

# Protecting Alabama's Water Quality through Marsh Restoration

## Project Location

Weeks Bay National Estuarine Research Reserve, Alabama

## Project Lead

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## Targeted End Users and Products

- [Project final report](#)

## Project Partners

- Weeks Bay Reserve
- Colorado State University
- Dauphin Island Sea Lab
- South Carolina Department of Natural Resources
- University of Alabama
- University of South Alabama
- University of Connecticut

## Overview

In coastal Alabama, stormwater runs off the land into coastal waters, carrying with it a variety of pollutants and disease-causing microbes that degrade water quality and threaten human health. Fully restored coastal marshes with complete plant cover are able to absorb up to 80 percent of the nitrogen pollution in this runoff. Less is known, however, about the capacity of marshes at different stages of restoration to improve water quality. A team led by the Weeks Bay reserve and University of Alabama addressed this gap by working with stakeholders to assess the ability and cost-effectiveness of marsh restoration designs, at varying stages of recovery, to remove nitrogen pollution from stormwater runoff.

## Project Benefits

- The team worked with stakeholders to ensure that project results guided restoration decision-making by integrating the project's ecological and social data to develop a restoration decision support tool.
- The project enhanced communication between and among decision-makers, coastal managers, researchers, and the general public by helping to build a common language around wetland conservation and restoration with a broad range of stakeholder groups.,
- The project produced a novel method to test the effects of sea-level rise on coastal wetlands that will inform future field experiments and restoration projects.

## Project Approach

The Weeks Bay reserve and the University of Alabama led a team of decision-makers, researchers, and municipal officials to explore how sea level rise will impact marsh structure, its ecosystem functions, and its capacity to filter nitrogen pollution from runoff.

### About the Science Collaborative

The National Estuarine Research Reserve System's Science Collaborative supports collaborative research that addresses coastal management problems important to the reserves. Learn more at [www.nerrs.noaa.gov](http://www.nerrs.noaa.gov).

## Project Approach (continued)

- Stakeholder Engagement: The project also administered a survey to assess stakeholder attitudes toward conservation and ecosystem services and to identify what terminology has the greatest potential to improve understanding of these efforts.
- Testing: The project team constructed test plots at the Weeks Bay reserve to analyze and compare pollution absorption capacity of coastal marshes, developed and applied a novel method to mimic sea level rise ,examined how predicted levels of sea rise would impact restored marshes, and compared construction costs and efficacy of pollution removal of different marsh conservation and restoration techniques.
- Application: The team is working with stakeholders to integrate the survey results and marsh restoration data to develop a restoration decision support tool to help determine cost-effective marsh restoration techniques.

