackey said he will discuss this item during today's meeting.

- Tonseth will redistribute the Methow Basin spring Chinook translocation plan for review and discussion in the March 20, 2019 meeting. Tonseth will ask Michael Humling (USFWS) and Charlie Snow (WDFW) to estimate the number of Methow returns that are likely to return to WNFH (Item II-A).

Tonseth said this item is ongoing (with Humling and Snow).

- Catherine Willard will send the Relative Reproductive Success (RRS) study extension memorandum to Rohrbach with the translocation plan for distribution (Item II-A) (Note: Rohrbach distributed an email from Willard and the attached RRS study extension and translocation plan to the HCP-HC and PRCC HSC following the March 11, 2019 conference call).

Willard said this item is complete.

- Tonseth will confirm with Andrew Murdoch (WDFW) that DNA sampling of the 2018 to 2023 returns is still consistent with the original RRS extension agreement and provide an updated extension (Item II-A).

Tonseth said this item is ongoing.

- Tonseth will send the Methow Basin Steelhead Conservation program preferred draft alternative for collecting broodstock by angling to Humling and Snow for review (Item II-A).

Tonseth said this item is complete.

- Bill Gale and Cindy Raekes (USFWS) will send suggested edits to Mike Tonseth regarding the Chiwawa Weir operations protocols to optimize operation and protect bull trout per the BiOps (Item II-A).

Gale said this item is complete.

- Willard will email notes that summarize 2018 Chiwawa Weir operations (Item II-A). (Willard notified Rohrbach that she emailed details on 2018 Chiwawa Weir operations to USFWS and WDFW on March 11, 2019).

Willard said this item is complete

- Tonseth will convene a Joint Fisheries Parties meeting to discuss marking to identify hatchery x hatchery returns from fish used to backfill the Nason and Chiwawa Conservation Program (Item II-A).

Tonseth said this item is ongoing.

- Tracy Hillman and Larissa Rohrbach will maintain a list of outstanding Broodstock Collection Protocol topics for presentation in HCP-HC and PRCC HSC meetings throughout the year (Item II-A).

Hillman said this item is ongoing

- *Hillman and Rohrbach will support the HCP-HC and PRCC HSC to identify sections of the Protocols that can be authored earlier in the drafting process by various HCP-HC and PRCC HSC members in future years (Item II-A).*

Hillman said this item is ongoing; potential approaches to be determined with HCP-HCs and PRCC HSC members' help.

### *Wells Hatchery Committee*

- *Greg Mackey will provide a revised version of Douglas PUD's draft 2019 Monitoring and Evaluation (M&E) Implementation Plan for HCP-HCs approval by email (Item I-A).*

Mackey said this item is ongoing.

## **II. Joint HCP-HCs and PRCC HSC**

### **A. Approve Broodstock Collection Protocols for HCP-HC Programs – DECISION ITEM**

Mike Tonseth said there is an additional version of the Protocols that reflects edits provided by USFWS late on March 19, 2019. Tracy Hillman projected the most recent version during the meeting for review.

Tonseth said the following three topics lack resolution in the Protocols:

1. Elimination of back-up steelhead collection in the fall at the Wells Volunteer Channel
2. Chiwawa Weir spring Chinook salmon trapping plan that minimizes impacts to bull trout in compliance with USFWS permits
3. Translocation of surplus adult Methow spring Chinook salmon

#### *Backup Steelhead Collection in the Fall at the Wells Volunteer Channel*

Tonseth said the HCP-HCs representatives agreed to the proposed elimination of all back-up collection of Methow and Okanagan steelhead broodstock in the fall.

However, Tonseth said there was not resolution on whether to continue to collect fall backup broodstock for the Columbia Safety Net steelhead program from the Wells Volunteer Channel. Tonseth said the concern, particularly this year when the run is low, is there may not be enough females collected in spring when the majority of fish moving through the rivers are more likely to be males.

Greg Mackey provided a summary of the number of fish in the CSN program. Mackey said the CSN releases 160,000 smolts directly into the Columbia River. He said adult return counts are only available for very recent years because the program is relatively new in its current form and fish have not been surplused from the Wells FH Volunteer Channel until recent years. Mackey said that in

2017, there were 224 and in 2018 there were 242 adult steelhead returns to the Wells FH Volunteer Channel. Mackey did not know the sex ratios. Mackey said these represent swim-ins in approximately March, but more could be collected with increased effort. Mackey said for the CSN, 86 steelhead would be needed, so there are plenty of spring returns to cover the CSN.

Mackey said that between captures by angling (USFWS) and captures at WNFH that could be used for the CSN (or MSN) program, there are currently 44 fish (21 males and 18 females). Mackey estimated that today potentially a couple hundred fish would be cleared out of the Wells Volunteer Channel, enough to cover the approximately 40 remaining needed for the CSN. Bill Gale said WNFH just started trapping in the weir and volunteer channel last week and may capture fish from other programs. If there is a surplus (in excess of needs for WNFH brood and the Methow Safety-Net program), those fish could be used for the CSN. Mackey asked if there are other intended uses for surplus fish at WNFH. Gale said that in the past there were other uses (e.g., spawning trials) but this year there are none. Gale asked if CSN spawning happens at Wells Hatchery. Mackey said yes. Gale said one difficulty of putting WNFH fish into the CSN program would be the transfer to Wells because spawning is happening now at WNFH. Kirk Truscott said if the Protocols are edited, he would want to make sure Methow program targets are met before allocating surplus fish from Methow FH to the CSN. Truscott also requested that if the Committee agrees to no back-up collections in the fall, that the volunteer ladder collection to back-fill shortfalls in the Okanogan Program will be prioritized above the CSN program. Tonseth said it may be a good test to operate the (Wells) Volunteer Trap this spring as if doing adult management to see how many adults there are and what the sex composition is to anticipate what to expect for the 2020 brood.

