Meeting Minutes

Lewis River Aquatic Technical Subgroup

To: Lewis River Aquatic Technical Subgroup Date: July 25, 2024

From: Larissa Rohrbach, on behalf of Sarah Montgomery, ATS Coordinator, Anchor QEA, LLC

Re: Final Minutes of the January 26, 2023, Lewis River Aquatic Technical Subgroup Meeting

The Lewis River Aquatic Technical Subgroup (ATS) meeting was held virtually on January 26, 2023, from 10:00 a.m. to 12:30 p.m. Attendees are listed in Section V of these meeting minutes.

Action Item Summary

- See Work Plan

Agreements or Recommendations

- None.

Review Items

- None.

Finalized Documents

- None.

I. Review Agenda, Review Last Meeting Action Items, and Approve Previous Meeting Minutes

A. Review Agenda

- Larissa Rohrbach reviewed the agenda and reordered it based on staff availability during the meeting.

B. Review Previous Meeting Action Items and ATS Work Plan

- See Work Plan.

II. ATS Meeting Topics

A. Genetic Plan Next Steps

PacifiCorp, Washington Department of Fish and Wildlife (WDFW), and Cramer Fish Sciences (Cramer) have met to discuss the draft genetics plan. The next steps are to evaluate the genetics baseline with a focus on the population structure of steelhead upstream of Swift Dam. Erik Lesko will organize the steelhead samples, and Cramer will do the single nucleotide polymorphism analysis. Kale Bentley said that existing tissues samples, including samples that have been previously run, from the Lewis Basin will be identified and organized. The results of these samples will further inform how the plan will be implemented. Cramer will publish the results on the SharePoint site where WDFW and PacifiCorp will be able to review them. WDFW is conducting genetics sampling in the Lower Lewis River that could be used to supplement this data analysis. Lesko will be in touch with Bentley and Todd Olson.

Lesko has an updated draft of a table summarizing the adult sampling strategy that was attached as a draft of the 2022 Annual Operating Plan (AOP). Bentley said there are aspects of the table that need to be discussed further. Bentley asked whether the table will be completed in the 2022 or 2023 AOP. Should it be additionally edited before it is sent to the Federal Energy Regulatory Commission? Rohrbach will reshare the version of the table attached to the 2022 AOP to the ATS.

B. Work Plan and Priority List

See Work Plan.

C. Yale Reservoir Fish Behavior Study

Chris Karchesky said that an additional behavior study will be performed as part of the Yale downstream design. The purpose of this study is to determine the variance in fish behavior between the different areas of Swift Reservoir, as well as how fish respond to operational changes. The results of the study will be overlaid with computational fluid dynamics (CFD) models, as well as the position and orientation of the collector. The review process is underway for 30% design.

Last year's study commenced in May and predominately looked at Coho Salmon. The 2022 behavior study provided insight into where fish are released and passage success. It is important that this year's behavior study expands upon last year's study. The 2023 behavior study will incorporate spring Chinook Salmon and steelhead in addition to Coho Salmon. The behavior study plan has been discussed with the Fish Passage Subgroup, and feedback from the ATS was requested. The behavior study plan will need to be given to the contractor soon.

The 2023 behavior study plan will focus on fish released at the head of Swift Reservoir. Additional equipment will be added to the study, enabling data to be collected on the water depth positioning of fish as they enter the forebay. Tags equipped with pressure transducers will be used to reveal the locations and depth of the fish. It is suspected that fish will remain in shallower water, and this study will help inform this hypothesis. The 2023 behavior study is proposed to commence on March 1 and will extend through June. Bentley asked whether the fish collected are a mix of parr and smolts and whether they are exhibiting smolting characteristics. Karchesky responded that the study is focused on the outmigration of smolts and will primarily analyze fish that are visibly smolting. The median length of fish coming through the collector are tagged.

