FINAL

Meeting Minutes

Lewis River Aquatic Technical Subgroup

To: Lewis River Aquatic Technical Subgroup　　Date: September 18, 2024

From: Larissa Rohrbach, ATS Coordinator, Anchor QEA

Re: Final Minutes of the August 22, 2024, Lewis River Aquatic Technical Subgroup Meeting

The Lewis River Aquatic Technical Subgroup (ATS) meeting was held in person on August 22, 2024, at the Washington Department of Fish and Wildlife (WDFW) Region 5 office: 5525 South 11th Street, Ridgefield, Washington, 98642, from 9:00 a.m. to 1:00 p.m. Attendees are listed in Section IV of these meeting minutes.

Action Item Summary

- Kevin Young (WDFW) will provide a summary of the methodology and results of the winter steelhead broodstock collection program at the September ATS meeting.
- Jeremiah Doyle (PacifiCorp) will provide an update on Bull Trout-Coho Salmon monitoring strategies at the September ATS meeting.
- Larissa Rohrbach (Anchor QEA) will prepare a decision document for the ATS Charter for submittal to the Aquatic Coordination Committee (ACC) in September.
- Erik Lesko (PacifiCorp) will determine the smolt-to-adult return (SAR) data needed for annual reporting and coordinate with ATS members to establish a reporting strategy.

I. Welcome (Lesko)

A. Review Agenda

The Updates (II) section was moved to the top of the agenda to accommodate the *Adult Winter Steelhead Mark-Recapture Study 2024* presentation (III.A) by Mount Hood Environmental (MHE) at 10:00 am.

II. Updates

A. Bull Trout-Coho Monitoring in Swift Reservoir (Doyle)

Jeremiah Doyle provided an update on the status of discussions between U.S. Fish and Wildlife Service (USFWS) and the Lewis River Bull Trout Recovery Team (LRBTRT) on Bull Trout-Coho Salmon monitoring in Swift Reservoir. Jeff Garnett (USFWS) and LRBTRT will discuss USFWS's perspective on monitoring methodology in 2024 and the application of monitoring metrics to the Biological Opinion (BiOp). A full monitoring update will be presented at the September ATS meeting.

Bryce Glaser (WDFW) noted that any conflict between the USFWS BiOp and the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) BiOp should be discussed to confirm information needs and identify strategies to work out conflicting issues. Issues may be elevated to the ACC level if Bull Trout-Coho Salmon monitoring conflicts with other metrics. The role of the ATS is to review the monitoring plan and determine how metrics are assessed.

Glaser said that moving forward with monitoring before working with the ATS on the monitoring plans goes against what was outlined in the 2024 and 2025 Adult Coho Salmon Supplementation Targets Upstream of Swift Dam Decision Document. If USFWS is unable to meet the established timeline for working with the ATS, the next steps forward must be reassessed. Doyle said data must be collected when Bull Trout begin spawning in the upcoming weeks regardless of USFWS's timing of review.

Doyle shared a brief overview of modifications made to existing redd superimposition monitoring strategies. Redds will not be capped in Pine Creek. Surveys in Pine Creek will attempt to mark the egg pocket with a colored marker. Historically, only 1% of Bull Trout redds have been observed to be constructed after October 15 each spawning season. Redds constructed after October 15 are likely to be from Coho Salmon. Photographs will be taken at each marker through December 15, 2024, to determine whether redds have been superimposed over time. The hope is that this monitoring strategy reveals displacement of the colored weight over the redd piles. High flow due to snow and rain fall are anticipated to disturb the markers by December. Kale Bentley (WDFW) said it would be helpful to clearly outline monitoring assumptions (e.g., specific dates when redds are assumed to be present) and how monitoring data will apply to the larger watershed. This will allow reviewers to effectively assess the validity of assumptions.

B. Genetics Monitoring Plan Update (Lesko)

Lesko said a genetic sampling plan is in development for juvenile steelhead downstream of Merwin Dam and upstream of Swift Dam. Bentley has organized a focus group meeting to determine which samples will be collected. The primary purpose of the meeting will be to review and finalize the sampling plan for inclusion into Strategy G: Genetic Risk Monitoring in the Annual Operating Plan (AOP).