Mackey said a good estimate of the total run is possible as adults come up the Columbia River in the fall. It could be assumed that only spring collection would be done unless the run forecast looks bad, then additional fish could be captured in September or October.

Tonseth said a concern is the 2019 return is predicted to be low for 1-salt steelhead to be used for the 2020 brood. Truscott said this could result in a skewed sex ratio toward females.

Mackey said maintaining fish health while holding fall-collected fish on well-water for extended periods of time is also a challenge.

Mackey said, for program flexibility, an in-season decision could be brought to the HCs based on run size; if the run is low, fish could be collected in the fall. Mackey said this could be a formal decision or a notice to the HCs. Gale said USFWS would like this to be a formal decision by the HCs rather than a notice. Gale asked if the in-season decision would only pertain to using surplus brood for the CSN. Mackey answered yes.

Hillman asked if the edits to the Protocols are adequate. Mackey said the protocol was edited to move entirely to spring collection of steelhead broodstock. Tonseth said if all are comfortable with this change, he will accept those edits. Truscott said CCT gives provisional approval based on adequate numbers to meet Methow program targets. Tonseth will revise the Protocols to reflect the suspension of fall collection of steelhead brood for the CSN with flexibility for the HCs to make an in-season decisions if the fall run-size looks low.

### *Chiwawa Weir Operation*

Tonseth said USFWS provided language that dictates the parties (i.e., WDFW and Chelan PUD) that would give notice to the USFWS if there is a need to change the number of days of Chiwawa Weir operation causing a change in the numbers of bull trout encountered. Gale said this would require informing USFWS Ecological Services. Cindy Raekes (USFWS) has approved this language. Truscott asked whether 20 days of trapping at the Chiwawa Weir has already been authorized. Gale and Tonseth answered yes. Gale said the allowance is to encounter less than 10% of the estimated bull trout spawning population. Last year this allowed for a limit of 93 encounters at the weir. Gale said the intention of the language in the Protocols is for USFWS Ecological Services to review the Protocols each year.

Tonseth said due to low expected run size, any natural-origin spring Chinook salmon encountered during the Chiwawa Weir collection days will be retained.

### *Out-Planting Methow Spring Chinook (Appendix C)*

Gale said he provided comments on the Protocols regarding how Methow FH natural-origin spring Chinook salmon are retained for Methow FH broodstock. Gale reminded the Committees members that translocation of all Methow FH returns not needed for broodstock to natural spawning areas was proposed by WDFW. Gale said that: 1) USFWS thinks active trapping at Methow FH should be done to prevent hatchery fish from spawning at the hatchery outfalls; and 2) USFWS is concerned about out-year effects on PNI of using only WNFH fish for brood. Gale said that according to the 3-population PNI prediction, it will be harder to meet the PNI goal of 0.67. Gale said USFWS suggests an approach of prioritizing females for out-planting and using males for WNFH brood. This approach keeps PNI at 0.5, minimizes hatchery by hatchery spawning in the wild, and promotes female-driven hatchery by wild spawning in the wild. Gale said the intent would be to use the translocation plan that was developed 2 years ago as a starting point (2017; distributed by Larissa Rohrbach on March 11, 2019).

Tonseth said there are three proposals to consider:

1. The original proposal to allocate all Methow FH returns (to Methow FH and WNFH) in excess of needs for WNFH for translocation
2. Maintain males for use at WNFH for broodstock
3. Allocate all Methow FH adults that return to Methow FH for translocation, and allocate all females that return to WNFH for translocation

Tonseth said the proposals would require operation of traps at Methow FH and WNFH for the full season to collect brood and collect Methow FH fish to translocate them to desirable sites (instead of spawning at the hatchery). Any translocation would depend upon return rates. Gale said a certain percentage of returning adults will bypass trapping even if traps are run; estimating this escapement would be a useful detail. Mackey asked whether in the original translocation plan there was a cap on the number to be translocated. Gale said yes, a cap of 200 hatchery-origin spring Chinook salmon adults was proposed; with a sex ratio that was skewed toward females (F:M of 1.0:0.2). Tonseth said based on the current run prediction, he has concerns there will be few males and translocation of too many females would bias interpretation of the success of the program if those females cannot find mates in the wild. Truscott said the Protocols should be clear that translocation is an issue that depends upon adequate returns. Truscott said allocating fish for translocation could cause a trickle-down effect resulting in a lack of sufficient Methow FH returns for broodstock to support the Winthrop NFH stepping-stone production, requiring Winthrop returns to be used to satisfy Winthrop production and potentially jeopardizing Okanogan 10j broodstock collection that utilize Winthrop returning adults.

Tonseth said the Protocols will state that the 2017 translocation plan will be revisited and recommendations will be made for the 2019 activities.

### *Douglas PUD Program Comments and Revisions*

Mackey said he revised a paragraph to be inserted into the YN coho salmon program appendix reflecting that Douglas PUD has a coho salmon program with broodstock collected within the YN program. The language also describes the activities based on discussions with Keely Murdoch and Cory Kamphaus. Mackey will send language to Tonseth and Keely Murdoch for her approval and inclusion into the Protocols by the end of today.

Mackey said Douglas PUD hatchery staff desire higher brood numbers than described in the Wells summer Chinook salmon yearling and subyearling broodstock collection plans. Mackey said Douglas PUD will not hold up approval of the Protocols but changes for these programs could be made between now and July 1. Tonseth said if it makes sense to change the plan, it is supported by WDFW.

Tonseth will send final revised Protocols to the HCP-HC and PRCC HSC representatives by late Thursday for email vote on Friday so the Protocols can be presented to the Wells HCP Coordinating Committee next week. Rohrbach will email final Protocols to the Wells HCP Coordinating Committee Chair (John Ferguson) and support (Kristi Geris) by the end of the day Friday.

## B. Streamlining

Tracy Hillman said this topic will be addressed in a future meeting.

## C. Spring Chinook Salmon Carcass Recovery Bias

Andrew Murdoch said there are two papers that describe approaches to estimating spawning escapement using carcass recovery methodologies (distributed to the Committees by Larissa Rohrbach on March 19, 2019<sup>1,2</sup>). Andrew Murdoch said the model is being refined to be submitted for publication this fall.

Andrew Murdoch said Mike Hughes (WDFW) will give a presentation, then Andrew Murdoch will provide an overview of carcass recovery methodologies that can be used. He will describe three variations for spring Chinook salmon and three for steelhead at a high level of detail.

Hughes gave a presentation entitled "Spring Chinook Carcass Recovery Bias in the Upper Wenatchee Basin." This is preliminary work developed by Hughes and Kevin See (Biomark). The key messages from the presentation are noted here.

- Slide 2: There are biases in carcass recovery on the spawning grounds resulting in biased spawning population estimates.
- Slide 3: Study objectives are to develop a model that predicts spring Chinook salmon carcass recovery rates in the upper Wenatchee Basin and corrects for biases. Results were shown for 2011 and 2013.
- Slide 4: Methods. 100% of fish were marked at Tumwater Dam. Tagging was done in June and July and carcasses were recovered in September. Pre-spawn mortalities and fallbacks presented problems. To address these problems, only detections of live passive integrated transponder (PIT)-tag fish on spawning grounds were used as recovery data.
- Slides 5 to 8: Recovery rates are highly variable between years. Other factors affecting recovery include river discharge (high water years vs low water years) and stream type (glacial-fed streams having lower recovery due to turbidity than non-glacial streams).

---

<sup>1</sup> Murdoch, A.R., C.H. Frady, M.S. Hughes, and K. See, 2018. Estimating Population Sampling Error for Spring Chinook Salmon Based on Redd Surveys. Draft manuscript.

<sup>2</sup> Murdoch, A.R., C.J. Herring, C.H. Frady, K. See, and C.E. Jordan, 2018. Estimating observer error and steelhead redd abundance using a modified Gaussian area-under-the-curve framework. *Can. J. Fish. Aquat. Sci.* 75: 2149–2158 (2018) [dx.doi.org/10.1139/cjfas-2017-0335](https://doi.org/10.1139/cjfas-2017-0335)

- Slide 9: Recovery rates also vary by channel type (pool-riffle vs plane-bed) with less complex channel types (plane-bed channels) showing a trend toward lower recovery rates.
- Slides 10 and 11: Across all 10 years of data, median recovery rate by sex shows recovery of females is greater than males. This reflects post-spawning behavior of females as they guard redds and die near the redd. In contrast, males are not faithful to specific spawning locations and can be found in the thalweg or pools. There is also a trend toward recovery of larger fish of both sexes.
- Slide 12: Recovery variability was examined using the following variables in the model: river discharge, stream type, channel type, sex, and fish size. Fish origin was not added into the model because no differences were observed between natural-origin and hatchery-origin fish. Differences in size and behavior are captured in the other variables.
- Slides 13 to 16: Relative importance of variables were shown graphically. The following conclusions were made:
  - Lower recovery was experienced with higher discharge, glacial streams, and plane-bed channel types for both males and females.
  - Size (post-orbital to hypural length [POH]) has almost no influence on recovery of female carcasses. They observed interactions between stream type and discharge. Freshet information was not included in the model for females.
  - Size and freshets affect recovery of male carcasses.
- Slides 17 and 18: At this time, they have examined corrected versus non-corrected data for only 2011 and 2013. Survey programs are underestimating the number of younger males.
  - Todd Pearsons asked why 2011 and 2013 were chosen for analysis. Hughes said 2011 was a high jack and high discharge year, while 2013 was a more average water year and typical Tumwater return (jack return). Andrew Murdoch said all years will be analyzed; these are preliminary results and they are unsure how representative these years are.
- Slide 19: Fish per redd and spawning abundance. Comparison shown between estimates for observations at Tumwater Dam, observed carcasses, and corrected by channel type. They also showed differences in spawning distribution between natural-origin and hatchery-origin fish.
  - Peter Graf asked what the difference is between plane bed use in 2011 and 2013? Hughes said there were many differences between years including flows and a large jack return in 2011. Andrew Murdoch said in 2013, ratios between plane-bed and pool-riffle use tended to be more similar. Hatchery-origin fish tend to use plane-bed channels because this is the channel type in the Chiwawa River near the acclimation site.
- Slides 20 to 26: Corrected sex ratios are really driven by the fish-per-redd calculation. Modeled results show that surveys would underestimate younger age-class fish and overestimate older age-class fish. Underestimation of younger fish, which tend to be HORs, causes underestimation of HORs on the spawning grounds.

Andrew Murdoch said this model shows the “spawner to carcass” phase rather than the “pre-spawn to carcass” phase, which was published in 2010 and was affected by pre-spawn mortality.

Kirk Truscott said he thought surveys were more likely to overestimate females. Hughes said the data shown are proportions, so the correction is not to add more females. Hughes said the model results are driven by the fish-per-redd ratio. By applying different fish-per-redd ratios corrected by channel type, the ratio of M:F changes. In the plane-bed reaches, the overall carcass recovery is low, compounded by more hatchery fish in plane-bed reaches.

Greg Mackey asked if it is possible the model would provide an estimate that is actually less than the actual number of carcasses observed? Hughes said no, proportions are corrected by adjusting probabilities of recovery and applying new recovery probabilities to ratios of males to female.

Andrew Murdoch said the model presented allows for the use of carcass sampling to generate fish-per-redd calculations for each channel type and each stream for more accurate estimates of spawner distribution between HORs and natural-origin returns (NOR). Andrew Murdoch said it also allows for understanding differences in space upstream from Tumwater. Mike Tonseth asked whether estimates still depend upon having robust carcass data. Hughes and Andrew Murdoch said yes, a total lack of collection of a given fish type gives outlier-adjusted results. Andrew Murdoch said rolling the data up to the evolutionarily significant unit level somewhat mitigates the influence of outliers.

### *Estimating Pre-Spawn Survival*

Andrew Murdoch presented slide 27 on pre-spawn survival in the Chiwawa River. Andrew Murdoch said the survival estimates start with detections at the in-basin array. He said in a previous exercise, they saw HORs always had lower pre-spawn survival, but data were not corrected for carcass-recovery bias. He said corrected data show that there is a carcass bias for females driven by a lack of pool-riffle reaches in the Chiwawa River where males would be found. He said a different picture emerges when data are corrected for carcass-recovery bias. Corrected data show similar HOR and NOR pre-spawn survival rates. Andrew Murdoch said survival of males is lower for HOR fish. Results were unexpectedly different from previous analysis.

Tracy Hillman asked whether estimates in the Chiwawa River were driven primarily by most hatchery-origin fish using plane-bed reaches and the fact that hatchery-origin fish are smaller and younger? Andrew Murdoch said yes, the strongest factor is channel type and a weaker effect was fish size. He said in the past, pre-spawn survival estimates were not possible for males.

Hillman highlighted the important point that pre-spawn loss is about 40% to 70%. Andrew Murdoch said yes, the same results were observed in 2010. Andrew Murdoch said the power of the model is

the number of detections observed on redds (3,500). He said they designed the model to be transferrable as long as there is information on redds and channel type.

Truscott asked whether this represents the maximum pre-spawn survival? Andrew Murdoch said yes, because measuring started near the mouth of the Chiwawa River. Thus, it does not include losses in the Wenatchee River. Mackey asked if the conclusions depend on redd counts, could one underestimate redds and underestimate survival. Andrew Murdoch said Area Under the Curve (AUC) was used to estimate spring Chinook salmon escapement and assumed one redd per female and that males spawn with one female. He said they know from the RRS study that this may not be the case. He said it is difficult to tease apart fish that returned from those that actually spawned. He said estimates of males could be high because we know males spawn with more than one female (more than one redd).

Hillman said it is surprising that survival did not change more with flows. Andrew Murdoch said yes, there is a bigger problem than anticipated to determine the factors that affect survival; this at least provides more accurate survival numbers.

Graf asked how will results be affected for 2014 and later when adult management was implemented (all jacks removed)? Andrew Murdoch said this will recast all the escapement predictions.

Keely Murdoch asked, given what you know about different habitat uses between HOR and NOR, how does this change interpretation of pre-spawn survival trends? Andrew Murdoch said the different pre-spawn survival previously observed between HOR and NOR was an effect of bias. Now the focus should be on identifying factors for pre-spawn mortality and keeping adults alive that have returned.

Graf asked whether the carcasses observed were spawned out. Tonseth said yes. Graf asked whether evidence has been found of fish that have died before spawning? Andrew Murdoch said yes, we do see them, but that finding carcasses that are not spawned out is fairly rare. He further indicated they are only looking during the spawning season and pre-spawn mortality is probably occurring throughout the season (prior to spawning). He said the females observed are those that have been guarding redds. He added there is still uncertainty about how behavior affects observation of pre-spawn mortalities.

### *Comparison of Methods for Estimating Spawning Escapement*

Andrew Murdoch compared three methods for estimating spawning escapement for spring Chinook salmon (slides 29 and 30) and steelhead (slides 31 through 33)

The spring Chinook salmon 3.0 method is the least biased method so far; it incorporates the bias correction model, which corrects for observer bias, carcass location, and sex ratios.

The steelhead 3.0 method uses AUC but is a PIT-tag detection and redd count hybrid. This method relies on PIT tagging at Priest Rapids Dam (the off-ladder adult fish trap [OLAFT]). Andrew Murdoch said fish are not assigned to a tributary during tagging; adjustment for pre-spawn mortality is based on radio telemetry results to generate HOR/NOR and sex ratios for the mainstem. The data can be used to roll up to a population level estimate. Andrew Murdoch compared methods for different tributaries.

Entiat steelhead that survive to the mouth of the river tend to survive to spawn. In the Methow and Wenatchee basins, version 2.0 or 3.0 can be used. The Okanogan River is a very different system than where the Gaussian AUC model was developed. Truscott said there are different water conditions with high turbidity in the Okanogan and surveys are affected by stream flows, which can delay surveys for several days or weeks. Andrew Murdoch said there are models to correct for that, but it helps to capture the peak of spawning. Hillman said he thinks there is a lot of overlap between summer Chinook salmon and steelhead spawning habitat use because of a lack of suitable spawning gravels in the Okanogan River.

Pearsons said the Committees are currently in the process of analyzing data for the comprehensive report to compare supplemented (treatment) areas to reference areas. He said they are lacking comparable information (unbiased data) from reference areas and asked whether they could (erroneously) be making corrections to treatment data and not reference area data, or the "after" period and not the "before" period? He said they could be making assumptions based on incorrect comparisons.

Andrew Murdoch said older data (before data) are wild fish and therefore are less biased. Programs would need to identify the bias associated with hatchery fish in the after period. He said in some cases it may be easier to adjust for observer bias with GPS data during the "after" period. Pearsons said productivity depends on both NOR and HOR data. Andrew Murdoch said if a bias is specifically associated with the treatment (e.g., supplementation with hatchery fish), that bias could be adjusted to achieve a better estimate for the treatment. He said the entire time series for the Wenatchee could be compared to other areas with less complete datasets as analysis progresses (e.g., little Wenatchee, White River).