Bentley asked what happens to the other 10% of fish. Karchesky replied that one release group exhibited interesting behavior. Collection of 80% was pretty good; there is some influence of tagging and tag life. At Swift Reservoir, 10% to 40% fish were observed at the collector. At Swift Reservoir, Coho Salmon tend to make their way down the collector compared to the other species. There is quantifiable mortality observed in Coho Salmon due to handling. Mortality is typically seen within 24 to 48 hours. Additionally, tag battery-life issues and predation of tagged fish are also observed.

Bentley said that Figure 14 shows the spill and flow types in May and June. Bentley asked whether a generation event is when there is a surge in the need for power. Karchesky responded that Yale Dam can turn generation on or off on a dime; they were trying to adjust for behavior when there is a spill event. Generation is split into two levels to distinguish between high and low generation. An event is around 4,500 cubic feet per second when the powerhouse is at a higher rate than half of what the flow would be for full generation. Low and high generation equate to lower and higher intake flows.

Bentley asked how typical 2022 was. Was it different in any meaningful way? Karchesky responded that generation in 2022 was typical; spill was a little bit more than typical but not out of realm of normal. Karchesky replied that there is historical information available related to fish passage, facility performance, and facility design. The operational profile is consistent. If there is not the opportunity to turn generation on or off, the reaction of fish to specific environmental conditions when entering the forebay is examined. When fish are attracted to flow, they are wind driven. The 2023 behavior study is interested in examining events that exhibit additional flow that cause fish to pass through the spillway. Infrastructure designed to promote an attraction to flow helps determine how to design a facility to capture natural behavior.

Bentley asked whether it would be beneficial to alter operations to make the 2023 behavior study experimental. Karchesky said flows and operations cannot be changed for an experiment. However, the fish will be exposed to a variety of operational conditions. A question posed from last year's behavior study was whether fish make it down from the head of the reservoir. The location of fish was determined using manual tracking. Once fish entered the reservoir, they tended to move along

one shoreline. As fish approached the dam, they distributed throughout the forebay and exhibited a searching behavior. The fish focused in on an attraction to flow. They would eventually either return upstream or pass. If the fish entered the forebay, they would end up at the powerhouse.

Erin Peterson asked for clarification on the resolution of the depth data from the pressure tags. Last year, most fish were staying in shallow water. Karchesky replied that the batteries on previous pressure tags were difficult to use because they were too large for the fish. The new pressure tags being used are small enough to use on juvenile fish. Peterson asked whether the tags are a mixture of pressure and non-pressure tags. Karchesky replied that for each species, pressure and non-pressure tags are evenly distributed.

Peterson asked whether Figure 1 shows just one upstream release site or releases are replicated at the mid-reservoir site. Karchesky responded that it is just the upper site to make things simple for releases and to not introduce statistical differences. It is interesting to see more of the timing of migration through the whole reservoir. Karchesky confirmed that fish caught at the Swift collection facility are being passive integrated transponder tagged.

Chuck Peven asked whether hydraulic model exercises are being conducted in the forebay. It would be beneficial to monitor whether operations add to the surface flow. Karchesky said CFD models have looked at the current conditions without the collector and how hydraulics are affected from a surface-oriented standpoint, as well as throughout the reservoir. Karchesky said the operations associated with the preliminary 30% design of collector itself are folded into the model too; 30% design is available, and there is a lot of information there available to review. Karchesky said any major changes to the behavior study plan will need to be made by March 1. Analytical components could be considered later than that date if needed. Tagging will start within a month for spring Chinook Salmon.

Bentley said that more than 25% of tagged fish were detected at Merwin Dam and by the nearby hydrophone. This data implies that the exclusion net was not functioning properly because many fish migrated through. This also demonstrates the ability for fish to survive the spillway. Bentley asked whether there is a method to determine whether the 25% was a minimum value. Would spilling over be an option for fish passage? The mortality rate of using the spillway would need to be determined. Karchesky said that fish passage through the exclusion net was expected to occur. The proposed change in infrastructure design at Yale Dam is to incorporate a barrier net that will replace existing exclusion nets. Barrier nets will help discourage fish from passing through the turbine in the powerhouse. A proportion of fish made it through as data showed fish stayed in tailrace until the tag's battery life expired.

