



North Carolina
Coastal Federation
Working Together for a Healthy Coast

Regional and State Salt Marsh Conservation

Claire Rapp

Marine Fisheries Commission Meeting

May 25, 2023

Outline

- Introduction
- Video - *Marsh Forward: South Atlantic Salt Marsh Initiative*
- The Importance of Salt Marsh
- South Atlantic Salt Marsh Initiative
- SASMI Regional Salt Marsh Plan
- NC Salt Marsh Conservation Action Plan
- Next Steps and Needs



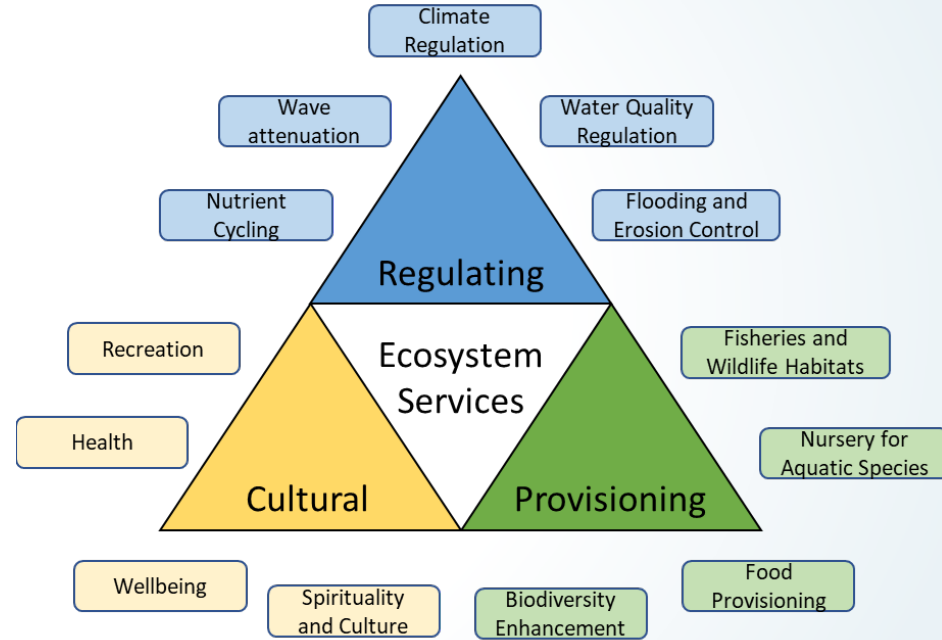
Marsh Forward: South Atlantic Salt Marsh Initiative



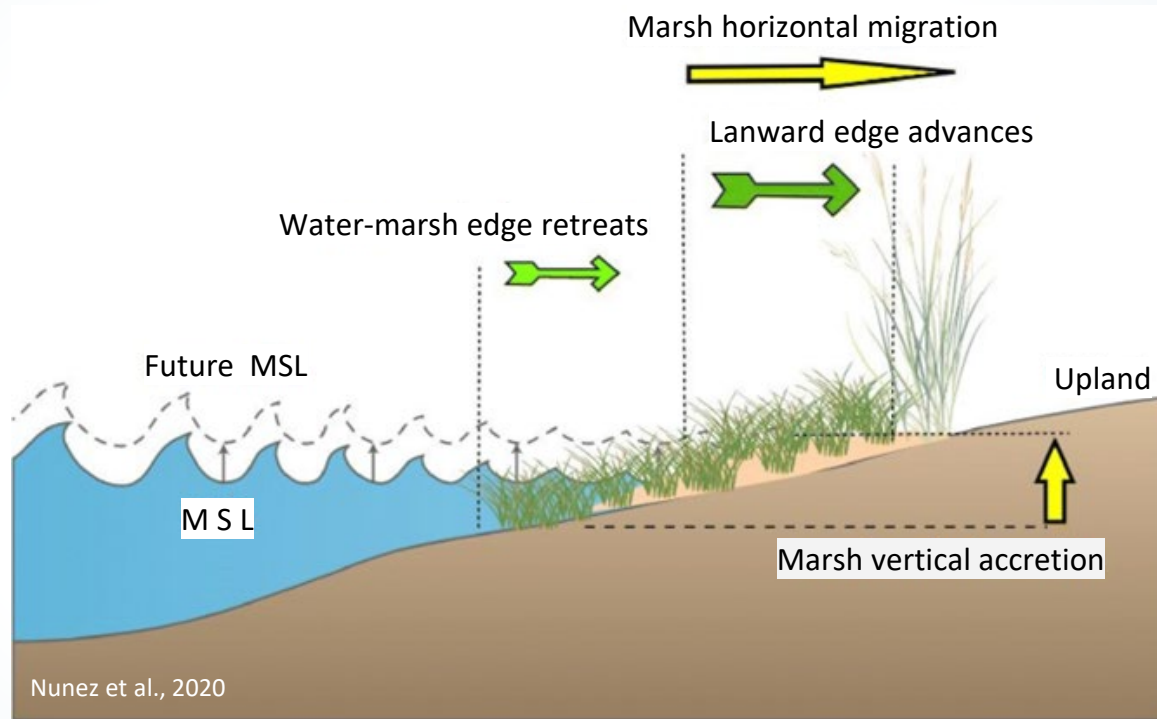
Produced by the Cornell Lab of
Ornithology

