FINAL

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ANCHOR QEA

Memorandum

To: Wells, Rocky Reach, and Rock Island HCP Coordinating Committees and Priest Rapids Coordinating Committee

Date: January 28, 2026

From: John Ferguson, HCP Coordinating Committees Chair
Larissa Rohrbach, PRCC Facilitator

cc: Kristi Geris, HCP Coordinating Committees and PRCC Support

Re: Final Minutes of the December 15, 2025, HCP Coordinating Committees and Priest Rapids Coordinating Committee – 2024 Subyearling Chinook Salmon Workshop Recap (Joint Session 12)

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan Coordinating Committees (HCP-CCs) and Priest Rapids Coordinating Committee (PRCC) met virtually by Microsoft Teams on Monday, December 15, 2025, from 11:30 a.m. to 12:10 p.m. for a joint session to discuss the 2024 Subyearling Chinook Salmon Workshop. Attendees are listed in Attachment A to these conference call minutes.

Action Item Summary

1. Anchor QEA will coordinate with HCP-CCs and PRCC representatives to formulate questions for Ryan Harnish (Pacific Northwest National Laboratory) and Rebecca Buchanan (Buchanan Statistical Services) after evaluating subyearling tagging effects (Item I-C).
2. Douglas, Chelan, and Grant PUDs will continue developing draft study plans to evaluate subyearling tagging effects and will provide recurring updates during future joint sessions (Item I-C).
3. A 2024 Subyearling Chinook Salmon Workshop Recap (Joint Session 13) will be held during the HCP-CCs and PRCC meetings on January 27, 2026 (schedule to be determined) (Item II-B).

I. Welcome

A. Review Agenda (Larissa Rohrbach)

Larissa Rohrbach (PRCC Facilitator) welcomed the HCP-CCs and PRCC to the twelfth joint session of the HCP-CCs and PRCC to discuss subyearling survival studies.

B. Joint Session Minutes Approval (Larissa Rohrbach)

The HCP-CCs and PRCC reviewed the draft 2024 Subyearling Chinook Salmon Workshop Recap (Joint Session 11) November 25 conference call minutes. L. Rohrbach said the draft minutes for review were distributed on December 9, and the revised minutes were distributed on December 11. All comments and revisions received are shown in tracked changes. L. Rohrbach acknowledged the shortened review period resulting from the Thanksgiving holiday and rescheduled December meeting and asked

whether HCP-CCs and PRCC representatives were ready to approve or would like additional time. The HCP-CCs and PRCC representatives present approved the Joint Session 11 minutes, as revised.

C. Joint Session Action Items Review (Larissa Rohrbach)

Action items from Joint Session 11 on November 25 and follow-up discussions were as follows *(Note: Italicized text corresponds to agenda items from the meeting on November 25)*:

- *Anchor QEA will coordinate with HCP-CCs and PRCC representatives to formulate questions for Ryan Harnish and Rebecca Buchanan after evaluating subyearling tagging effects (Item I-C).* This action item will be carried forward.
- *Douglas, Chelan, and Grant PUDs will continue developing draft study plans to evaluate subyearling tagging effects and will provide recurring updates during future joint sessions (Item I-C).* This will be discussed during today's meeting.

II. Joint Session 12

A. Subyearling Chinook Salmon Workshop Recap (All)

An updated working draft Subyearling Workshop Matrix, including a recap from Joint Session 11, was distributed to the HCP-CCs and PRCC by Kristi Geris on December 10. There is nothing outstanding in this matrix to discuss.

The PUDs provided updates on draft study plan development, as follows.

<u>Douglas PUD Update</u>

John Rohrback said because of the logistical changes resulting from moving the proposed study from Methow Hatchery back to Wells Hatchery, Rebecca Buchanan will need to redo the power analysis, which is why a draft study plan is not yet ready for review. J. Rohrback said, instead, he will share the presentation, *DCPUD Subyearling Tagging Study Update* (Attachment B), which was distributed to the HCP-CCs and PRCC by Kristi Geris after the conference call on December 15, 2025. Discussions were as follows.

