Understanding the Vulnerabilities of Southeastern Coastal Habitats to Climate Change Impacts

Project Location

North and South Carolina

Project Duration

June 2016 to November 2018

Project Lead

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Project Type

Science Transfer – Promoting the use of science

Project Partners

- North Carolina National Estuarine Research Reserve
- North Inlet-Winyah Bay National Estuarine Research Reserve

Project Webpage

nerrssciencecollaborative.org/project/Plunket16

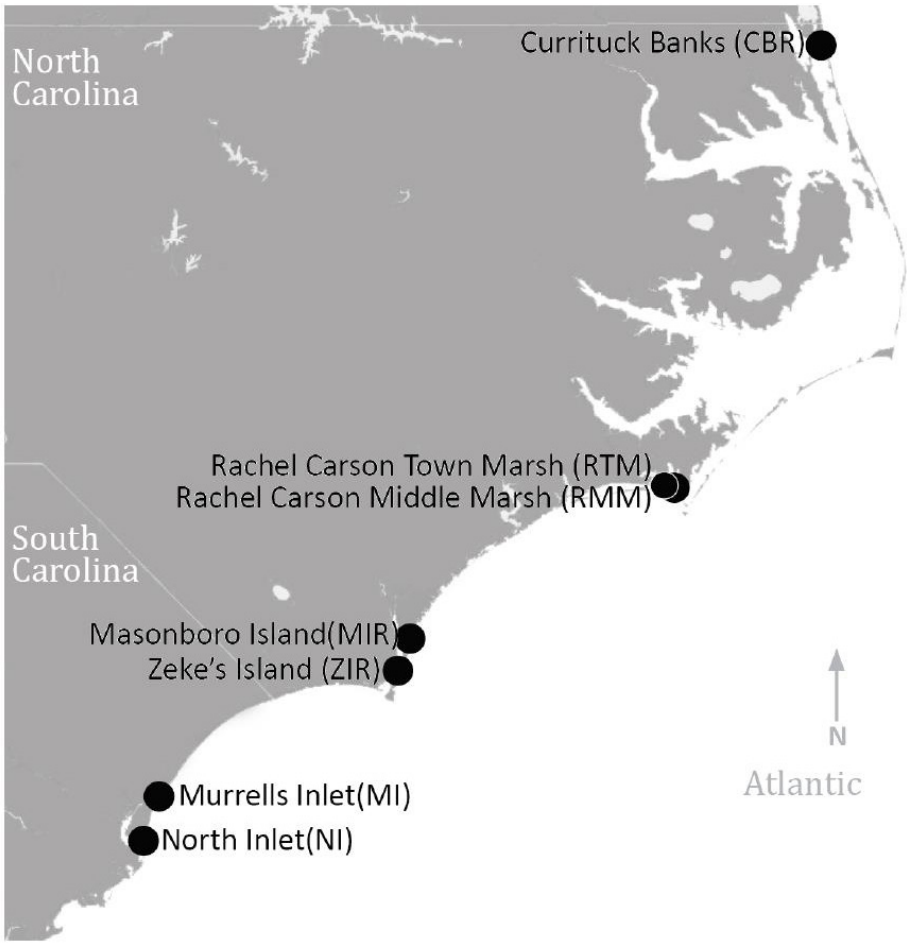
Overview

Climate change is having an impact on salt marshes in the southeastern United States through sea level rise, increases in air and water temperature, changes in precipitation patterns, and an increase in storm event intensity. However, the degree and intensity of these impacts vary from marsh to marsh, depending on local environmental conditions. Understanding this local variability is critical when making management decisions. Through this project, estuarine reserves in North and South Carolina sought to improve local understanding of climate change effects on southeastern marshes and provide decision-makers with the information and skills they need to address these vulnerabilities by using the Climate Change Vulnerability Assessment Tool for Coastal Habitats, or CCVATCH. Created to help managers better understand the specific vulnerabilities of a habitat to climate change, this decision-support tool incorporates existing information on climate change impacts with knowledge of local conditions to help users develop vulnerability scores for specific areas.

For this project, North Carolina Reserve staff members were fully trained in the application of the tool and facilitation of the assessment process by their colleagues at North Inlet-Winyah Bay Reserve. The two reserves worked together to identify relevant resources and existing research needs and develop outreach products and activities.

Project Approach

Following initial training in the Climate Change Vulnerability Assessment Tool for Coastal Habitats application, the project team consulted with regional experts to identify and collect local resource data and information on the effects of climate change for seven local habitats. After gathering this information into a resource database, the team applied the tool across North Carolina's reserve sites and at North Inlet in South Carolina. Input from project participants, including local land managers, representatives of community organizations, and reserve staff members, was used to develop habitat vulnerability assessments for emergent marsh areas at each reserve location. The assessment outcomes were captured in site-specific and summary reports that can be used to explore how current and potential management actions could increase resilience to climate change.



Climate vulnerability was assessed at seven sites in North and South Carolina.

Benefits

- Participants in the assessment process—including reserve staff, land managers, researchers, and coastal decision-makers—gained a greater understanding of the impacts of climate change on Southeast coastal habitats.
- This project identified site-specific vulnerabilities for different components of the North Inlet-Winyah Bay and North Carolina Reserves, which is helping to shape land management and stewardship activities on those properties.
- Eleven reserve staff members and partners were trained in how to conduct assessments and use the results, and 28 experts participated in the different site assessments. They now have a better understanding of the data and resources available to support assessments, and can make more informed habitat management decisions aimed at increasing resilience to climate change.
- Over the course of several closely related projects, seven reserves along the East Coast have applied the Climate Change Vulnerability Assessment Tool for Coastal Habitats to help guide their land stewardship programs.

Products

- Report: The project team developed a comprehensive report, *Saltmarshes in the Southeast: Climate Change Vulnerability Assessment*, which summarizes project findings and serves as a resource for managers seeking to understand the effects of climate change and improve habitat resilience.
- Site-Specific Assessments: The report includes a summary of habitat vulnerabilities and management recommendations for seven specific estuaries in North and South Carolina, and also provides a comparison of scores across sites.
- Updated Climate Change Vulnerability Assessment Tool for Coastal Habitats website: The website provides assessment scoring spreadsheets and an updated guidance document, and new references relevant to the assessment process and southeastern marshes are being added.

What's Next

Based on a partnership that emerged during the project, the team is actively developing a web tool that will facilitate the assessment process and can be expanded with future need and funding. The tool will be available at ClimateVulnerability.app.

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. The Science Collaborative is managed by the University of Michigan's Water Center through a cooperative agreement with the National Oceanic and Atmospheric Administration (NOAA). Funding for the research reserves and this program comes from NOAA. Learn more at nerrssciencecollaborative.org or coast.noaa.gov/nerrs.