→ Independent partner of SASMI

The Importance of Salt Marshes



Marsh Response to Sea Level Rise





South Atlantic Salt Marsh Initiative



Pew

South Atlantic Salt Marsh Initiative (SASMI)

- Officially launched May 2021
- 300+ members consisting of leaders from SERPPAS and other local, state, and federal partners, communities, and NGOs from NC, SC, GA, and FL



SASMI

Goal: To enhance the long-term abundance, health, and resilience of the approximately 1 million acres of salt marshes within the South Atlantic states to ensure no overall loss of the benefits these wetlands provide to fish, wildlife, and people.



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SASMI's Regional Salt Marsh Plan



MARSH FORWARD

A REGIONAL PLAN FOR THE FUTURE
OF THE SOUTH ATLANTIC COAST'S
MILLION-ACRE SALT MARSH ECOSYSTEM

A COLLABORATIVE
EFFORT OF THE



Between land and sea lie ecological guardians of the coast—salt marshes.

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EXECUTIVE SUMMARY

MARSH FORWARD

A Regional Plan for the Future of the South Atlantic Coast's
Million-Acre Salt Marsh Ecosystem

The South Atlantic region of the United States harbors approximately 1 million acres of salt marshes that benefit fish, wildlife, communities, the economy and national defense. Sustaining this valuable resource in the face of persistent threats will require a concerted effort by all who depend on it.

This is a plan to do just that.

The South Atlantic region of the United States harbors approximately 1 million acres of salt marshes that benefit fish, wildlife, communities, the economy and national defense. Sustaining these valuable resources in the face of persistent threats will require a concerted effort by all who depend on them. Salt marshes are wetlands that fill and drain with the tides.¹ They protect shorelines, coastal communities, and military installations from extreme storm events and mitigate impacts such as flooding, runoff and excess nutrients that can degrade water quality. They also serve as vital habitat for many of our nation's fish and wildlife, including those that support coastal industries and state economies. Salt marshes collectively form

an extensive habitat in the South Atlantic region, representing a rich history, many cultures and an irreplaceable way of life. At approximately 1 million acres, this habitat is nearly the size of Grand Canyon National Park but exists in a relatively narrow band that stretches along the coast of four states, from North Carolina to east-central Florida.

Marshes provide food, refuge or nursery habitat for more than 75% of fisheries species, including shrimp, oysters and many popular finfish, such as redfish and flounder.² Together these species support subsistence fishing and contribute to valuable commercial and recreational fisheries. In the South Atlantic, recreational fishing alone generates more than \$3.9 billion in

- Officially launched Tuesday May 16th

- Available on the Website:

<https://marshforward.org/>



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Two Strategies

1. Protect and restore the health and function of existing salt marshes
2. Conserve marsh migration corridors and remove or retrofit barriers to ensure salt marshes can shift as sea levels rise