Betsy Bamberger asked whether the old and new models could be run simultaneously? Andrew Murdoch said they will be running the old method and new method for comparison. Hillman said assuming all data are collected the same way, you can make the comparisons because the bias is likely the same for both treatment and reference areas. If you adjust one group for bias and not the other, comparisons would be confounded. Hillman said surveys in the upper Columbia River are

more robust than in other regions. He said there is so much variation in the data, treatment effects are difficult to identify, and analyses lack suitable power even if there is a long time series of data.

Hillman thanked the presenters and concluded the discussion on carcass recovery bias and estimating escapement.

#### **D. Steelhead PIT-Tagging at the Off-Ladder Adult Fish Trap and Array Operations and Maintenance**

Andrew Murdoch said WDFW is still planning to move forward on PIT-tagging spring Chinook salmon at the OLAFT. Andrew Murdoch said WDFW is reducing their scope for antenna operations and maintenance but adamant about using every array necessary. They will eliminate upper Entiat Basin former Integrated Status and Effectiveness Monitoring Program (ISEMP) arrays. Andrew Murdoch said it is the goal of the Bonneville Power Administration to move operations and maintenance for all arrays (remnants of ISEMP arrays and WDFW-operated arrays) into a single project for efficiency of operations. This month PTAGIS will create an instream PIT-tag array subcommittee, which will ensure instream arrays are functioning and performing similar to mainstem arrays.

Andrew Murdoch said that use of paired antenna rows overestimates detection probability and underestimates escapement because detections by each antenna are not independent.

Andrew Murdoch said that they are advocating for detections at two sites farther apart to lower the detection bias at the lower detection point. He said they wish to demonstrate that loss of a detection point could lead to underestimation of escapement. Catherine Willard asked how far apart arrays need to be. Andrew Murdoch said arrays used are at least 10 miles apart. He said it helps for viable salmonid population metrics to have arrays at the downstream end and one in tributaries upstream. He said array placement is consistent for much of the upper Columbia River. Andrew Murdoch said the proposal is to model steelhead escapement in all of Eastern Washington (Okanogan, Wenatchee, and Methow); life history is very different between these tributaries, between spring spawners and holdovers. He said the tributaries to the Snake have a different model due to differences in life history.

Andrew Murdoch said the original motivation was to use the investment in PIT arrays for more than just steelhead. He said the steelhead viable salmonid population project is really a data gaps project—the first six data gaps have been addressed, some still exist, and some are emerging and WDFW wants to maintain flexibility to address those data gaps. The motivation to switch to tagging spring Chinook salmon would be to understand what's going on across the spring Chinook salmon evolutionarily significant unit and to develop a model to observe salmon recovery trends. He said the motivation is to leverage the fish data in the Wenatchee Basin to influence project prioritization.

Greg Mackey asked of the arrays that are critical for the OLAFT PIT-tag model, are any contracted through Biomark? Andrew Murdoch said no, none in the Methow. Mike Tonseth said WDFW is a subcontractor to Biomark for only the arrays originally funded by ISEMP; others are WDFW-funded arrays. Andrew Murdoch said there are no former ISEMP arrays in the Methow. He said there are arrays WDFW inherited from the Bureau of Reclamation (Pat Connolly's group) that required rebuilding. Andrew Murdoch said the Entiat and Wenatchee array operations will be funded but not for array maintenance. Tonseth said Okanogan arrays are a combination of WDFW and former-ISEMP arrays. ISEMP has ended, and funding sources are still unresolved.

Willard asked if PIT-tag arrays used for steelhead mark-recapture modeling will not be turned off assuming PIT tagging steelhead at OLAFT is continued? Willard said if a switch to PIT tagging spring Chinook salmon occurs, steelhead tagging would start July 1 and Chelan PUD uses the mark-recapture based estimates for tributary steelhead escapement estimates in the Wenatchee sub-basin. Willard said, assuming BPA approves WDFW using funds that are currently used for PIT tagging steelhead at OLAFT to PIT tagging Chinook at OLAFT, the funding need for PIT tagging steelhead at OLAFT would be for this year, Douglas PUD is already funding WDFW to estimate escapement into the Methow tributaries by PIT-tagging steelhead at Wells. Andrew Murdoch said stock assessment for all upper Columbia River steelhead could occur at OLAFT. He said Douglas PUD could amend contracts to allocate WDFW staff and resources differently in the Methow. Todd Pearsons said there would be a number of decisions to be made because Grant PUD shares run composition modeling at Wells with CCT. Pearsons said Grant PUD would need to think about, for example, switching to PIT tags from spawner surveys in the Okanogan River. Andrew Murdoch said this was the purpose of comparing different survey and modeling methods in the earlier presentation. Willard said Chelan PUD is committed to using the "3.0" version of the model for Wenatchee steelhead because Chelan PUD has been using this model for the past five years.

Andrew Murdoch said that when Upper Columbia wild spring Chinook salmon run size starts dropping, there are Adaptive Management Implementation Plan triggers within the Federal Columbia River Power System BiOp that requires agencies to "help out." Andrew Murdoch said tagging at OLAFT can support this and can also support adult management.

Kirk Truscott said he has 2 questions:

1. Will steelhead be PIT tagged at the OLAFT in 2019? Willard said Chelan PUD will be PIT tagging at the OLAFT in 2019.
2. Will PIT tagging at the OLAFT provide sufficient data for steelhead stock assessment for stocks upstream from Wells Dam? Andrew Murdoch said yes, there is so much overshoot at Wells that the stock assessment for Methow and Okanogan at Wells is currently inaccurate. Andrew Murdoch said PIT tagging at the OLAFT will benefit all programs upstream from Priest Rapids

Dam. He said the accuracy of using PIT-tag detections for small tributary spawning streams isn't as good but can be more accurate when data are rolled up to the distinct population segment level. Andrew Murdoch said the hope is that new high density polyethylene (HDPE) arrays are much more durable than the old polyvinyl chloride (PVC) arrays. He said he is still working with PTAGIS to reduce data management costs.