Study Design Summary (Slide 2)

J. Rohrback reviewed this slide, which was copied from the draft study plan. To note, the fish source was changed to the yearling summer Chinook Salmon program, which works well for two reasons: 1) the timing works out better; and 2) these broodstocks are tested for bacterial kidney disease, and considering these fish will be subjected to high water temperatures, this is an extra precaution for disease outbreaks. Again, using these fish will not affect meeting the hatchery program production targets (per HCP agreements). Also of note, the study proposes using 12 tanks that are individually plumbed, which will help with controlling temperatures.

Rearing Duration (Slide 3)

J. Rohrback said this study proposes a post-treatment rearing duration of 30 days for a couple of reasons. First, this aligns with tag life assumptions found in studies such as the results from one on this slide. Second, this fits within the hatchery bio-plan and will allow for the study to be completed before the tanks are needed for other purposes. Andrew Gingerich said a third reason is the literature suggests that mortality or handling and tagging issues manifest by the 25-day mark, so a 30-day window seems reasonable. J. Rohrback agreed that no significant changes are expected in the results beyond 30 days.

Keely Murdoch cautioned that the study referenced on this slide occurred during COVID-19, and she believes Battelle was experiencing battery supply-chain issues at this time, which led to a shorter tag life than anticipated. She recommended reviewing more recent data if they are available.

PIT versus ELAT (Slide 4)

J. Rohrback said this study assumes the survival impact due to tag burden of a passive integrated transponder (PIT) tag and eel/lamprey acoustic tag (ELAT) would be the same considering the similarity of the two tags. ELATs are a little smaller, but minimally.

Fish Size (Slide 5)

J. Rohrback reviewed the reasons for proposing a fish size of 65 millimeters (mm), as bulleted on this slide. K. Murdoch said the Yakama Nation (YN) has been vocal about a request for a field behavior study. Douglas PUD could use such an opportunity to confirm some of the findings bulleted on this slide. J. Rohrback agreed this could be discussed for another study.

Temperature (Slides 6 to 7)

J. Rohrback said the graph on Slide 6 shows average temperatures in the Wells Reservoir in recent years. He said 13°C is the approximate temperature of well water at Wells Hatchery during the summer when this study will be conducted. This study will also evaluate what happens to fish when tagged at 18°C and 20°C, which are approximately the warmest temperatures fish will experience in the Wells Reservoir. As shown on Slide 7, some years are warmer than others, which is why it is important to conduct this tag-effects study. Gingerich noted that the literature suggests there is no significant difference in survival at or below 16°C; however, the literature is void of tests using temperatures above 16°C. This is another reason behind the jump from 13°C to 18°C and 20°C in Douglas PUD's study—these are temperatures in the Wells Reservoir but are also where the literature is most limited.

Bill Gale left the conference call.

Discussion

K. Murdoch asked about an acclimation period for these study fish. Ideally these fish should be exposed to a temperature profile that matches what fish encounter in the wild. This is something the

YN is concerned about and will be looking for in the draft study plan. J. Rohrback said the current draft study plan is consistent with the literature, which suggests that when tagging fish in temperatures warmer than 17°C, fish should be acclimated at increased temperatures of up to 2°C per day. For Douglas PUD's study, this will require about 1 week of acclimation. He acknowledged that 2°C per day is faster than what occurs in the natural environment, and he plans to discuss options with hatchery staff to determine whether there is infrastructure in place to extend this acclimation period. K. Murdoch appreciates Douglas PUD looking into ways to slow this down. Looking at the graph on Slide 6, roughly, it looks like these higher temperatures last for about 2 months in the Wells Reservoir. Matching this natural temperature profile as closely as possible during the study would be helpful.

Larissa Rohrbach said temperature increases to acclimate over a longer period of time will likely affect the grow-out schedule, but hatchery staff will be able to weigh in on this. She asked when the first 65-mm group is proposed to be ready. J. Rohrback said June or July. L. Rohrbach noted that this still leaves a good amount of time for the Wells HCP-CC to review the study plan. J. Rohrbach agreed, and he recalled last month reporting that approximately 1,000 study fish were needed. He is unsure whether the new power analysis will find that more or fewer fish will be needed.