Four Cross-Cutting Approaches

1. Policy
2. Culture and Community
3. Funding
4. Communication, Education, and Outreach



Implementation

- Focusing most on the importance of
 - Close coordination
 - Collaboration
 - Co-creation
- Organizational structure modified from the America's Longleaf Restoration Initiative

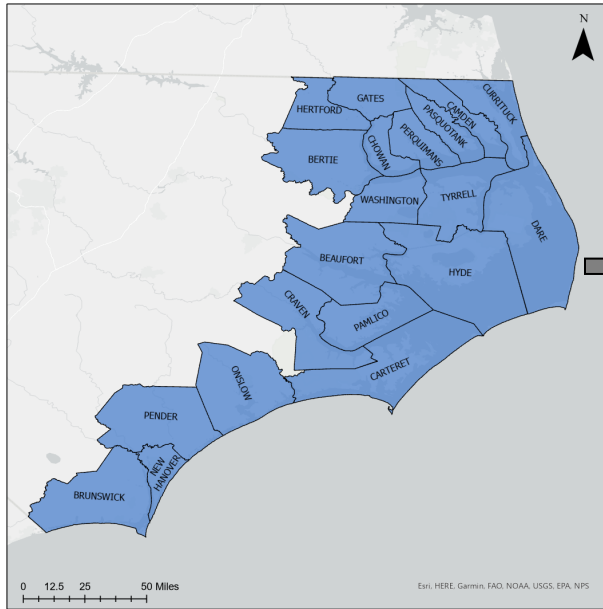


North Carolina Salt Marsh Conservation Action Plan

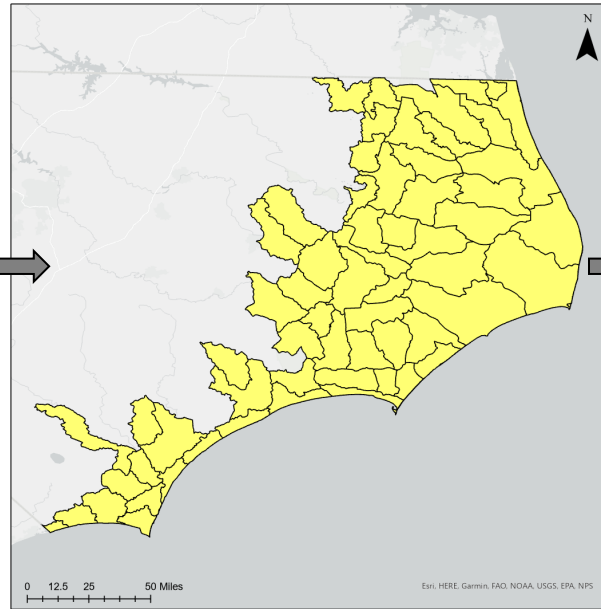


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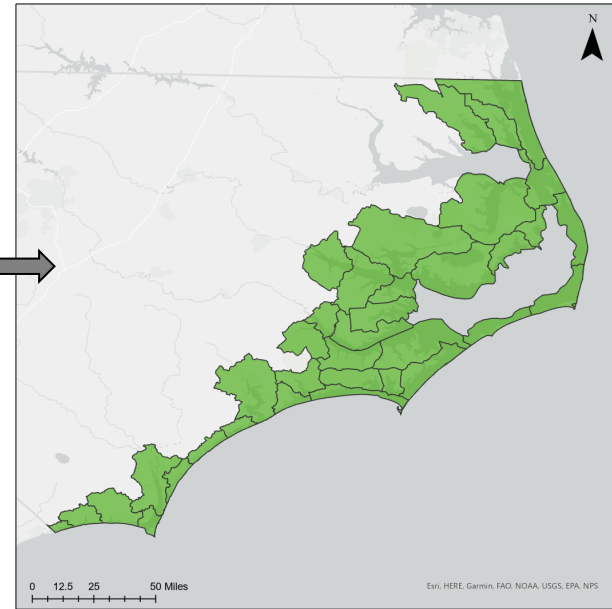
Creating Conservation Planning Units