C. Integrated Population Model Update (Bentley)

Bentley organized a meeting between Integrated Population Model (IPM) developers and those involved in IPM projects from WDFW, the United States Geological Survey (USGS), MHE, and PacifiCorp. The purpose of this meeting is to coordinate with regional IPM developers, share model outputs, and ensure models are being developed cohesively. The meeting will be held on September 6, 2024, at the tentative time of 11:00 a.m. to 1:00 p.m. Individuals interested in attending this meeting may reach out to Rohrbach, Chris Karchesky (PacifiCorp), or Bentley for the Teams meeting link.

D. Winter Steelhead Broodstock Collection Preparations (Young)

The current year, 2024, was the first year of winter steelhead broodstock collection for implementing the winter steelhead stepping-stone program under the Lewis Steelhead Transition Plan. Kevin Young will provide a summary of the methodology and results of the 2024 broodstock collection program at the September ATS meeting to determine the best approach to winter steelhead broodstock collection in 2025. Young said the program was successful and a record number of fish were passed upstream. Thirteen broodstock pairs were collected per week for 4 weeks in April (52 males and 52 females). The program produced three spawning events/egg takes. The goal of future broodstock collections will be to consolidate all stepping-stone fish into two spawning events/egg takes.

E. General Updates (All)

ATS members shared several general updates. Lesko said that beginning in September, Swift Reservoir will be drawn down to 950 feet to accommodate spill gate repairs. As a result of the drawdown, the boat ramp at Swift Forest Camp on the Lewis River will be out of service starting after Labor Day. Higher-than-average flows from Merwin are expected through September. A press release will be published the week of August 26. A more detailed update on this situation will be provided at the September ACC meeting.

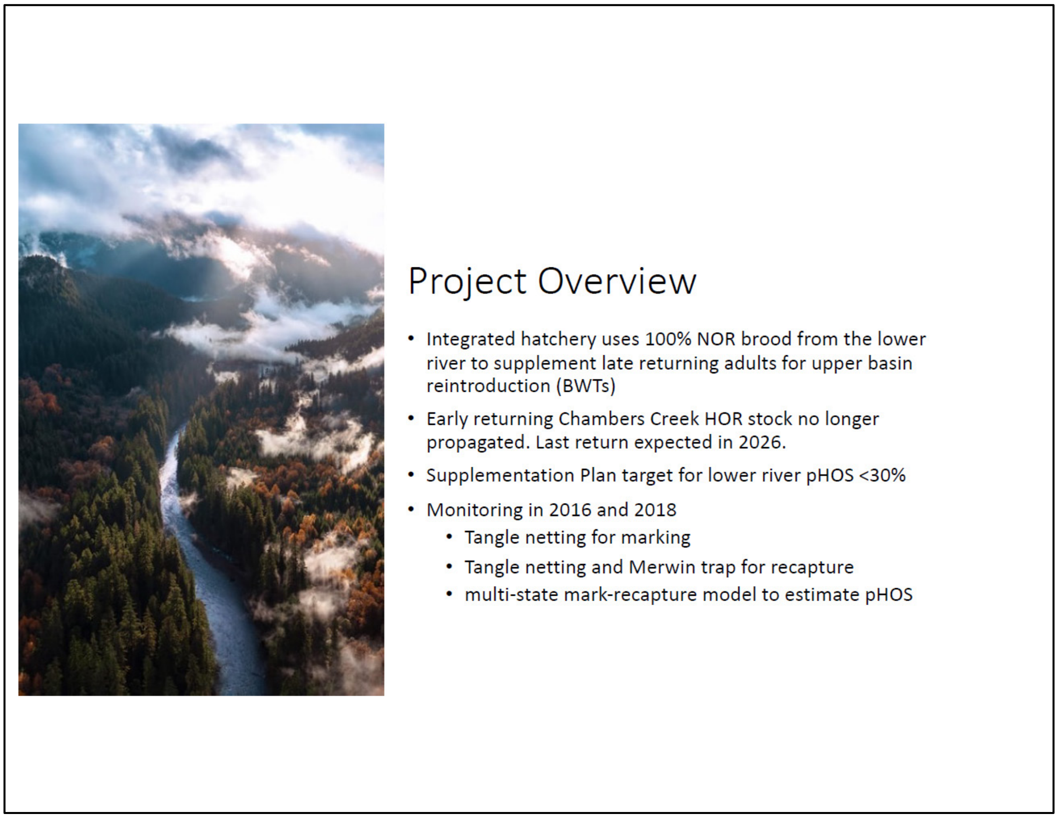
Glaser said that he has responded to the policy questions regarding the implementation of the Lewis Coho Hatchery Transition Plan. Glaser would be happy to share his answers to these questions with the ATS or ACC if members are interested in adding this to a future meeting agenda.