Bentley asked whether the exclusion and barrier nets used at Yale Dam are different than the nets being used at the Swift collection facility. Karchesky replied that the nets are similar; however, the orientation and geography of the Swift Dam forebay causes the nets to function more like barrier nets. Bentley noted an objective of the *Aquatic Monitoring and Evaluation Plan for the Lewis River* pertains to estimating the loss of fish over Swift Dam into Yale Lake. Karchesky said there is risk associated with the use of all nets. Under the current objective, it is difficult to monitor passage through the Swift powerhouse. There is not an indication that fish are getting through the exclusion net. There is not a good way to census or monitor at Yale Dam yet, and having a collection facility would help with annual estimates. The Baker Project has generated annual passage estimates of fish from the upper into the lower reservoir through barrier nets.

D. Update: Transition Planning

Bryce Glaser and Josua Holowatz have been working on the draft transition plan. The draft will not be ready by January as Bentley and Sam Gibbons are working through additional modeling of program sizes. Glaser said that they aim to get the draft to the ATS in February.

E. Hatchery Practices and Pathology

Sean Roon met with Aaron Roberts and Gibbons to discuss treatment options for kokanee salmon at Speelyai Hatchery. Luke Miller (WDFW) noted early release of kokanee salmon has been done for the past 6 years. In the last few years, kokanee salmon were treated with oxytetracycline. Currently, a subgroup of kokanee salmon is undergoing a trial treatment of azithromycin (aqabamycin). When bacterial kidney disease presents in a group, usually due to stress from marking, it is proposed to treat it as soon as marking is complete. There will be a round of azithromycin treatment in June. Roon proposes implementing this treatment for 3 years to see whether it is a viable option. A potential issue with azithromycin is that it can cause renal toxicity and requires a 28-day feeding regime. It is not the most palatable drug, with the Cowlitz Hatchery having difficulty implementing the full 28-day regime. The hatchery had to go down to a 21-day regime because fish would stop eating it. A different mix rate is being trialed to attempt to return to the 28-day regime.

Kevin Young said that Chinook Salmon and kokanee salmon have been ponded at Speelyai Hatchery. The facility is in rearing mode and conducting winter maintenance. Marking will begin in March. Winter and summer steelhead have been spawned at Merwin Hatchery. Merwin Hatchery is additionally prepping for wild brood collection.

F. Review Next Meeting Topics

The ATS identified the following potential items to discuss at the next meeting:

- Placeholder for Lesko, Rohrbach, and Bentley to have a technical workshop
- Holding a short February meeting

III. ATS Administration

The next meeting will be on February 23, 2023, and held virtually. The meetings will continue to be held virtually until further updates.

IV. List of Attendees

Name	Affiliation
Larissa Rohrbach	Anchor QEA
Chris Karchesky	PacifiCorp
Mark Ferraiolo	PacifiCorp
Erik Lesko	PacifiCorp
Chuck Peven	NMFS
Kale Bentley	WDFW
Sam Gibbons	WDFW
Bryce Glaser	WDFW
Erin Peterson	WDFW
Aaron Roberts	WDFW
Sean Roon	WDFW
Kevin Young	WDFW

Meeting Minutes

Lewis River Aquatic Technical Subgroup

To: Lewis River Aquatic Technical Subgroup Date: July 25, 2024

From: Larissa Rohrbach, on behalf of Sarah Montgomery, ATS Coordinator, Anchor QEA, LLC

Re: Final Minutes of the February 23, 2023, Lewis River Aquatic Technical Subgroup Meeting

The Lewis River Aquatic Technical Subgroup (ATS) meeting was held virtually on February 23, 2023, from 10:00 a.m. to 12:30 p.m. Attendees are listed in Section V of these meeting minutes.

Action Item Summary

See Work Plan.

Agreements or Recommendations

- None.

Review Items

- None.

Finalized Documents

- None.

I. Review Agenda, Review Last Meeting Action Items, and Approve Previous Meeting Minutes

A. Review Agenda

Larissa Rohrbach reviewed the agenda and reordered it based on staff availability during the meeting. Update: Genetics Monitoring Plan (E) was added to the meeting topics.