Grant PUD and Chelan PUD Update

Lance Keller said Grant PUD and Chelan PUD continue to work with Four Peaks Environmental Science and Data Solutions (Four Peaks) to finalize a draft study plan. Four Peaks is coordinating with Abernathy National Fish Hatchery, which is still the preferred laboratory for conducting the study. Keller is confident a draft study plan will be ready for discussion in January. Tom Dresser said Grant PUD and Chelan PUD are discussing the same questions and comments that Douglas PUD is working through.

B. Next Steps (Larissa Rohrbach)

A 2024 Subyearling Chinook Salmon Workshop Recap (Joint Session 13) will be held during the HCP-CCs and PRCC meetings on January 27, 2026 (schedule to be determined).

List of Attachments

Attachment A List of Attendees
Attachment B DCPUD Subyearling Tagging Study Update

Attachment A
List of Attendees

Name	Organization
John Ferguson	Anchor QEA
Larissa Rohrbach	Anchor QEA
Kristi Geris	Anchor QEA
Tracy Hillman	BioAnalysts
Lance Keller*	Chelan PUD
Catherine Willard*	Chelan PUD
Tom Kahler*	Douglas PUD
Andrew Gingerich*	Douglas PUD
John Rohrback	Douglas PUD
Tom Dresser†	Grant PUD
Tim Taylor†	Grant PUD
Scott Carlon*†	National Marine Fisheries Service
Emi Melton*†	National Marine Fisheries Service
Bill Gale*†○	U.S. Fish and Wildlife Service
Chad Jackson*†	Washington Department of Fish and Wildlife
Andrew Murdoch*†	Washington Department of Fish and Wildlife
Keely Murdoch*†	Yakama Nation
Pete McHugh†	Columbia River Inter-Tribal Fish Commission for the Confederated Tribes of the Umatilla Indian Reservation

Notes:

* Denotes HCP Coordinating Committees representative or alternate.

† Denotes PRCC representative or alternate.

○ Left conference call during the Douglas PUD Update.

DCPUD Subyearling Tagging Study Update

John Rohrback

Wells HCP-CC

December 15, 2025

Study Design Summary

Study location: Wells Hatchery

Rearing duration: 30 days

Fish source: Wells Hatchery

Fish population: Subyearling summer Chinook Salmon

Minimum fish size: 65 mm

Tags or marks: PIT tags, VIE or VIA tags (providing unique identification). PIT tags are considered to be a suitable representation of an ELAT acoustic tag, and tag retention and survival rates are assumed to be equal between the two tag types tagged in the same manner.

Tag treatments: PIT tag, sham tag (incision but no PIT tag), control (no PIT tag or incision); all fish receive unique VIE or VIA tag

Water temperatures: 13° C, 18° C, 20° C

Fork lengths: target of 65 mm, TBD mm, TBD mm with CV = 0.07

Study fish will be randomly assigned to tag treatment and water temperature treatment, with the same target fork length distribution and sample size per tag-temperature treatment.

Rearing: Fish from all three tag treatments and of all fork lengths will be reared in a common rearing tank at the Wells Hatchery. Fish will be drawn from this common rearing tank for three study batches as they grow into the desired sizes for study. During the study periods, each experimental tank will be assigned a water temperature.

Sample size per tag-temperature-fork length-replicate combination: TBD

Number of replicates per temperature: 4

Total number of fish: TBD

Number of tanks: 12

Rearing duration: 30 days

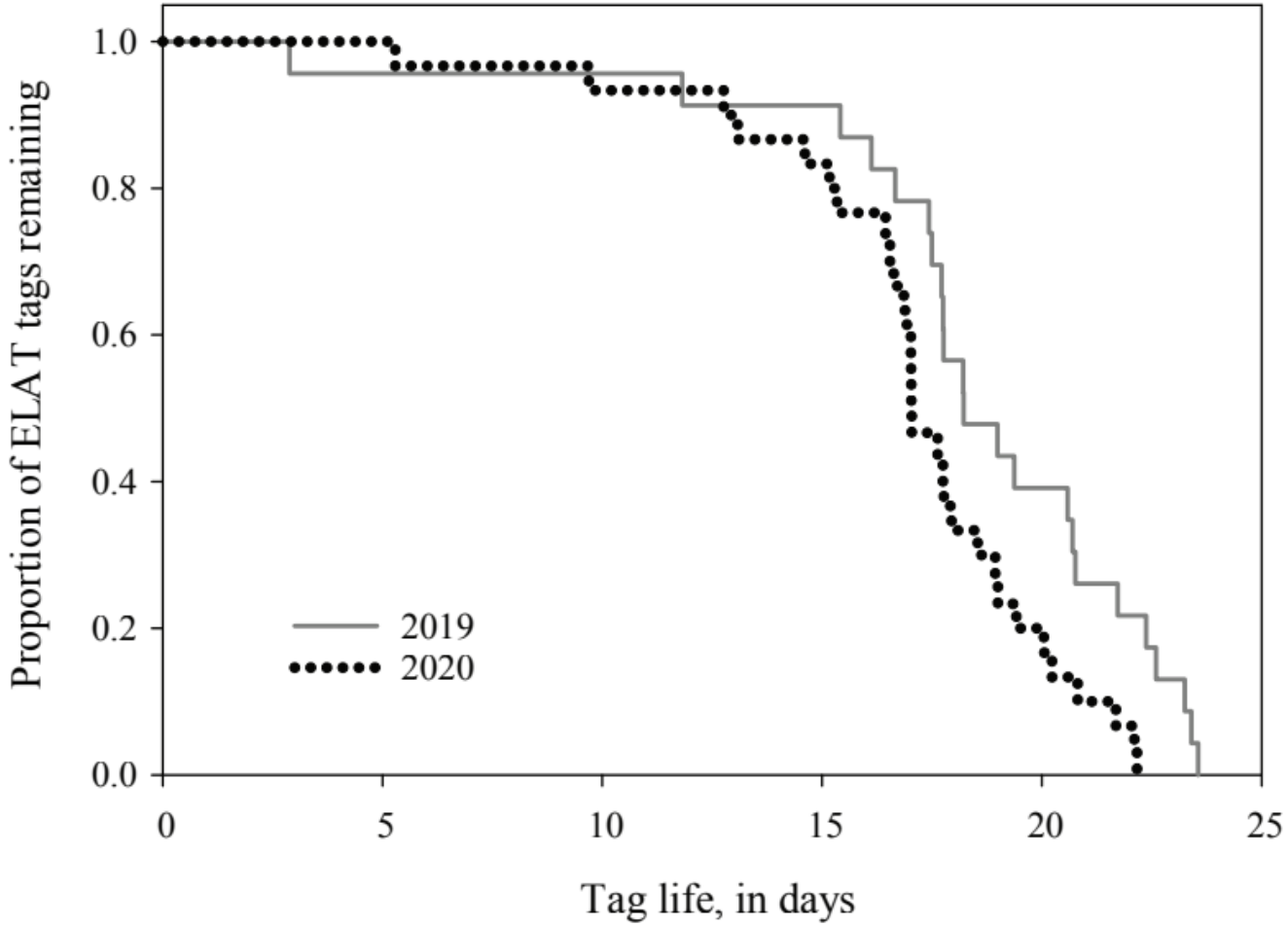


Figure 13. Kaplan-Meier survivorship plot of eel-lamprey acoustic transmitter (ELAT) tag life empirically measured in a laboratory study, 2019 and 2020.