III. ATS Meeting Topics

A. Adult Winter Steelhead Mark-Recapture Study – 2024 Summary (Mount Hood Environmental; 1 hour)

<u>Introduction and Study Methodology</u>

Ian Courter, Ben Briscoe, and Mark Roes from MHE presented the 2024 preliminary results of the *North Fork Lewis River Late Winter Steelhead pHOS Analysis*.



Doyle provided a project overview. Natural-origin return (NOR) winter steelhead broodstock monitoring began in 2009 to inform NOR steelhead supplementation to the upper Swift Reservoir. This study plan was developed in response to the Utilities' desire to change broodstock collection methods from tangle netting to angling. Courter said proportion of hatchery-origin spawners (pHOS) was 50% in 2016 and fell just under 30% in 2018. A complete data set was not achieved in 2018. Bryce Glaser noted that the Integrated Hatchery Program no longer collects 100% NOR broodstock.

Previous Field Methods: Tangle Netting

Pros

- High efficiency

Cons

- Non-selective capture method resulted in significant bycatch
- Field staff noted descaling and egg/milt discharge from captured steelhead
- Disruptive to anglers
- Hazardous
- Sex biased
- Only effective at 3500-5500 cfs

"Due to the invasive nature of tangle nets, great care must be used to prevent mortalities. This is especially true late in the spawning season when steelhead are actively spawning and already in poor physical condition."

USGS 2021

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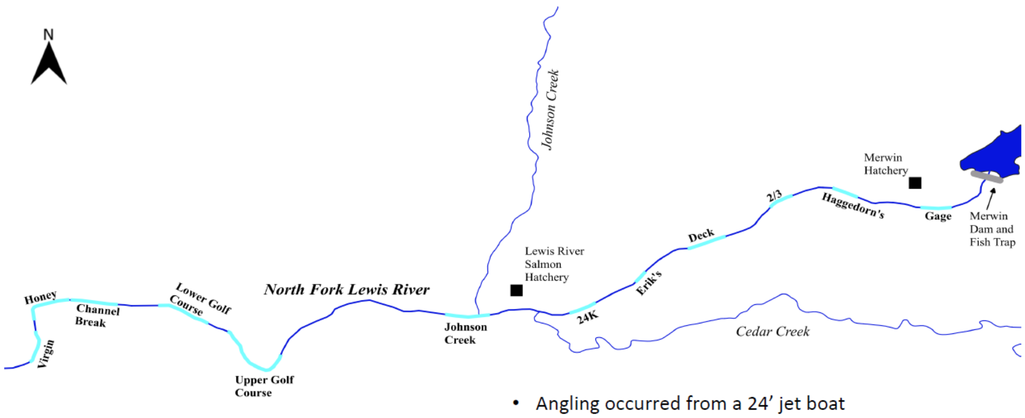

- Angling occurred from a 24' jet boat
- 1-2 days per week (Feb-May), 18 total events
- 12 discrete angling reaches
- 3 drifts (bobber and jig) per reach during each event
- 4 experienced anglers, plus boat operator

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Field Data Collection

- Origin (HOR or NOR)
  - HOR = BWT and/or stubby dorsal
- Fork length, gender, life-history, reproductive status of residuals, pre- or post-spawn status, capture location, and time.
- Scale and genetic samples
- PIT tagged and returned to the river
- Recap via angling and Merwin trap