CAMA Counties



HUC-10



CPUs

NC Salt Marsh Projections*

Current salt marsh = about 220,000 acres

2050 salt marsh = about 400,000 acres

More than 92,000 acres lost

Approximately 270,000 acres gained

Net gain of about 180,000 acres by 2050

*data used are not scaled for parcel level decision making and should be used as regional estimates only



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PLOS CLIMATE

RESEARCH ARTICLE

Sea level rise drives carbon and habitat loss in the U.S. mid-Atlantic coastal zone

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Abstract

Coastal marshes and seagrass beds store millions of tons of carbon in their sediments and sequester carbon at higher per-area rates than most terrestrial ecosystems. There is substantial interest in this “blue carbon” as a carbon mitigation strategy, despite the major threat that sea level rise (SLR) poses to these habitats. Many projections of habitat and carbon change with SLR emphasize the potential for inland marsh migration and increased rates of marsh carbon sequestration, but do not consider carbon fluxes associated with habitat conversion. We integrated existing data and models to develop a spatial model for predicting habitat and carbon changes due to SLR in six mid-Atlantic U.S. states likely to face coastal habitat loss over the next century due to low tidal ranges and sediment supply. Our primary model projection, using an intermediate SLR scenario (1.2 m SLR by 2104), predicts loss of 83% of existing coastal marshes and 26% of existing seagrasses in the study area. In addition, 270,000 hectares of forest and forested wetlands in low-lying coastal areas will convert to coastal marshes. These SLR-driven habitat changes cause the study area to shift from a carbon sink to a source in our primary model projection. Given the many uncertainties about the habitat and carbon changes represented in our model, we also identified the parameters and assumptions that most strongly affected the model results to inform future research needs. These included: land availability for inland marsh migration, the baseline extent and location of coastal marshes, proportion of stored carbon emitted from lost habitats (coastal marsh sediments or terrestrial biomass carbon), and methane emissions from freshwater habitats. The study area switched from a net carbon sink to a net carbon source under SLR for all but three model runs; in those runs, net carbon sequestration declined by 57–99%.

1. Introduction

Coastal wetland habitats, including saline marshes and seagrasses, provide many valuable ecosystem services, including serving as nursery areas for commercially and recreationally harvested fish species, providing habitat for coastal birds, improving water quality, and buffering shorelines from storms and erosion [1–4]. In the last decade, these habitats have also been

