PNAMP January 2025 Newsletter

If you would like your meetings posted on the PNAMP calendar, please email gs-pnamp_contact@usgs.gov with details.

Upcoming Events

Jan 8	Modeling and Analysis Session – ETIS 2025 Webinar Series
Jan 15	Artificial Intelligence and Machine Learning Session – ETIS 2025 Webinar Series
Jan 16	Fish Monitoring Work Group Meeting (virtual)
Jan 22	Data QA/QC Session – ETIS 2025 Webinar Series
Jan 29	Genetics Session – ETIS 2025 Webinar Series
Feb 3	River Restoration Northwest 2025 (Skamania, WA)
Feb 5	Remote Sensing Session – ETIS 2025 Webinar Series
Feb 25	Oregon Chapter: American Fisheries Society Meeting 2025 (Bend, OR)

Ringing in 2025 with the PNAMP Coordination Team

We wish you well as we ring in the new year and can't wait to collaborate with you in 2025. Here are a few of our favorite things we do in our free time. Here are a few of our favorite things that we do in our free time.

JEN: Most of my favorite hobbies involve being outside...whether it's hiking, gardening, or volunteering!

AMY: In my free time I enjoy hiking and backpacking with my two favorite guys, Morgan and Henry Rollins.

SAM: Twenty twenty-four sparked a lot of new activities and rekindled old ones. I found a new hobby in mosaicking old movie posters from broken plates. I continue to beat up my body with long runs on trails and roads. And I try to get out to as many concerts and sporting events as I can including the College World Series in Omaha.

MEG: This year I enjoyed continuing to develop my printmaking and other arty pursuits, attended the Women's NCAA Basketball Tournament to watch Nebraska battle Oregon State (GOBEAVS!), and went on adventures with my favorite people.



Pictures left to right: Jen birding, her garden full of flowers, and volunteering with her sister in Michigan

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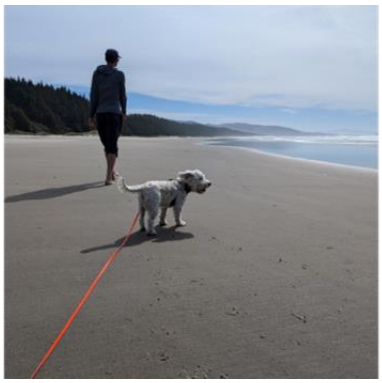


Pictures left to right: spring wildflower hike in the Columbia River Gorge, summer beach hiking on the Oregon coast, and fall backpacking in the Sierras

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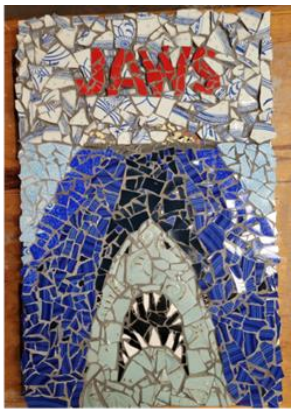

Pictures left to right: Sam out with his run club, College World Series, one of Sam's mosaics.


Pictures left to right: Meg posing with a Nebraska mascot, one of Meg's prints, Meg and her besties on a hike in Hood River

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The Emerging Technologies Information Sessions (ETIS) 2025 Webinar Series Starts This Week!

Interested in learning more about the new and innovative tech being used in aquatic monitoring? Join PNAMP and StreamNet for our weekly Emerging Technologies Webinar Series.

Tune in every Wednesday from 9:00 AM - 11:00 AM (PST) starting this Wednesday, January 8th, for a five-week webinar series that showcases cutting-edge techniques and tools for aquatic monitoring. Each week we'll have presentations from experts around the world on specific monitoring topics. You can RSVP for each session to receive email reminders.

- Modeling and Analysis Session - January 8th, 2025
- Artificial Intelligence and Machine Learning Session - January 15th, 2025
- Data QA/QC Session - January 22nd, 2025

- Genetics Session - January 29th, 2025
- Remote Sensing Session - February 5th, 2025

For details on these sessions including full abstracts from the presenters, check out the ETIS program or visit the ETIS project page on PNAMP.org.

Can't attend the webinar series? No worries! All presentations will be recorded and available on the PNAMP YouTube channel. Registration for this event is FREE!

ETIS logo

Kick-off 2025 with the PNAMP Fish Monitoring Work Group

Join us at 10:00 am (Pacific) on January 16th for the next meeting of the PNAMP Fish Monitoring Work Group (FMWG). During the meeting, we will update participants on current tasks, hear a presentation about innovative fish monitoring, and provide you with opportunities to engage regional managers and experts.