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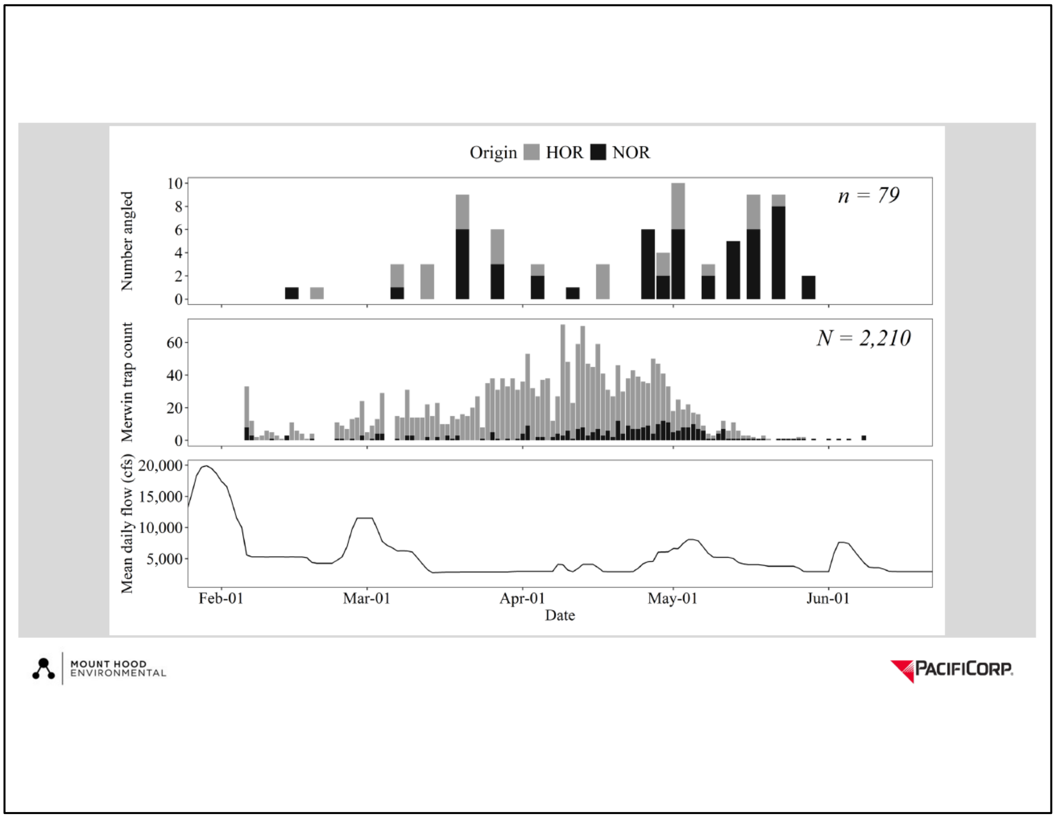
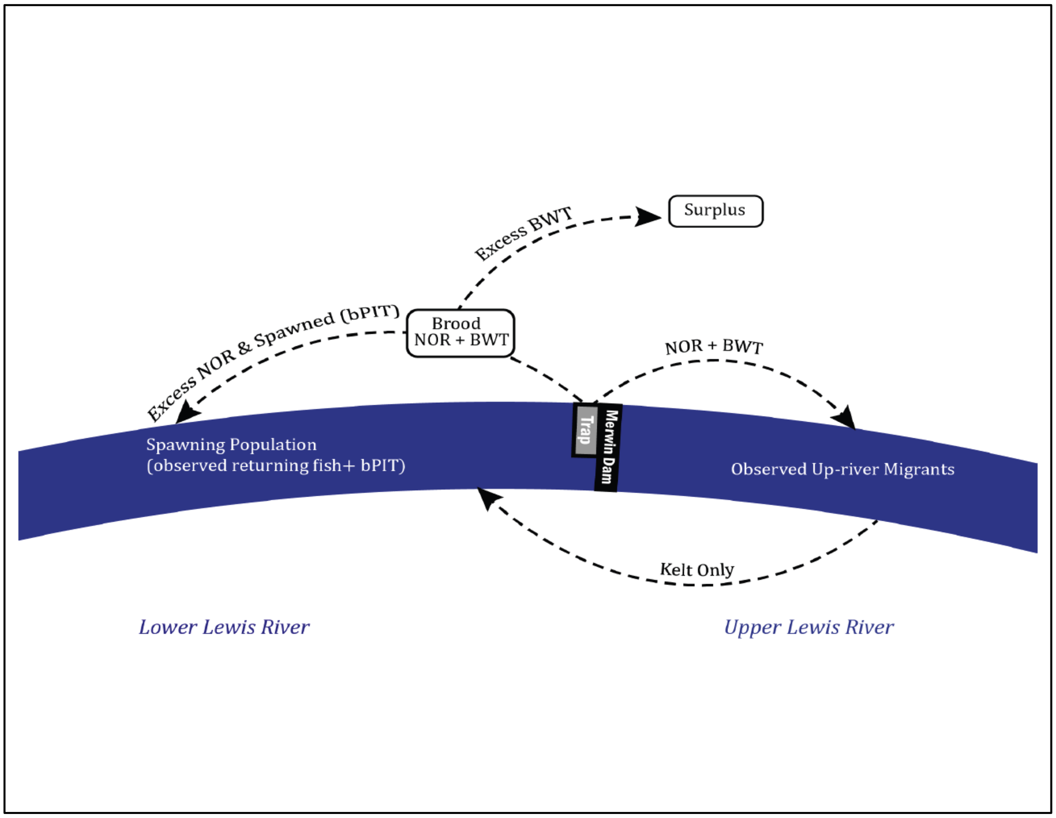
Courter said 54 anadromous fish and 25 residual fish were caught. The 2024 angling survey sample size was comparable to the 2018 tangle-netting surveys and larger than the 2016 tangle-netting surveys. Angling surveys required more time on the water, however, over several weeks, and averaged 4.3 anadromous and residual fish caught per trip. The angling surveys began with using bobber dogging rigs and later switched to a bobber and jig setup.