B. Review Previous Meeting Action Items and ATS Work Plan

See Work Plan.

II. ATS Meeting Topics

A. AOP 2023

A clean and redlined version of the final working version of the Annual Operating Plan (AOP) will be sent to the ATS. Work on the 2024 template for the *Aquatic Monitoring and Evaluation Plan for the Lewis River* will now begin. The removal of Strategy K (Total Dissolved Gas Monitoring), major changes to document structure, and a summary of major content changes to the AOP were discussed during the meeting. Erik Lesko said changes could be made to fall monitoring in the next version of the AOP. In-season changes need to be made.

B. Summer Steelhead Broodstock Collection

Chris Karchesky said summer steelhead broodstock collection was brought up to the Aquatic Coordination Committee (ACC) toward the end of 2022. Modifications to the Merwin Fish Collection Facility are being planned in response to collection efficiency evaluations. When the facility is turned off, fish passage needs to be maintained, and the summer steelhead broodstock collection program must continue to run. The ACC has approved the project, which will begin in July. A 2-month outage is expected, and the collector will start up in September. The ACC has brought this plan back to the ATS to review and provide recommendations for the summer steelhead broodstock collection program. It would be beneficial to establish a finalized plan by May.

Karchesky shared graph of the run timings of spring Chinook Salmon, summer steelhead, and early Coho Salmon. Karchesky asked how many fish are needed for broodstock collection. A vast majority of summer steelhead are coming through the system. The question was whether collecting broodstock before and after the planned outage would meet broodstock needs. Our plan is to ensure all equipment and fabrication are completed by mid-June. The trap will not be closed to unless that is completed. Karchesky shared a slide that showed the last several years of trap data, as well as the number of males and females collected between April 1 and June 30.

Keely Murdoch asked why this work could not be scheduled during winter. Karchesky replied that high flows in winter would make work difficult because accessing the conveyance system requires work below water level. The work further includes closing a bulkhead, dewatering the crowder, and working under the tailrace elevation. A trap outage is not anticipated until the first week of July. Substantial completion of work by August is ideal so the existing system can be decommissioned and replaced. The commissioning process will occur for 2 weeks in September. Fish may be able to be collected but at a limited capacity. Sam Gibbons asked whether there is another method of temporarily or manually trapping fish at the Lewis River Collection Facility. Karchesky replied that would not be possible.

Karchesky shared slides from the ACC that provided details on the fish ladder and conveyance system. It takes multiple days to conduct a fish salvage. The issue with the crowder resulted in fish sitting out. A goal of the facility modification is to make the crowder flexible enough to retain functionality. Additionally, the crowder will be able to be lifted out without having to dewater the system. There is not an effective way to collect fish when the bulkhead is down and dewatered. Fish will need to be collected at Lewis River Hatchery during the outage. In 2012, increased numbers of fish returning to the facility after the outage was observed.

Bryce Glaser said that the length of the outage may be a concern. It is important to explore alternate collection options. In the long term, it would not be beneficial to only collect at the beginning or end of the return. However, adopting this collection strategy for 1 year would be acceptable. Murdoch asked whether hook-and-line collection has been considered. In the upper Columbia River, Winthrop National Fish Hatchery uses this method every year for natural-origin return (NOR) steelhead broodstock collection. Karchesky said that volunteers would be available to help. Josua Holowatz suggested transporting fish to Lewis River Hatchery to promote attraction. If the water is seeded with fish, broodstock may be enticed to enter the facility.

Holowatz asked whether dredging at the mouth of the ladder has been considered. Lesko responded that dredging on the Lewis River has been an ongoing issue and has not been conducted in recent years. Aaron Roberts said dredging is very effective in improving attraction to flow. Dredging would need to be done approximately every 3 years in response to gravel movement caused by high water levels.

Kevin Young said the broodstock collection target is 250 adults. The collection window is from June to September in a normal year. This year, the collection window could be expanded to meet the unique conditions. The Lewis River ladder could be used when the collection facility is decommissioned. Lewis River ladder collection numbers tend to be low, but broodstock collection in July and August would be achievable. The average number of broodstock collected in July is approximately 70 to 75 adults. The average number of broodstock collected in August is approximately 85 adults. Karchesky said that PacifiCorp will have internal discussions and updates will be provided at the next ATS meeting.