OPEN ACCESS

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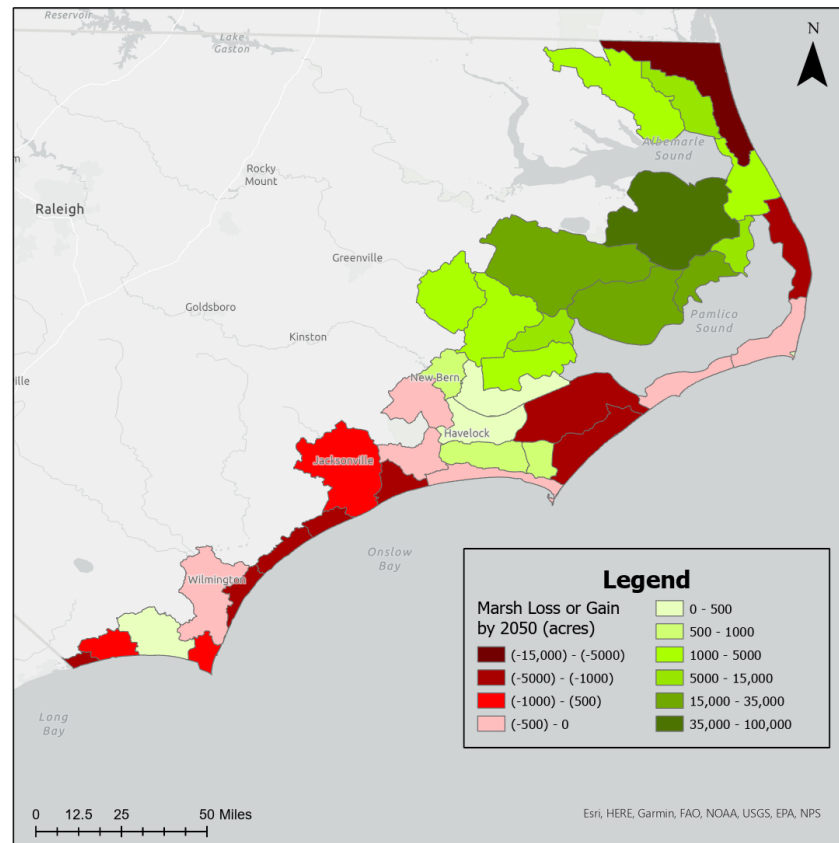
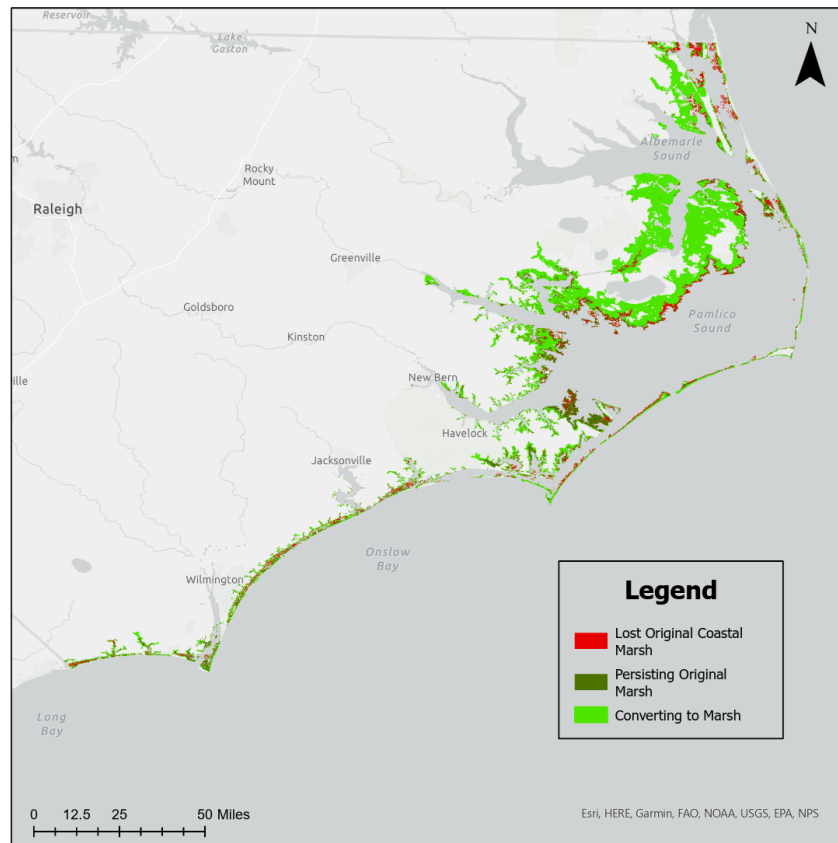
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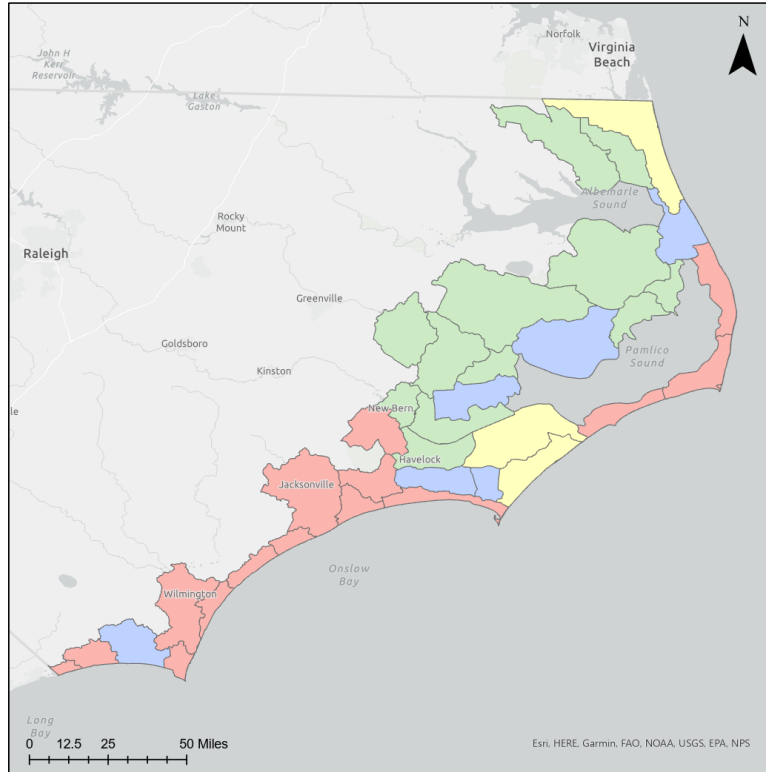
Data Availability Statement: All data are available in the manuscript, Supporting Information files, or the Duke Research Data Repository (<https://doi.org/10.7924/H4r5z7v>).

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Salt Marsh Gain and Loss



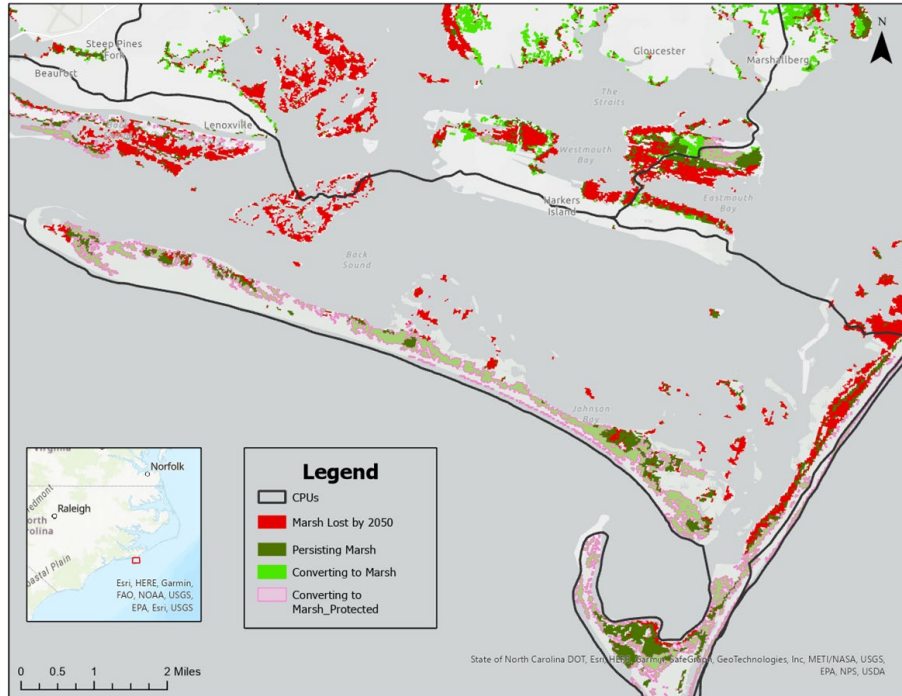
Priority Action Suggested for each CPU



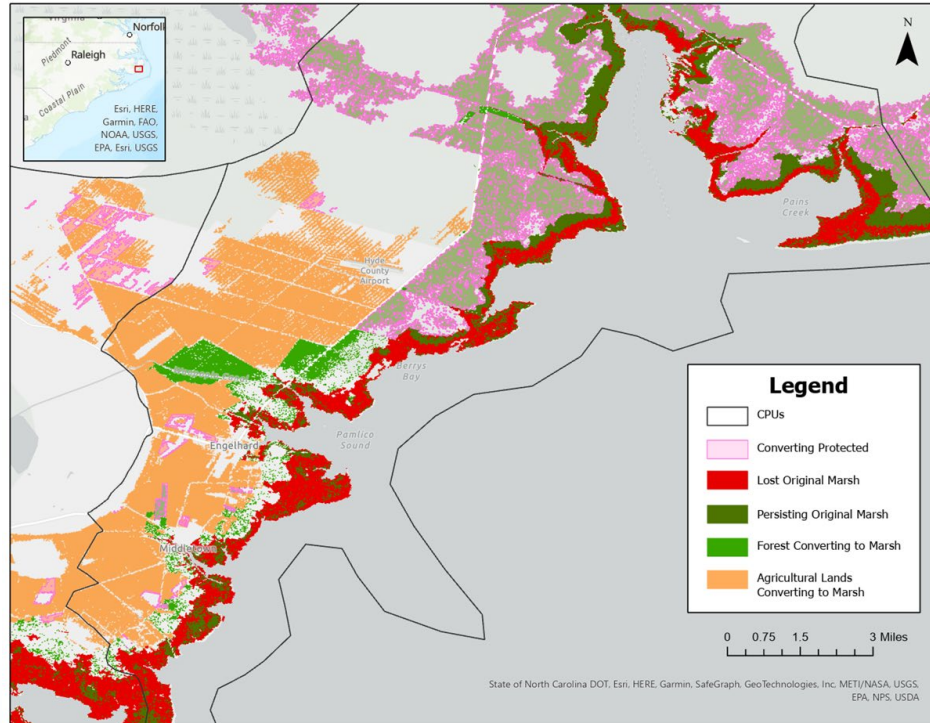
Suggested Priority Action for Salt Marsh Protection			
Cluster	*Net Gain or Loss	Loss Mitigation/ Restoration	Facilitate Migration
Red	Loss	X	
Yellow	Loss	X	X
Blue	Gain	X	X
Green	Gain		X

*Net loss or gain refers to the difference in salt marsh acreage per CPU between now and 2050 under intermediate SLR scenario (1.5ft) - assuming current levels of development. Developed from data by Warnell, Olander, and Currin (2022).