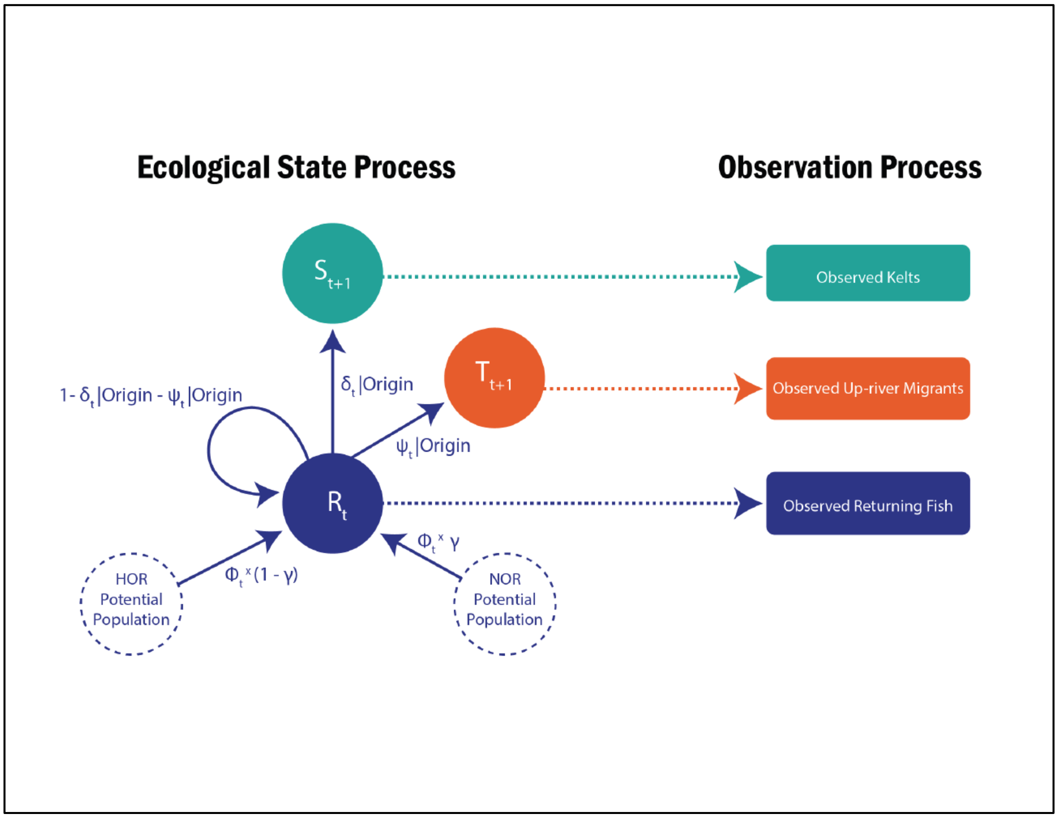
Roes said the study is interested in estimating the winter steelhead spawning population in the lower Lewis River. The estimated population is composed of fish observed during angling and fish that were collected for broodstock and released in the lower Lewis River. Josua Holowatz (WDFW) asked whether the 79 total fish angled represent both winter and summer steelhead. Courter said the 79 total fish angled represents fish presumed to be anadromous and residual winter steelhead. Summer steelhead and spring Chinook Salmon were encountered but not incorporated into the number of angled fish.