Tracy Hillman thanked Mike Hughes and Andrew Murdoch for their presentations.

### **E. Comprehensive Report Update**

Todd Pearsons said the PUDs have been moving ahead with the 10-year analyses. The rough schedule outlined in the SOA is to provide the draft comprehensive report to the HC and HSC in 2020. Keely Murdoch asked how this is different from the 5-year analytical report. Pearsons said this is a 10-year manuscript-style report broken down into chapters developed by different authors. Keely Murdoch asked who writes the report and will there be an opportunity to comment on the report. Pearsons said the PUDs are writing the report, BioAnalysts is doing much of the statistical analysis, and that it will be provided to the Committees for review and approval. Pearsons said the comprehensive report is designed to be an integration of results and comparison to literature and other programs around the upper Columbia River.

### **F. NMFS Consultation Update**

Brett Farman said the summer/fall Chinook Salmon bundle Environmental Assessment may be heading to NMFS headquarters today for review.

Farman said the Section 10 permits (for takes of threatened and endangered species) are being reviewed by counsel this week or next. Farman said those permits will then go out for review by the programs at the same time as they go out for public comment.

Farman said he is still waiting for an update on the steelhead program permits.

Larissa Rohrbach asked the HCP-HC and PRCC HSC Representatives what their feedback for Emi Kondo is on the dissemination of HGMP publication announcements. Truscott said Representatives and Alternatives (HCP-HC; or HSC primary list) should be notified and it is up to NMFS to disseminate announcements more broadly. Bill Gale said the distribution list should be similar to when HGMPs were sent out several years ago. Farman said NMFS is making more effort to notify interested parties than in the past. Gale asked if announcements would be posted to the Federal Register and NMFS' public website. Farman said yes.

### III. Wells Hatchery Committee

#### A. Washington Animal Disease Diagnostic Lab Bacterial Kidney Disease Testing Update (Tentative)

Betsy Bamberger said the WADDL is able to report raw optical density (OD) values resulting from BKD assays. WADDL has revised protocols in use by federal hatcheries. Bamberger said Douglas PUD still needs to consider differences in cost between using WADDL and WDFW laboratories for BKD testing. Mike Tonseth asked whether WADDL is still working on a go-between between their method and the state's OD threshold method? Bamberger said no, there are many differences between methods and they would already use their in-house methods. Bamberger said if a change in methods were requested from WADDL, the programs would have to be very specific about what they want WADDL to do. Tonseth said the Methow BiOp requires use of the OD values for culling decisions that are based on fixed thresholds. Bill Gale said USFWS has negotiated with WADDL to provide the raw data, but for the federal hatchery programs, the decision thresholds are not fixed, data are binned, and thresholds determined after the fact. Gale said their approach is more conservative than using a fixed threshold for culling. Bamberger said because there are no clear relationships between OD limits and clinical disease, it is more of a risk-management tool. Bamberger said the program can ask WADDL for raw data. Tracy Hillman said the state's existing thresholds are very similar to what WADDL uses for the federal programs. Bamberger said there is laboratory-to-laboratory variability. Tonseth said the BiOp for the Section 10 permit dictates the thresholds. The HC would need to recommend a deviation from the current approach.

### IV. RI HC

#### A. Marking the Chiwawa 2018 Brood

Catherine Willard said that the brood year 2018, Chiwawa spring Chinook salmon program is supposed to be 100% wild by wild crosses for a conservation program; however, wild by wild fish currently make up only about 30% of the conservation program and the remaining 70% consists of hatchery by hatchery crosses due to not collecting enough natural-origin brood. There are currently 50,000 wild by wild-origin progeny and 125,000 hatchery by hatchery-origin progeny. Under the proposed action analyzed within the BiOp, any shortfall in Nason and Chiwawa fish to meet the safety-net program would result in use of hatchery-origin fish. The program would apply an adipose fin clip to Nason and Chiwawa safety-net fish.

Keely Murdoch said that sounds different than what was in the Spring Chinook Salmon Management Plan and the HGMP. Willard said the permits do not specifically mention marking. Willard said the bottom line should be the terms and conditions agreed to in the permits and what was analyzed in

the BiOps. Mike Tonseth said this does create a problem if the management plan was the material considered when issuing the BiOp, but the BiOp seems contradictory to the management plan. Tracy Hillman asked which document are we supposed to follow if there is conflicting information among documents. Willard said she is interested in knowing what NMFS' opinion is on this issue. Tonseth said the BiOp was written to consider direct and indirect take (such as from harvest on marked fish).

Bill Gale said the first thing is to review the HGMP. The proposed action reviewed by the BiOp is supposed to summarize the HGMPs. Willard said that Craig Busack may be the best person to answer our questions because he was one of the authors of the BiOp.

Hillman asked if we need NMFS to interpret the documents and provide guidance on what should be done. Gale said yes, but if there is conflicting guidance. The HCs needs to come to consensus on what to do. Brett Farman said his inclination is to mark fish based on origin of the brood, but the Committees should review the documents to understand if that was implied and expressed. Farman said he will discuss the issue with Amilee Wilson and Craig Busack to understand the original intent of the marking direction in the BiOps.

Tonseth said a follow-up discussion needs to be had after: 1) all are able to review the BiOps, HGMPs, and Management Plan; and 2) Tonseth gets information from Chuck Aldrich (WDFW) on timing of tagging to set up the timeline for a follow-up discussion on marking. Tonseth said this decision will affect the 2018 brood and the 2019 NOR shortfall. Tonseth said the timeline is to tag in summer 2019, but the outreach has started in order to reserve the tagging trailer.

Tonseth said he will collect all documents being discussed (Spring Chinook Salmon Management Plan, HGMPs, Permits, and BiOps) and send them to Larissa Rohrbach for distribution. Hillman said there should be a location on the Extranet where all these documents should be filed. Rohrbach said she would determine the appropriate place for these resources on the Extranet.

Keely Murdoch stated that after recalculation of the Chiwawa program, which resulted in a smaller production number, she thought the number of required natural-origin brood needed for the program would be met, but it has not been met. Willard stated that the committee should consider if it makes sense to collect spring Chinook at Tumwater Dam that are very likely genetically Chiwawa fish (Willard stated the genetic assignments from 2018 which included 38 out of 60 samples typing back to the Chiwawa at 90% or greater) and put them back in the river and hope that they are trapped at the Chiwawa weir. The natural-origin brood target has only been met in one out of five years of collecting Chiwawa brood at the Chiwawa weir due to meeting the bull trout encounter rate and low natural-origin spring Chinook returns. Willard said the Committees need to continue the conversation on where the broodstock for Chiwawa will come from.

Gale said there is a philosophical question at hand about whether hatchery-origin fish used to back-fill the conservation quotient are in fact "safety-net" fish (and therefore tagged by ad-clipping) or should all conservation fish be ad-present regardless of origin. Gale said the original intent of the programs was to ensure a set quotient of fish would escape harvest (by not ad-clipping them).

Tonseth said it is important to understand which fish would be moved up-river for spawning. Tonseth said if the program is producing fewer conservation fish, in subsequent years there could be an effect on PNI. Keely Murdoch said the original intent was to ensure that it would be a rare occurrence to move hatchery fish into the conservation program. The assumption was that the NOR run would increase over time; the current limitation on NORs was not forecasted. Willard said there are natural-origin fish that are passed over Tumwater that could be retained for conservation programs. Willard said there are genetic implications of using the F2 generation from safety-net fish in the conservation program

Tonseth said WDFW does not have an issue with moving more hatchery fish into the conservation program. He said the 3-population model should be used to determine how PNI will be affected if you allow more safety-net fish on the spawning grounds. Gale said if you use the Methow as an example, WNFH partial percentage of hatchery origin broodstock is no more than 50% and the 3-population PNI allowed them to conclude that they should strive to have less than 5% safety-net fish on the spawning ground to maintain percentage of hatchery origin broodstock targets. Tonseth said the Chiwawa hatchery program is 100,000 fish, which is much smaller than the Methow program. Gale said the decision depends on the proportion of safety-net fish on the spawning grounds, not the absolute numbers. Gale said the low percentage of natural origin broodstock composition of the safety-net fish will have a higher effect on PNI than the high percentage of natural origin broodstock of the conservation program. Pearsons said if you have empirical information about relative reproductive success it may not be necessary to use PNI, which is a theoretical number.

## V. PRCC HSC

### A. Approve the February 20, 2019 Meeting Minutes, Committee Updates, and Meeting Summary Review (Todd Pearsons)

The PRCC HSC representatives approved the draft February 20, 2019 meeting minutes as revised.

Larissa Rohrbach reminded PRCC HSC members to return comments on the Priest Rapids Hatchery M&E Implementation Plan to Todd Pearsons by March 25, 2019.

## **B. Approve Broodstock Collection Protocols for PRCC Programs – DECISION ITEM**

Tracy Hillman said the PRCC program Protocols will be approved over email following distribution of a final revised version as will be done by the HCP-HCs.

Todd Pearsons said the outcome of a discussion by the Joint Fisheries Parties about marking Nason conservation program fish should later be brought back to the HSC. Mike Tonseth said there will be overlap with the Chiwawa marking discussion so the topic should be revisited by the HSC and HCP-HCs.

## **C. Review and Re-Scope the White River Memorandum**

Tracy Hillman received a memorandum from Elizabeth McManus (Ross Strategic) regarding the history of PRCC HSC involvement on the topic of re-initiating a White River spring Chinook salmon hatchery program. Hillman said he talked to Craig Busack, who committed to spending time this summer to address this topic with the PRCC HSC.

As a bit of background, Keely Murdoch said in the process of considering the Lake Wenatchee proposal (on which the PRCC ultimately voted not to proceed), the PRCC identified data needs with the intent to issue a Request for Proposals (RFP) to address those data needs. Keely Murdoch said it was her understanding that Curt Dodson (Grant PUD) tasked the PRCC HSC to develop an RFP based on those data needs. Bill Gale and Peter Graf said their interpretation of the PRCC's guidance was to determine if an RFP was needed. Gale said there was no written guidance from the PRCC, so it is unclear what they want.

Keely Murdoch suggested using the word "re-scope" if the goal is a consensus memorandum from the HSC. She said it is difficult to come to consensus on what type of data she will need to make the decision and to secure the support of her upper management. Keely Murdoch said that if that recommendation is not to start a hatchery program, there needs to be some good reasons why and good alternatives. For the YN, getting to recovery is the ultimate goal and the National Oceanic and Atmospheric Administration (NOAA) has signaled to the YN the importance of the White River. Ultimately, we may need to provide other recommendations that could be used as an alternative to achieve recovery of the White River aggregate to show why the recommendation not to restart the hatchery program makes sense. Keely Murdoch said there is difficulty coming to consensus because the data needed to inform one representative's particular program is not the same as for another. Graf said the solution may be a memorandum that is not a consensus memorandum. Graf said this does not have to be the last say. At any time, the HSC can add to this memorandum and revisit it. Gale said the current version of the memorandum highlights the areas of non-consensus. Keely Murdoch said the memorandum currently does not inform why there is non-consensus.

