**Title:** Combining Environmental DNA Analysis and Soil Stability Metrics to Assess the Impact of Pollinator Habitat on USACE Levees

**Abstract:** Pollinator species have experienced substantial declines, with losses in pollinator biodiversity known to reduce plant reproductive success, diminish ecosystem services, and result in significant economic impacts. At the same time, the U.S. Army Corps of Engineers manages or monitors nearly 30,000 miles of levees, many of which occur within riparian landscapes that have the potential to provide valuable pollinator habitat. In this study, we are investigating whether levee management can simultaneously support pollinator biodiversity and maintain appropriate levee stability while also developing USACE guidelines for implementing pollinator-friendly levee seed mixtures. I will present our results from environmental DNA (eDNA)-based arthropod analysis on Texas Gulf Coast levees to evaluate relationships between levee stability and pollinator biodiversity and the ongoing development of a novel seed mixture designed to increase pollinator-supporting vegetation while incorporating low-growing grasses and other characteristics compatible with levee management. This work demonstrates a framework for integrating conventional levee stability assessments with emerging molecular biodiversity tools to improve habitat for pollinators while maintaining the functional requirements of critical flood-control infrastructure.

## Presenters:

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**Bio:** Mark Johnson is a research biologist with the U.S. Army Corps of Engineers, Engineer Research and Development Center (ERDC), where he researches Threatened and Endangered Species (TES) conservation and management on military and civil lands. His work focuses on applying environmental DNA (eDNA) analysis to improve TES management strategies and support federal consultation and policy initiatives. He supports TES management and Endangered Species Act compliance at more than 20 military installations across the United States and Pacific Islands. In addition to his role at ERDC, Dr. Johnson is affiliated with the Illinois Natural History Survey at the University of Illinois, where he serves on multiple graduate student committees and advises students.