Connecting Estuarine Dynamics and Fish Migration: Collaborative Modeling of Mercury Exposure in the Penobscot River

August 6th, 2025 | 9:00 am - 4:10 pm

Project Description

In the Penobscot River, tidal and river dynamics shift sediments and influence contaminant movement and deposition, posing risks to migratory fish such as river herring, striped bass, Atlantic salmon, and sturgeon. Long-standing mercury contamination has made some species unsafe to eat or use, limiting access to important cultural and subsistence resources. Understanding fish interactions with estuarine processes is key to identifying exposure pathways and reducing toxicity in these ecologically and culturally significant species.

Overview

This workshop will focus on the identification of key fish behaviors, biological processes, and environmental dynamics that influence contaminant exposure in anadromous species within the Penobscot River Estuary. In partnership with the Penobscot Nation, participants will collaboratively evaluate how biological processes (e.g., osmoregulation, predation) and external factors (e.g., salinity, temperature, suspended sediments, and flow conditions) interact to shape exposure risk. The goal is to refine ecological model components using both ecological knowledge and community input to better represent the complexity of fish-environment interactions.

Workshop Objectives:

- Support interdisciplinary and community-informed model development by sharing cultural, ecological, and biological perspectives on estuary processes and sea-run fish.
- Identify key stressors and internal/external drivers of contaminant exposure in anadromous fish.

Expected Outcomes:

- Participants will collaboratively identify and refine key behavioral and environmental processes driving contaminant exposure in anadromous fish.
- Participants will engage in hands-on development of an ecological model tailored to the Penobscot River.
- Each participant will be able to request a model output or simulation aligned with their management or personal interest. Results to be shared after the workshop.

Workshop at a Glance

This full-day, hands-on workshop is designed to bring together community members, researchers, and Tribal members to collaboratively explore how tidal dynamics, fish behavior, and mercury contamination intersect in the Penobscot River.

Start your day with refreshments and an interactive welcome activity to build connections across disciplines and communities.

Contribute your knowledge during breakout sessions, where we'll identify and refine biological (e.g., physiology) and external (e.g., salinity, flow) processes that affect fish exposure risk.

Shape model priorities by sharing the outcomes and outputs you'd most like to see from this work.

Explore partnership opportunities to support future collaboration and elevate Tribal priorities.

Wrap up the day by reflecting on key insights, reviewing the model interface, and outlining next steps together.

Workshop Organizers:

Workshop Contact:

For Questions, RSVPS, or Accommodations Please Contact: