Impacts of thin layer sediment deposition on salt marsh ecosystems

Dr. Kenneth W. Able
Principal Investigator
Department of Marine and Coastal Sciences
Rutgers, The State University of New Jersey
able@marine.rutgers.edu

Dr. Shannon Murphy
Co-Investigator
Department of Biological Sciences
University of Denver
Shannon.M.Murphy@du.edu

Dr. Gina Wimp
Co-Investigator
Department of Biology
Georgetown University
gmw22@georgetown.edu

Salt marshes in the United States are lost at a high rate every year, yet these marshes provide valuable ecosystem services (e.g. coastal protection, waste treatment, fisheries maintenance, carbon sequestration, recreation). This is particularly important because services provided by salt marshes are greater than any other ecosystem per unit area. Artificial thin layer deposition (TLD) is a strategy to conserve salt marshes and their important ecosystem services despite the threat of sea level rise. TLD modifies current hydraulic dredging methods because it liquefies dredged sediments and sprays them on the marsh to increase accretion rate without destroying salt marsh vegetation. Although TLD has been used in the Mississippi Delta, few studies evaluate the impacts of TLD on Atlantic salt marshes and no studies have investigated how TLD affects the foodweb.

This project is designed to evaluate the effectiveness of TLD in an extensively studied salt marsh system in southern New Jersey in order to determine the ability of TLD to retain and restore marsh resiliency. More specifically, researchers will determine the impacts of TLD on salt marsh communities and ecosystem processes with emphasis on soil properties, vegetation, arthropods, fishes, and decapod crustaceans. In the process, the project will directly address New Jersey Sea Grant's healthy coastal ecosystems focus area objectives including sustaining New Jersey's critical environmental and economic resources.

This project has several benefits. First, the project will be the first to test how TLD affects salt marshes in the state of New Jersey. The project will also be the first to test how TLD affects not just the plant community, but the entire arthropod foodweb as well as fish communities.