# Team EcoMod News

**This issue will focus on our work with federal partners. When other agencies undertake a project they may reach out to EL for expertise on ecological studies. We use our modeling capabilities to forecast and consult on various subjects including dredging, invasive species, and environmental impacts. Guest writer Karen Smith assisted in interviewing our team about three current collaborations.**

January 2025

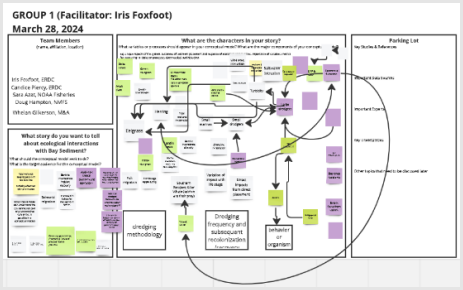
## NextGen Webinar Dates

**2025 SCHEDULE COMING SOON!**

***Guest writer, Karen Smith***

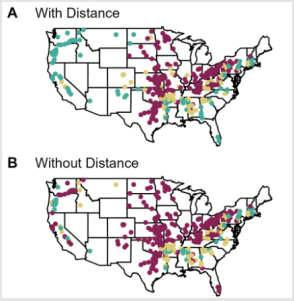
University of Mississippi student Karen Smith joined the EcoMod team during winter break! As a computer science major, she brought the technical and student perspective to modeling. Her biggest projects were assisting with a new curriculum for agent-based modeling using the python package Mesa- and refining coding and conceptual diagrams in Draw IO for oyster growth models. Her biggest lessons from this month revolve around how academic study is used in real life R&D. She realized that even professionals ask questions and utilize their resources, especially from colleagues and collaborators. She also began to think about how different groups respond to coding including restoration planners, biologists, and graduate students, and how to teach these audiences the value of ecological modeling.

### San Francisco District




The San Francisco district is developing a Regional Dredge Material Management Plan (RDMMP). This focuses on optimizing local dredging operations to maximize benefits and minimize costs and impacts. Team members Iris Foxfoot and Todd Swannack were brought in to develop quantitative models to forecast the response and recovery of the benthic community to dredge material placement. The first stage of this research is to gather subject matter experts (SMEs) to detail important ecological processes and develop conceptual models from this knowledge. To do this, they held a workshop where the SMEs described the physical and environmental influences affecting benthic invertebrates. This produced a conceptual diagram (pictured above ). This conceptual model will serve as a component of a corresponding study led by Candice Piercy, which will use modeling to inform ongoing cost/benefit analysis for optimization.

### Bureau of Reclamation




The EcoMod team has a long history of developing models for invasive species dispersal and colonization with the US Bureau of Reclamation (USBR), including dressenied mussels like zebra mussels. Team members Kiara Cushway and Iris Foxfoot are working on a model to quantify the likelihood of infestation at USACE reservoirs with hydropower. By understanding how habitat quality integrates with USACE management actions, the model quantifies risk of colonization into one of three categories: High, Moderate, or Low risk. They hope the model will allow for preparation against the mussels *before* they arrive, protecting the local ecosystem and hydropower facilities. Currently, they are focused on getting waterbody -specific data including Calcium levels, PH, temperature, and hardness levels, in order to concentrate on monitoring goals.

### Wilmington District

The North Carolina Port Authority is interested in deepening Wilmington Harbor to allow bigger ships to navigate the waterway. As part of an environmental impact study, the Wilmington District is investigating how deepening will impact wetlands and aquatic resources, mainly through salinity changes. They are utilizing water quality and HSI models for this assessment. Team member Emily Russ will interpret the findings of these models, evaluate their reliability, and refine inputs. Summarily, she can more accurately assess the environmental outcomes. Her conclusions will be summarized in an appendix to the EIS.