Angling was conducted for the entire run. Capture rates increased when fish first arrived in the lower Lewis River between March and April as well as in May and June when fish exhibited aggressive behavior associated with their spawning status. Angling was most successful when water flow was moderate and nonfluctuating and least successful when water flow was high.

Lower Lewis River Winter Steelhead Abundance Model Structure and Preliminary Results



This statistical model was created by Dalton Hance (USGS) to estimate the late-winter steelhead population in the lower Lewis River and demonstrate the multiple paths fish may move through the Lewis River basin. Angling collects a subsample of the whole lower Lewis River late-winter steelhead population. An individual fish that is angled may not always be a part of the lower Lewis River spawning population, because it may be en route to areas upstream.



The winter steelhead abundance model assumes Merwin Fish Collection Facility (MFCF) has 100% trap efficiency. An estimate of the lower Lewis River winter steelhead population size is generated based on pHOS and fish origin. The individual model approach estimates the origin and ecological state of a fish (e.g., kelting or spawning) based on angling data, later passive integrated transponder (PIT)-tag detections, and capture data from the MFCF.

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Results

Parameter	Median	95% CI	SD	$\hat{R}$	
pHOS	0.39	0.3 – 0.49	0.04	1.0	Lower River
NOR spawners	224	185 – 259	19.1	1.1	Lower River
HOR spawners	145	108 – 180	18.5	1.05	Lower River
Residual ratio, female	0.01	>0.01 – 0.03	0.01	1.0	Lower River
Residual ratio, male	0.06	0.04 – 0.09	0.01	1.0	Lower River
NOR entered	522	483 – 557	19.1	1.1	Basin-wide
HOR entered	1,969	1,932 – 2,004	18.5	1.05	Basin-wide
Female ratio	0.39	0.37 – 0.41	0.01	1.0	Basin-wide

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Comparison to Previous Results

	PIT Tagged Fish	Spawner Est. (H+W)	pHOS	Residuals
2016	42	375	51.0% (41.3-60.4)	0.7% (f) 7.7% (m)
2018	73*	492	27.2% (21.1-33.9)	1.6% (f) 2.4% (m)
2024	79	369 (293-439)	39.2% (29.9-48.7)	1.4% (f) 6.1% (m)

* Total netted. Number PIT tagged fish not reported.

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The preliminary results are comparable to the results of previous years, however, the 2018 sample size may be inaccurate. The number of PIT-tagged fish used for broodstock was not included in the 73 PIT-tagged fish.

2024 has seen the largest number of NOR late-winter steelhead enter MFCF. Erik Lesko said it is interesting that spawning estimates are lower than expected given this year's high trap counts. It is possible fish moved upstream and did not contribute to downstream abundance in the lower Lewis River. Roes said fish that enter MFCF, spawned for broodstock (or are excess), or moved back into the lower Lewis River are accounted for in the model. Fish that enter MFCF and leave the lower Lewis River are not incorporated into the model. Kale Bentley said a total of 2,050 fish (277 NORs and 1,773 hatchery-origin returns [HORs]) were transported upstream in 2024. Late-winter steelhead are either taken for broodstock or transported upstream, other than fish from Chambers Creek Hatchery. The only year where fish were moved back downstream was 2020. Bentley does not believe fish were placed downstream in 2016 or 2018.

Courter said spawner estimates include adult anadromous and residual fish. This is necessary to estimate pHOS and reveals what portion of blank wire tagged fish became residual adults. Residuals have a higher capture probability, and some residual adults were angled multiple times. Holowatz said fish are not monitored in Cedar Creek. It is possible that fish angled in the lower Lewis River move into Cedar Creek and are not further detected. Roes replied that the model assumes fish spawn in the lower Lewis River. Bentley asked how many of the 79 total PIT-tagged fish were detected at MFCF. Roes replied approximately 13 were detected at MFCF, including 3 fish that were held for broodstock, not spawned, and released back into the lower Lewis River.

Bentley asked how the model was able to generate a precise estimate given the number of recaptures. The R-hat convergence diagnostic indicates whether the different chains in a model have converged to a stable solution, ensuring the reliability and accuracy of the results. John Best (WDFW) said the model has converged, and it is possible to run the model again to drive R-hat values down and produce higher confidence in the model output.

Glaser asked whether there are data on expected collection efficiency for MFCF given the model assumes 100% trap efficiency. Chris Karchesky replied that there are 4 years of collection efficiency data for late-winter steelhead. The collection efficiency is approximately 94% to 95%. Glaser said stubby dorsal fins are used as secondary identification for HOR fish. Was the proportion of fish with stubby dorsal fins analyzed? Karchesky replied it is rare for a fish to have a stubby dorsal and not be blank wire tagged. Holowatz asked whether pinniped damage was observed while angling. Doyle replied that pinniped damage was recorded on many fish. Pinnipeds were observed by the holding ponds at the end of the sampling period.

Couter asked whether there is anything MHE should do to follow up with this analysis. Given the low recapture rate of anadromous adults in the MFCF, it could be a challenge generating a large sample size for the model. The ATS could continue to discuss additional statistical approaches that may more adequately accommodate the current sample size. MHE will run the model again to produce lower R-hat values and provide final results to the ATS in the future. Bentley said a summary of model assumptions should be addressed in the data report. If possible, it would be beneficial for the model to incorporate the susceptibility of male versus female HOR and NOR fish. These susceptibility ratios would impact sample size and model assumptions.

Glaser said it will be important to discuss how to factor adaptive management in season to achieve high capture rates. Bentley and Best are interested in evaluating how much angling effort is needed to achieve meaningful results. Best ran a simulation that used run-timing data from 2016 to simulate the capture probability of angling and tangle netting. The goal was to determine the covariates for these estimates. The capture probability ranged from 1% to 2% each week. A long-term goal could be to rewrite the model in a computationally friendly way with continuous data for the parameters.

Glaser noted the sex ratio seemed biased toward males in the abundance model. Is this a result of increased angling of males due to aggressive behavior? Doyle replied there were more males observed on redds than females. Bentley said the proportion of HOR females observed at MFCF was 36%. The ratio of male to female NOR fish was approximately 50:50.

Glaser said it may be possible for WDFW to operate the trap at the Cedar Creek Fish Ladder. Data from the Cedar Creek Fish Ladder would adjust the recapture probability in the lower Lewis River and provided a better understanding of the Cedar Creek late-winter steelhead spawning population. Holowatz said WDFW historically has estimated 200 adult NORs passing through Cedar Creek yearly. WDFW has not operated the trap in 7 or 8 years.

Courter said the results will be finalized into a brief data report this fall. Lesko said this model has been successful in helping address key questions and objectives of the ATS. The data generated on late-winter steelhead pHOS, abundance in the lower Lewis River, and proportion of residual adults addresses Objective 5 of the 2024 AOP and three objectives in the Lewis River Hatchery and Supplementation Plan (H&S Plan). Discussions on the use of the model and data collection strategies will apply to the 2025 sampling season.

The assumptions of mark-recapture studies are outlined in Strategy A: Adult Abundance and Composition in the AOP. The ATS can discuss whether the assumptions of this mark-recapture model approach are in alignment with past assumptions. This discussion will be added to the priority table.

Largest fish captured, 890 mm

B. Revised ATS Charter Updates

Larissa Rohrbach shared feedback received to the ATS Charter document. Emi Melton's (NOAA Fisheries) comments focused on revising the language when discussing changes to Hatchery Genetics and Management Plans (HGMPs). Language was added verbatim from the Settlement Agreement addressing the completion of H&S Plan updates every 5 years or earlier if required by HGMPs. The ATS agreed with finalizing this version of the ATS Charter and moving it forward to the ACC for approval. Rohrbach will prepare a decision document for the ATS Charter for submittal to the ACC in September.

