

GREEN/DUWAMISH AND CENTRAL PUGET SOUND (WRIA 9) IMPLEMENTATION TECHNICAL COMMITTEE



WRIA 9 Implementation Technical Committee Meeting

July 15, 2026 | 9:30 am – 11:30 am

Teams Meeting: [Join the meeting now](#)

Meeting ID: 217 204 006 221 53

Passcode: 5b92K3uL

9:30 **Welcome & Introductions**

9:45 [Investigating multiple stressors on the health and survival of juvenile Puget Sound Chinook Salmon](#)

Melissa Dreissnack,
WSU

Presentation followed by Q&A

Melissa will present results from a multi-year research program that assessed the effects of three stressors – contaminated diet, diet quantity, and smolting status – on juvenile Chinook. This body of work aims to inform our understanding of cumulative impacts on juvenile Chinook survival in the Duwamish River.

10:45 **Smolt trap observations: 2026 outmigration following the severe and widespread flooding in December 2025 and the large pink spawning migration in 2025**

Michael Scheu,
WDFW

Presentation followed by Q&A

Michael's team developed a preliminary in-season assessment of juvenile Chinook salmon outmigration across Puget Sound watersheds impacted by the December 2025 flooding, including the Green River. Michael will also present results from his investigation into pink-year vs. non-pink-year patterns in Chinook outmigration abundance.

11:15 [Round Robin Updates](#)

All

Open discussion – bring your updates to share!

3:00 **Adjourn**

WRIA 9 ITC web page: <http://www.govlink.org/watersheds/9/committees/ImpleTechCmte.aspx>

Participant list:

Alicia Kellogg, Ash Gould, Chester Bennett, Chris Gregersen, Christa Heller, Darian Bernard, Erik Rigaux, Rowena Valencia-Gica, Heidi Watters, Iris Kemp, Jenn Stebbings, Julia Kobelt, Julian Douglas, Kerry Accola, Kerry Bauman, Kollin Higgins, Wendy Eash-Loucks, Marc Marcantonio, Matt Knox, Melissa Driessnack, Nathanael Overman, Nikolas Novotny, Suzanna Smith, Taylor Martin

Round-table Updates

- Yesterday, the King County Flood Control District voted unanimously in favor of the WRIA recommended Cooperative Watershed Management (CWM) projects presented this year and affirmed their enthusiastic support and appreciation for the great work project sponsors do in making these projects possible.
- Chris, Kerry A, Julia, Kerry B, Jenn, and Iris discussed PIT tag updates – stay tuned for future presentation(s) as lots of data were gathered this year via stationary arrays (Lower Russell, barges, Duwamish River People’s Project) and mobile tracking in Lower Green (rafting in mainstem and handheld scanning at Lower Russell) and Duwamish (seining project sites and mainstem).
- Nik – updates from upper watershed: HHD downstream fish passage construction is underway. Nik conducted upstream passage facility assessment during last fall’s return, assembled recommendations, and is now developing conceptual designs for facility improvements that will go to stakeholder group and utility for approval.
- Nathanael – finishing up steelhead surveys: increased abundance this year!
- Julian – recently permitted habitat projects for beaver dam analogs at Judd Creek and Shinglemill Creek on Vashon Island.
- Chester – continuing to work on Springbrook corridor plan. Kudos to Ash for great site visit last week!
- Rowena - continuing to work on Lower Russell Habitat Area A and Boeing Rock projects.
- Erik – revegetation at Mill Creek initiated and working with Ecology on a Mill Creek remeander project.
- Ash – revegetation partners group did a site visit/revegetation tour last week. Also working on NE Auburn project to reconnect perched wetland and working with KC Parks to reactivate Titus Pit and do acquisitions for wetland restoration.
- Alicia – met with Elliott Bay trustees to present Cecil Moses tire revetment removal and habitat improvements. Also supporting West Seattle Ridge to River effort – looking into acquisitions for a more strategically thoughtful space and trail system.
- Marc – next DC advocacy effort for funds to complete HHD construction in September.

Investigating multiple stressors on the health and survival of juvenile Puget Sound Chinook Salmon

Melissa presented results from three years of research on the impacts of multiple stressors to juvenile Chinook in the Duwamish.

Year 1 evaluated the effects of diet quantity (uncontaminated full feed, uncontaminated reduced feed) and PCB exposure (contaminated full feed, contaminated reduced feed) on Chinook morphometrics and mortality. There was no statistically significant survival difference or morphometric (length, weight) differences across groups. Condition factor was higher for Chinook that were not fed contaminated prey. Chinook fed contaminated prey had high levels of whole body contaminants.