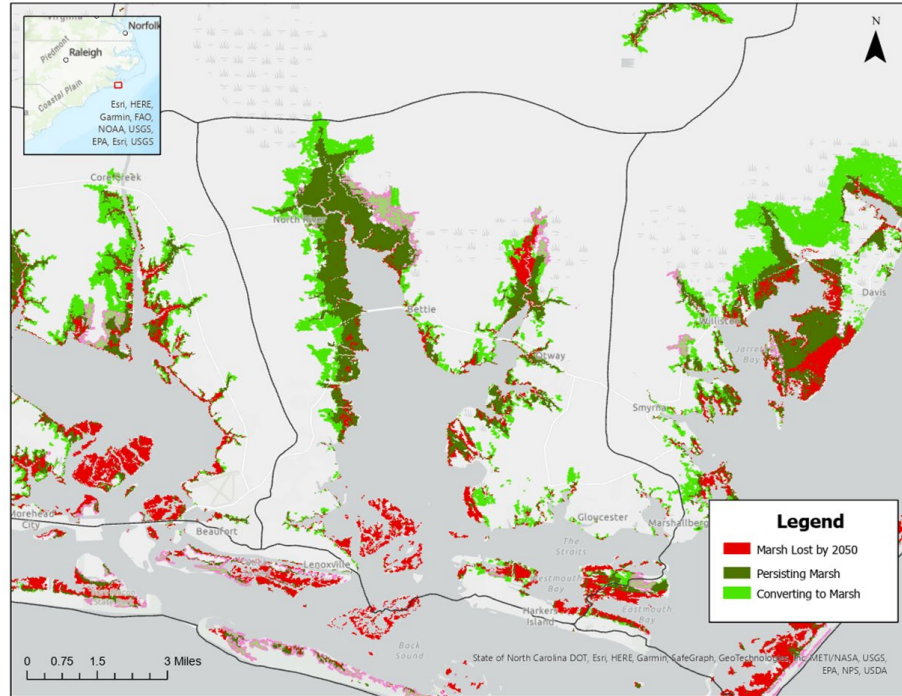
Loss Mitigation and Restoration



Migration Facilitation



Both Restoration and Migration Facilitation



Next Steps

- Stakeholder Workshops
 - Southeastern NC - focusing on Restoration and Loss Mitigation strategies
 - Northeastern NC - focusing on Migration Facilitation strategies
- Publish online Webmap to showcase GIS salt marsh projections and stakeholder-determined priority areas
- Release NC Salt Marsh Conservation Plan late Fall 2023



Thank You!

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