Our Tech Talk Speaker is Russell Perry, a Research Fish Biologist in the Quantitative Ecology Section at the USGS Western Fisheries Research Center. His presentation, *Putting Time Back into Space-for-Time Mark-Recapture Models* will discuss mark-recapture models such as the Cormack-Jolly-Seber and multi-state models that are widely used to estimate survival of PIT- and acoustic-tagged fish migrating through stream and river networks. Although mark-recapture models were designed to estimate survival over time between discrete sampling occasions, when applied to migratory animals, space can be swapped for time by using the discrete sampling locations to form detection "gates" along the migratory corridor. However, space-for-time models pose significant challenges when interest centers on understanding the effect of time-varying covariates on survival. This is because the environmental conditions that fish experienced upon passing a detection gate are unknown when individuals are not detected.

In this presentation, Russell will describe Time-Integrated Migration and Survival (TIMS) models that overcome this limitation of space-for-time mark-recapture models. TIMS models combine a migration model with a mark-recapture model to explicitly model travel times between detection gates and to account for probable arrival times and environmental conditions experienced by undetected fish. Russell will provide example applications of these models to both acoustic- and PIT-tagged juvenile salmon to illustrate how the TIMS modeling framework allows for estimating effects of daily covariates such as flow and temperature on migration and survival. Visit the event page for join information: January 16th

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First-of-its Kind Habitat Metric Data Standard Available

Many entities conduct surveys that measure physical attributes of the stream channel and surrounding area – most of us call these *habitat surveys*. While many habitat surveys measure similar things, we don't all follow the same exact protocol or methods or store the results in the same database. So, while it is tantalizing to think about using another entity's data, it seems daunting to do so, given nuances in data collection methods, ability to discover existing data, confidence in reusing others' data, and the mechanics of integrating disparate datasets.

To demonstrate one way to overcome these hurdles, PNAMP hosted the Stream Habitat Metric Integration Project, which brought together four programs that produce similar data: the Bureau of Land Management Assessment, Inventory, and Monitoring lotic division, the U.S. Environmental Protection Agency National Aquatic Resource Surveys National Rivers and Streams Assessment survey section, the Federal interagency Aquatic and Riparian Effectiveness Monitoring Program, and the PacFish/InFish Biological Opinion Monitoring Program. PNAMP led a working group of experts from these four monitoring programs to determine data compatibility, develop a Stream Habitat Metrics Integration (SHMI) data exchange standard, and integrate compatible wadeable stream data. The resulting SHMI data exchange standard contains a data mapping file used to transform data from the source program data to a conformed format based on a controlled vocabulary.

After extensive discussions assessing and comparing program collection and analysis methods, the working group found 26 stream habitat metrics to be sufficiently comparable to be integrated into a meaningful dataset. A selection of compatible data from 14 datasets were filtered, transformed, standardized, and combined using R code to create the integrated SHMI dataset containing about 12,000 locations, 19,000 events, and 200,000 measurements from 2000 to 2022. In addition, the BLM AIM sites were published in PNAMP's Monitoring Resources map viewer.

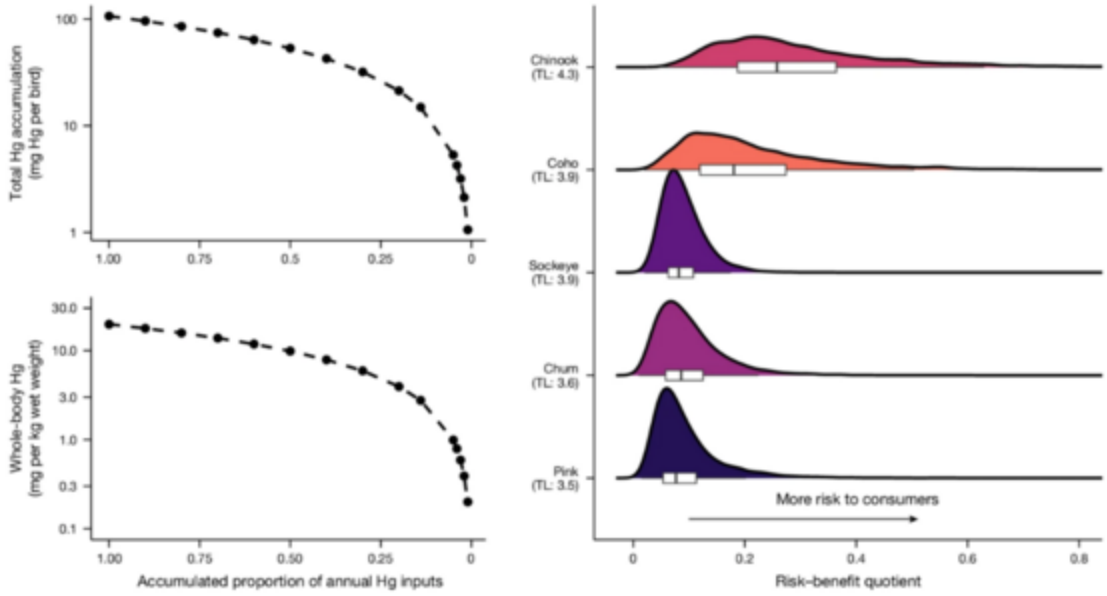
The SHMI data exchange standard is now published in a USGS report that describes its development, the metric compatibility assessment, and the data integration process, so that others may reuse the SHMI data exchange standard and its components as well as the data integration processes. By easing access and integration of data from large scale monitoring programs, this work will enable insight into status and trends at scales that was previously not possible.
Learn more here:

- *A Data Exchange Standard for Wadeable Stream Habitat Monitoring Data.* Techniques and Methods 16-B2. Prepared in cooperation with the U.S. Environmental Protection Agency, Bureau of Land Management, and the U.S. Forest Service. Report (3.3 MB pdf) , HTML , XML
- *Wadeable stream habitat data integrated from multiple monitoring programs for the US from 2000–2022* USGS data release
- Code used to generate the integrated dataset: USGS software release
- Lessons learned paper: *Sharing FAIR monitoring program data improves discoverability and reuse*. Environ Monit Assess 195, 1141 (2023) https://doi.org/10.1007/s10661-023-11788-4.

The Role Migratory Salmon Play in Cycling Nutrients and Contaminants Between Ecosystems

A publication in Nature released just last month revealed that thousands of tons of nutrients and kilograms of contaminants are being moved from the ocean to freshwater ecosystems annually by Pacific salmon. This research examines a 40-year (1976 –2015) contribution of Pacific salmon migrations to the biogeochemical cycling of marine-derived nutrients and contaminants across inland ecosystems, with a focus on how these processes affect aquatic and terrestrial food webs. The findings show that higher salmon returns increased salmon-derived nutrient inputs by 30% and also increased contaminant inputs by 20%. The proportionally greater rate in nutrient inputs (30%) to contaminant inputs (20%) with higher salmon return rates indicates that greater salmon returns are more ecologically beneficial over time on a large continental scale. However, contaminant loadings may represent exposure concerns for some salmon predators like the bald eagle and there is a need to understand the net effects of Pacific salmon inputs at local scales.

If you're interested in learning more about this research and possible for filling in the gaps of how chemicals are being cycled from marine to inland ecosystems, checkout the interview with lead author Jess Brandt in the October 9th Nature podcast.



Caption: Fig. 5: Potential ecological influences of Pacific salmon-derived subsidies. Brandt, J.E., Wesner, J.S., Ruggerone, G.T. et al. Continental-scale nutrient and contaminant delivery by Pacific salmon. Nature 634, 875–882 (2024). https://doi.org/10.1038/s41586-024-07980-2

A Day in the life of a Municipal Environmental Regulator

Written by Jolene Willis-Lujan, Environmental Services Manager, City of Albany, OR

I manage the Water Quality Control and Industrial Pretreatment programs for the City of Albany. These regulatory programs ensure that our city returns clean water to our waterways. Every day is a little different: from field sampling, responding to spills, writing reports, reviewing and writing permits, public outreach, and keeping up with State and Federal regulations. I don't know anyone who wanted to go into the industrial pretreatment or municipal stormwater field, but a few of us fall into it. I fell into this position after getting my start in fisheries and salt marsh restoration, and I'm glad I did because I use that knowledge to help my community return clean water to the system and improve habitat on a local scale.

Every day is different, but it all falls under the "one water" approach. Myself, and my team manage our stormwater and wastewater, with the goal of meeting all regulatory requirements, and then some, to return clean water to the waterways under our jurisdiction. We are regulated by DEQ under a National Pollutant Discharge Elimination System (NPDES) permit, Total Maximum Daily Loads (TMDL's) and our Municipal Separate Storm Sewer System (MS4) permit.

To meet the goals of each of these permits we sample our waters regularly. Our newest project is a monthly ambient water quality survey that samples the top, middle and end of creeks going through our city. We do field testing using multi-meters and run in-house ammonia and E. coli tests. Our area has many human impacts, we want to reduce them by finding trends and providing resources. This is important, not only to keep water entering the Willamette and Calapooia Rivers clean, but also because we have three creeks that Oregon Department of Fish and Wildlife documented as having juvenile Chinook, steelhead, cutthroat trout and Pacific lamprey present.

Albany is a unique area that has become a hub for metals manufacturing. We regulate the industries discharging to our treatment plant by regularly sampling them for metals and volatile organics. We also sample our plant quarterly for metals and cyanide and sample the Willamette River above and below discharge to monitor our impact. We are in the process of renewing our permit and have undergone 2 years of priority pollutant monitoring on our discharge and in the Willamette. PFAS have become a pollutant of concern that we are monitoring at our plant and working to identify sources within our community.

There are a lot of projects to juggle so no day is the same but some of my favorite days are when I can interact with the community and share the work we are doing to improve the waters as they pass through.

Jolene (right) and interns survey creek for macroinvertebrates; photo courtesy City of Albany