Figure from Liedtke, T.L., Lampman, R.T., Monk, P., Hansen, A.C., Kock, T.J., Beals, T.E., Deng, D.Z., and Porter, M.S., 2022, Monitoring the movements of juvenile Pacific Lamprey (Entosphenus tridentatus) in the Yakima River, Washington, using acoustic telemetry, 2019–20: U.S. Geological Survey Open-File Report 2022–1052, 28 p., https://doi.org/10.3133/ofr20221052. PULSE-RATE INTERVAL WAS 3 SECONDS

Are PIT tags a viable substitute for an ELAT tag in a tagging study? DCPUD says, “Yes!”

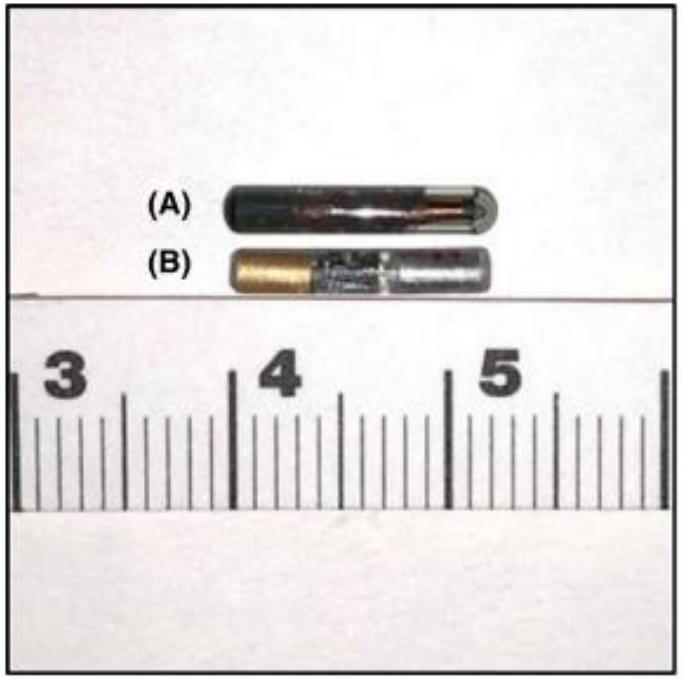
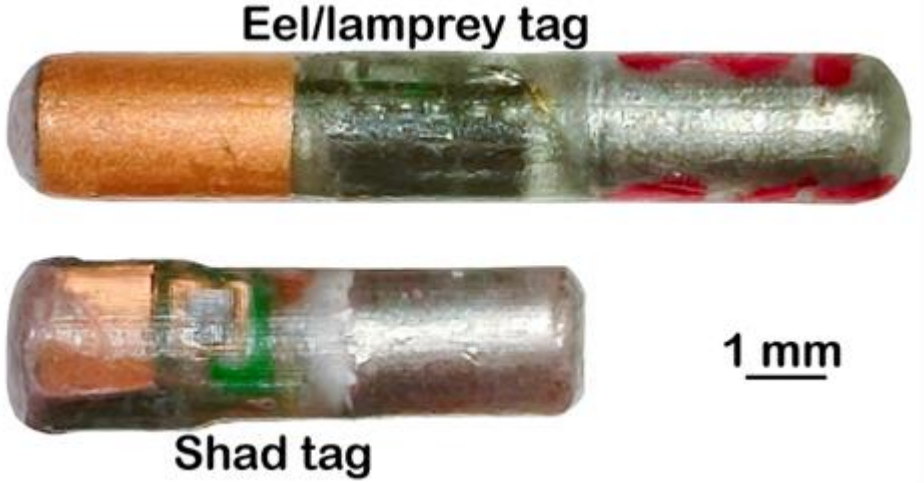


FIGURE 1. Comparison of **(A)** a passive integrated transponder (12.5 mm; 0.09 g) that is commonly implanted in fish ≥65 mm fork length and **(B)** the Eel–Lamprey Acoustic Tag (12.0 mm; 0.088 g). [Color figure can be viewed at afsjournals.org.]