C. Hatchery and Pathology Updates

Kevin Young said Speelyai Hatchery is holding spring Chinook Salmon broodstock for the first spawning event on Tuesday, August 27. Coho Salmon broodstock collection will begin in the next 2 weeks for the early segregated program. The summer steelhead broodstock collection at Merwin Hatchery will be completed in two weeks. Adult Coho Salmon have begun arriving at Lewis River Hatchery. Aaron Roberts said spring Chinook Salmon carcasses from Lewis River Hatchery will be used for nutrient enhancement activities. Marking and tagging of juvenile summer steelhead and Rainbow Trout was completed last week. Merwin Hatchery is holding juvenile winter steelhead from the conservation and stepping-stone programs to be marked and tagged in late November and early December.

D. ATS Priorities

The top priorities listed in the ATS Workplan include the following:

1. ATS review of the 2025 AOP
2. Finalize genetics monitoring as an official strategy in the AOP.
3. Establish a framework for efficient access to data storage, data sharing, and reporting strategies. This is necessary to effectively meet the reporting needs of the Federal Energy Regulatory Commission and address the H&S Plan and Aquatic Monitoring and Evaluation Plan for the Lewis River (M&E Plan).
4. Evaluate the methodology and results of the 2024 winter steelhead broodstock collection for the stepping-stone transitional program.
5. Finalize the ATS Charter and submit for ACC approval.
6. Develop a framework to report on SAR estimates for hatchery released smolts.
7. Evaluate the spring Chinook Salmon rearing and release study.
8. Evaluate the methodology and results of the lower Lewis River winter steelhead abundance model.

Lesko said SAR analysis is an objective in the H&S Plan that the ATS has not addressed in past years. Glaser said SAR analysis should be addressed in two separate categories: 1) an evaluation of survival for each species; and 2) a formal analysis of the survival of different spring Chinook Salmon rearing and release life strategies. Anja Huff (WDFW) has been working on developing a standardized framework for the development and reporting of SARs for all hatchery programs.

Glaser said that there is enough information available on NOR return rates to fully address the M&E Plan Objective 12: Develop Estimates of Ocean Recruits. The next steps will be determining how SAR data and the spring Chinook Salmon rearing and release evaluation can be incorporated into ocean recruit analyses.

Rohrbach said it is important to determine which metrics need to be reported on in the upcoming months to produce the 2025 AOP. A goal for 2025 will be to integrate general hatchery SAR data and specific spring Chinook SAR data into the corresponding Annual Operating Report. Huff said SAR calculations are easily adjustable depending on the data need. Lesko will determine which SAR data are needed for annual reporting and will coordinate with ATS members on a reporting strategy.

IV. ATS Administration

ATS meetings will now begin at 9:30 a.m. instead of 9:00 a.m. Meetings will continue to end at 1:00 p.m. Emi Melton will not be attending ATS meetings in October and November. Kathryn Blair (NOAA Fisheries) and Marc Johnson (NOAA Fisheries) will be in attendance and able to address NOAA Fisheries specific topics.

A. Next Meeting September 26, 2024 (Rohrbach; 5 min)

The next meeting will be on September 26, 2024, and will be virtual only.

V. List of Attendees

Name	Affiliation
Caitlin Burd	Anchor QEA
Larissa Rohrbach	Anchor QEA
Amanda Farrar	Cowlitz PUD
Amelia Johnson	LCFRB
Steve Manlow	LCFRB
Ben Briscoe	Mount Hood Environmental
Ian Courter	Mount Hood Environmental
Mark Roes	Mount Hood Environmental
Kathryn Blair	NOAA Fisheries
Marc Johnson	NOAA Fisheries
Emi Melton	NOAA Fisheries
Jeremiah Doyle	PacifiCorp
Mark Ferraiolo	PacifiCorp
Chris Karchesky	PacifiCorp
Erik Lesko	PacifiCorp
Kale Bentley	WDFW
John Best	WDFW
Mike Chamberlain	WDFW
Bryce Glaser	WDFW
Josua Holowatz	WDFW
Anja Huff	WDFW
Aaron Roberts	WDFW
Kevin Young	WDFW