C. Update: Transition Planning

Glaser and Holowatz provided an update on the status of the Lewis Coho Hatchery Transition Plan (Transition Plan). A draft plan will be sent to ATS members for a detailed review before the next meeting. The document contains a synopsis of current Coho Salmon transition plans. Programs in the proposed transition plan would remain the same size. The early program would aim to release 1.1 million smolts, and the integrated late program would aim to release 900,000 smolts. The draft

transition plan also includes a proposal to pivot into an integrated Coho Salmon program, as well as a harvest-only segregated early program. The ATS reviewed sections of the transition plan, abundance levels, and management scenarios, as well as discussed recovery phases.

Fish in the segregated early program will not be used for reintroduction or upper basin transport. The program is harvest only; therefore, proportion of natural-origin brood and mining rates will not be analyzed. A ventral clip will be added as a secondary mark. The timing for National Oceanic and Atmospheric Administration consultations was discussed.

The integrated late program would mirror the run timings for NORs. The plan discusses monitoring and evaluation, hatchery configuration, and infrastructure modifications. The program likely will require industrial water chillers to manipulate early egg takes. The program collection curve took into consideration *United States v. Oregon* (302 F. Supp. 899) and remote site incubation. There would be no interim harvest based on abundance metrics in the Upper Lewis River. The Lower Lewis River and ocean fisheries would not change.

Glaser said a harvest analysis was run to understand how the early program and late program were contributing to fisheries, particularly ocean fisheries outside of Buoy 10 (Columbia River). Modeling outputs of expected return sizes has generated an estimate lower than the smolt return goals for both programs. Hatchery and Genetics Management Plans (HGMPs) for Coho Salmon and steelhead will be a co-submission for Washington Department of Fish and Wildlife (WDFW) and PacifiCorp. HGMPs will use the Hatchery and Supplementation Plan, the Lewis Coho Hatchery Transition Plan, and the Lewis River Hydroelectric Projects Settlement Agreement for guidance. The transition plan will be attached as an appendix of the Cowlitz HGMP. This organizational structure could be used for the Lewis HGMPs. The ATS's role is to help the draft plan to meet recovery and hatchery obligations. The transition plan will then be recommended to the ACC. Comments will come back on March 23.

D. Update: Screw Traps

Jeremiah Doyle said the installation of screw traps at the golf course has been delayed. The traps were originally to be installed on March 1 but will now be installed on March 7, 8, or 9. A screw trap (5-foot cone) will be installed at the mouth of Cougar Creek in March.

E. Update: Genetics Monitoring Plan

Lesko provided updates on the genetics monitoring plan. Cramer has started analyses on existing steelhead samples to establish baseline data and identify data gaps. Samples from the Merwin screw trap and the Swift floating surface collector are currently being compiled. Sample analysis will likely be finished in April. Bentley said there is already a genetic baseline for steelhead available, and it is

important to not duplicate work. Cramer made suggested revisions that Lesko will coordinate with WDFW to discuss.

F. Work Plan & Priority List

See Work Plan.

G. Hatchery Practices and Pathology

Young said marking and tagging of spring Chinook Salmon will begin in March. Ponding and incubation work is currently happening at Merwin Hatchery. Blank wire tagged (BWT) and natural origin return (NOR) wild winter steelhead brood collection and returns have been low. Two BWTs are on hand at the hatchery. This observed low return could be due to the large number of sea lions at the mouth of the Lewis and Cowlitz rivers. No returns for spring Chinook Salmon have been observed. Mike Chamberlain said the spring Chinook Salmon February groups have been released. Late Coho Salmon will be ponded soon.

H. Review Next Meeting Topics

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Name	Affiliation
Josua Holowatz	WDFW
Aaron Roberts	WDFW
Sean Roon	WDFW
Kevin Young	WDFW
Keely Murdoch	Yakima Nation