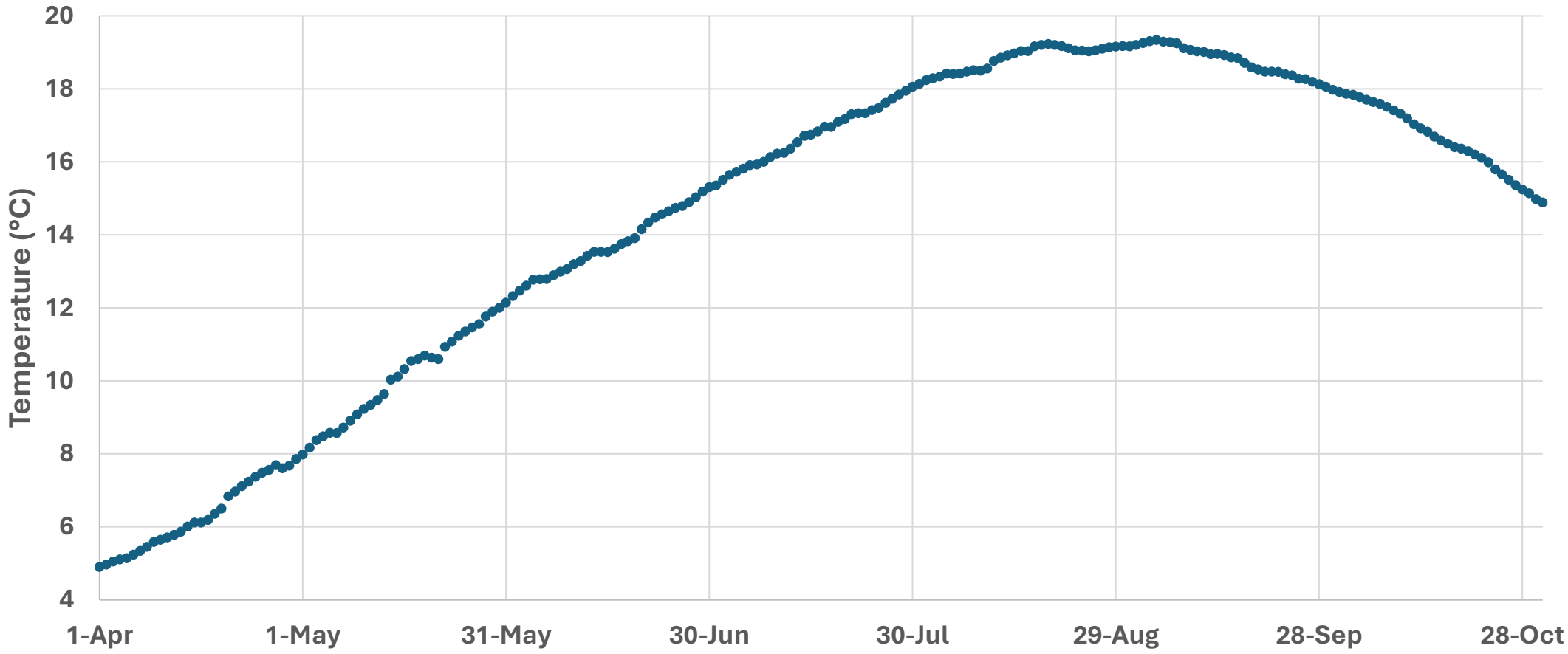
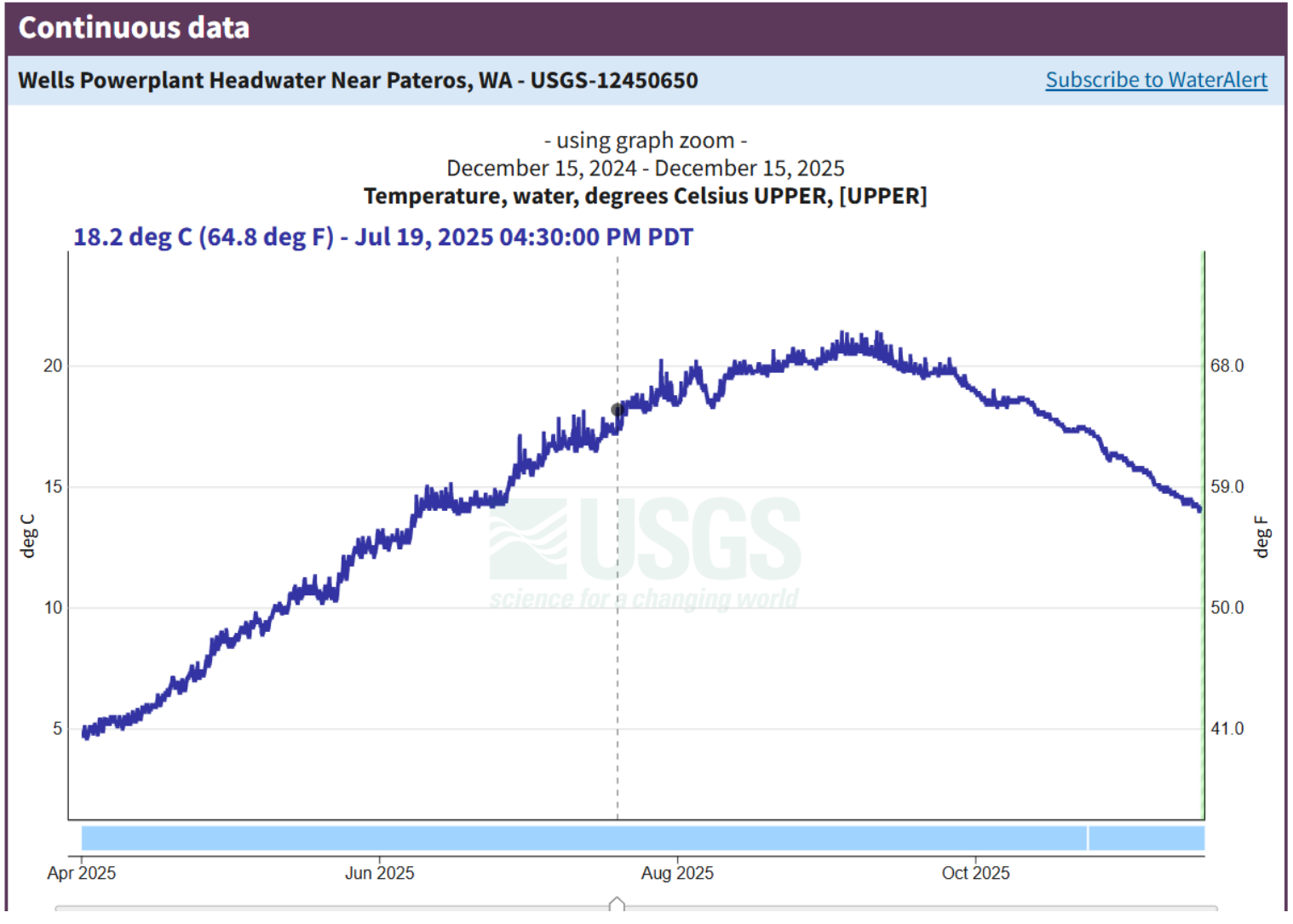
	PIT tag	ELAT tag	Shad Tag
Length (mm)	12.34	12.0	7.6
Diameter (mm)	2.04	2.0	2.0
Weight in air (g)	.090	.088	.05
Battery life at a 5 second ping rate interval	N/A	40 days	30 days



Liss et al. (2021) recommended tagging salmon ≥59 mm with an ELAT tag… why not study fish smaller than 65 mm?

- Fischer et al. (2019) predicted 90% survival for tagged fish that are 62 mm in a pilot study of ELATs in subyearling Chinook
- Liss et al. (2021) predicted ≥98.6% survival and retention for tagged fish ≥58.6 mm
- Liss et al. (2021) states that this recommended guideline should be confirmed in a field study.
- PTAGIS steering committee recommends not tagging juvenile salmonids less than 65 mm

What About Temperature?



Of course, some years are warmer than others…