Year 2 added a smolt challenge, assessing saltwater tolerance between full feed and reduced feed groups. Smoltification is physiologically demanding, energetically expensive, and heightens Chinook susceptibility to stressors including chemical exposures. The full feed fish grew larger and survived the saltwater challenge better than the reduced feed fish.

Year 3 added a contaminated diet three weeks prior to the saltwater challenge, feeding oligochaetes reared in Duwamish sediment vs. control sediment. Control full feed and Duwamish full feed fish achieved similar lengths and weights, while reduced feed fish (both control and Duwamish) had lower lengths and weights. Analyses are ongoing.

Takeaways:



Dietary exposure is an important and environmentally relevant pathway for contaminant uptake in juvenile Chinook.



Prey quality and food availability both influence growth, condition, and saltwater performance.



Body size and nutritional status influence saltwater tolerance, suggesting they may affect successful estuarine transition.



Diet may modify responses to environmental contaminant exposure, highlighting the importance of considering multiple stressors together

Q&A:

- Was there a difference in the amount of food needed to reach satiation between control fish and Duwamish-sediment fish?
 - Everything was weighed so could measure actual consumption by each tank and generate feed efficiencies and growth rates. Prey also sent for lipid analysis to see whether prey reared in Duwamish sediments had different lipid content than control prey. Sediment chemistry also analyzed. Have not fully processed results yet. Likely some differences in nutrient availability. In future, would like to rear prey in sediments from multiple Duwamish sites.
- What size were fish at study initiation? Why 45 days?

- Fish were from Voights Cr hatchery – future studies would use Soos Cr hatchery fish. Fish came right at ponding in year 1 and one week fed in year 2 – so early fry in both years. Literature values suggested 30-60 day range in Duwamish; chose a middle value. Lights on timer to match daylight and trying to push smolt window to get there before solstice.
 - In future, would like to pair lab studies with field sampling to better align lab with environment. Would also better account for sheer quantity of food needed to be able to feed longer – growing enough prey was a challenge!
- Were water temperatures kept stable? Adjusted to mimic lower Duwamish?
 - Steady at 10°C for the most part, let it creep towards 11°C by end of study. Didn't want to introduce another factor but, in future, would like to include lights and temperature variation as smolt triggers.
 - Temperature has huge influence on growth. Would be interesting to see whether full feed fish could compensate for metabolic cost while restricted feed fish crash under higher temperatures.
- What was water velocity environment in lab? Fish in natural environments hold post-feed – swimming costs have huge effect on growth rate.
 - Used smaller 30L flow-through aquaria. Would want to improve in future. Current aquaculture intern has been designing flow-through tanks that better mimic natural environments. In future, would want to use those and to incorporate swim performance measurements along with intermediate saltwater challenges.
- Earliest fry migrants to Duwamish do not return as adults – they likely feed in the Duwamish for longer than the 3 weeks this study represents.
 - Agree. Future studies ideally would stage sediments from sites along the length of the Duwamish and feed an invertebrate portfolio more closely matched to Duwamish. Longer feeding durations was part of the original goal but couldn't accomplish given lab equipment failure and prey rearing and feeding challenges. Fish had no interest in eating frozen Duwamish invertebrates – would only eat them live. (Would eat frozen controls though.)
- Year 1 trial comparing PCB vs. non-PCB – plans to introduce known levels of contaminants to sediment versus sediment-sourced contaminants?
 - Would consider – have talked about isolating specific contaminant classes, e.g., PCB-contaminated prey vs. PBDE-contaminated prey vs. Duwamish-sediment prey. But current interest is driving more towards better environmentally reflecting the interface between chemical exposure and smolt process.
- Chemical analysis of Duwamish sediments – what's in there?
 - Have sent samples from collection and at different timepoints. Basic chemistry – in future would use different analytical company that could produce more robust results.
- Is food limiting for Chinook in the Duwamish?
 - Went into the study thinking there might be a deficiency in food availability but it does seem like invertebrate communities are responding positively to clean-up

and remediation efforts. Toxicology tests with Duwamish sediment and oligochaetes and amphipods suggested invertebrates were doing great although a bit smaller than controls. Also had an upstream site where invertebrates did much poorer than Duwamish site – so food impact might be greater upstream in lower Green.

- In year 2, fish had been fed one week on hatchery feed and over the first 3 study weeks there was a drop in body condition and lipids as fish switched from hatchery feed to invertebrates. Effect disappeared by future sampling points but could be a stressor.
- Limitation of study – only used benthic prey, so does not represent drift diet. Input from terrestrial environment not reflected in this study.

Further questions? Contact Melissa Dreissnack at melissa.dreissnack@wsu.edu.