Todd Pearsons suggested appending information that is not evident in the memorandum that communicates each party's interests and needs for a decision to be made in the future. Hillman said each entity could identify the minimum data or information that is needed to make a decision. Hillman said the memorandum already provides a lot of this information in tables. Gale said he does not like the idea of each agency providing their data needs. Gale asked why the HSC representatives wouldn't just communicate the needs back up through each PRCC representative for consideration by the PRCC.

Pearsons said there are topics where consensus would never be achieved because there are probably true differences in opinion among the entities. Graf said those differences are fundamental to the scope of starting a new hatchery program and include each agency's philosophical approach to mitigation. Keely Murdoch said there may be other ways to increase the productivity of the White River spawning aggregate. She said there is agreement that the White River aggregate is still an important piece of recovery of the species. Mike Tonseth said this principle is in the Recovery Plan, which was adopted by NMFS.

Tonseth asked what the intention is of the 2013 SOA. Did it include identifying data gaps or providing alternatives to a hatchery program? He added, there is a need to ask the PRCC for clarity. Pearsons said he did not read text about providing alternatives to restarting the White River hatchery program in the SOA and GPUD folks that negotiated the SOA said that alternative mitigation was not part of the agreement. Keely Murdoch said there is not a difference of interpretation of the SOA on whether or not to restart a White River program.

Keely Murdoch said there are two topics that would prevent a decision to restart a White River hatchery: 1) shorelines permitting with Chelan County due to challenges complying with the Washington State Shoreline Management Act; and 2) broodstock source. She read the revised Shorelines Management Plan in the meeting that now has new language that is less restrictive for aquaculture for the purposes of recovery. Gale said previously Chelan County was responding to public perception of aquaculture and its constituents. Tonseth said that is a political aspect and not a technical aspect. The HSC was tasked with considering the technical aspect.

Pearsons asked preliminarily if any Party is going to promote the idea of a White River spring Chinook salmon hatchery program? Keely Murdoch said she doesn't know. Pearsons said there will be several large datasets arising from M&E work that will inform this decision. Keely Murdoch agreed but said data are lacking for understanding juvenile Chinook salmon survivability through Lake Wenatchee and what the ecological mechanisms are that are limiting White River Chinook salmon. Hillman asked whether any decision triggers have been drafted ("if this, then that" type of language). For example, if you find high predation rates in the lake on White River Chinook salmon by bull trout,

would that mean no hatchery program should be pursued? Hillman asked whether the HSC could make the decision. Keely Murdoch said the HSC will make the decision informed by recommendations from an expert panel.

Pearsons said a lot was invested in PRCC HSC discussions on the White River program in the past without much tangible benefit. Hillman said an alternative approach that is not necessarily HSC consensus is to provide lists of minimum data needs from each Party. The minimum list would be much more stripped down from the existing list. Hillman suggested that if the minimum was identified, the Parties might find more consensus.

Gale asked if there is a timeline for this? Keely Murdoch said the decision needs to be made by 2026; the timeline for achieving consensus and involving an expert panel by 2026 may start now if 3 to 4 years of data collection is needed prior to 3 years of committee and expert consideration. Tonseth said the current permits expire in 2026 and no current permit would cover the 2026 brood. A new permit and consultation would be needed. Pearsons said two things could happen: 1) the HSC could decide they don't want to restart a hatchery program, which could restart a discussion on alternatives; or 2) the decision does not need to be made until 2026 when the expert panel is convened. Grant PUD would not be supportive of investing in facility work planning before a decision about restarting a program and that won't be made until 2026.

Hillman said Craig Busack indicated that NOAA needs to provide an opinion on the status of the White River spring Chinook salmon aggregate. Graf said because there is no timeline on this memorandum, he suggested we wait until Busack re-engages with HSC. Keely Murdoch suggested asking the PRCC for additional guidance before Busack re-engages.

Hillman will ask Denny Rohr (PRCC Facilitator) to provide written instructions from the PRCC on what exactly the PRCC wants the HSC to do. HSC Representatives will assemble their list of minimum data or information needs to make a decision on the White River program.

## VI. Administration

### A. Next Meetings

The next HCP-HCs and PRCC HSC meetings are on April 17, 2019, at Grant PUD; May 15, 2019, at Grant PUD; and June 19, 2019, at Grant PUD.

## VII. List of Attachments

Attachment A List of Attendees

Attachment B Final 2019 Broodstock Collection Protocols

FINAL

*HCP Hatchery Committees  
Meeting Date: March 20, 2019  
Document Date: April 18, 2019  
Page 26*

Attachment C Presentation: Spring Chinook Carcass Recovery Bias in the Upper Wenatchee Basin

**Attachment A  
List of Attendees**

---

Name	Organization
Tracy Hillman	BioAnalysts, Inc.
Larissa Rohrbach	Anchor QEA, LLC
Catherine Willard*	Chelan PUD
Kirk Truscott*‡	Colville Confederated Tribes
Tom Kahler*	Douglas PUD
Greg Mackey*	Douglas PUD
Peter Graf‡	Grant PUD
Deanne Pavlik-Kunkel	Grant PUD
Todd Pearsons‡	Grant PUD
Brett Farman*‡°	National Marine Fisheries Service
Bill Gale*‡	U.S. Fish and Wildlife Service
Michael Humling	U.S. Fish and Wildlife Service
Alf Haukenes	Washington Department of Fish and Wildlife
Chad Jackson*‡	Washington Department of Fish and Wildlife
Mclain Johnson	Washington Department of Fish and Wildlife
Mike Tonseth*‡	Washington Department of Fish and Wildlife
Keely Murdoch*‡	Yakama Nation

Notes:

\* Denotes HCP-HC member or alternate

‡ Denotes PRCC HSC member or alternate

° Joined by phone