

Challenges and Opportunities Managing Dynamic Shorelines in South Carolina and Georgia

Edges of Our Estuaries Workshop
GTM NERR, St. Augustine, FL
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SC

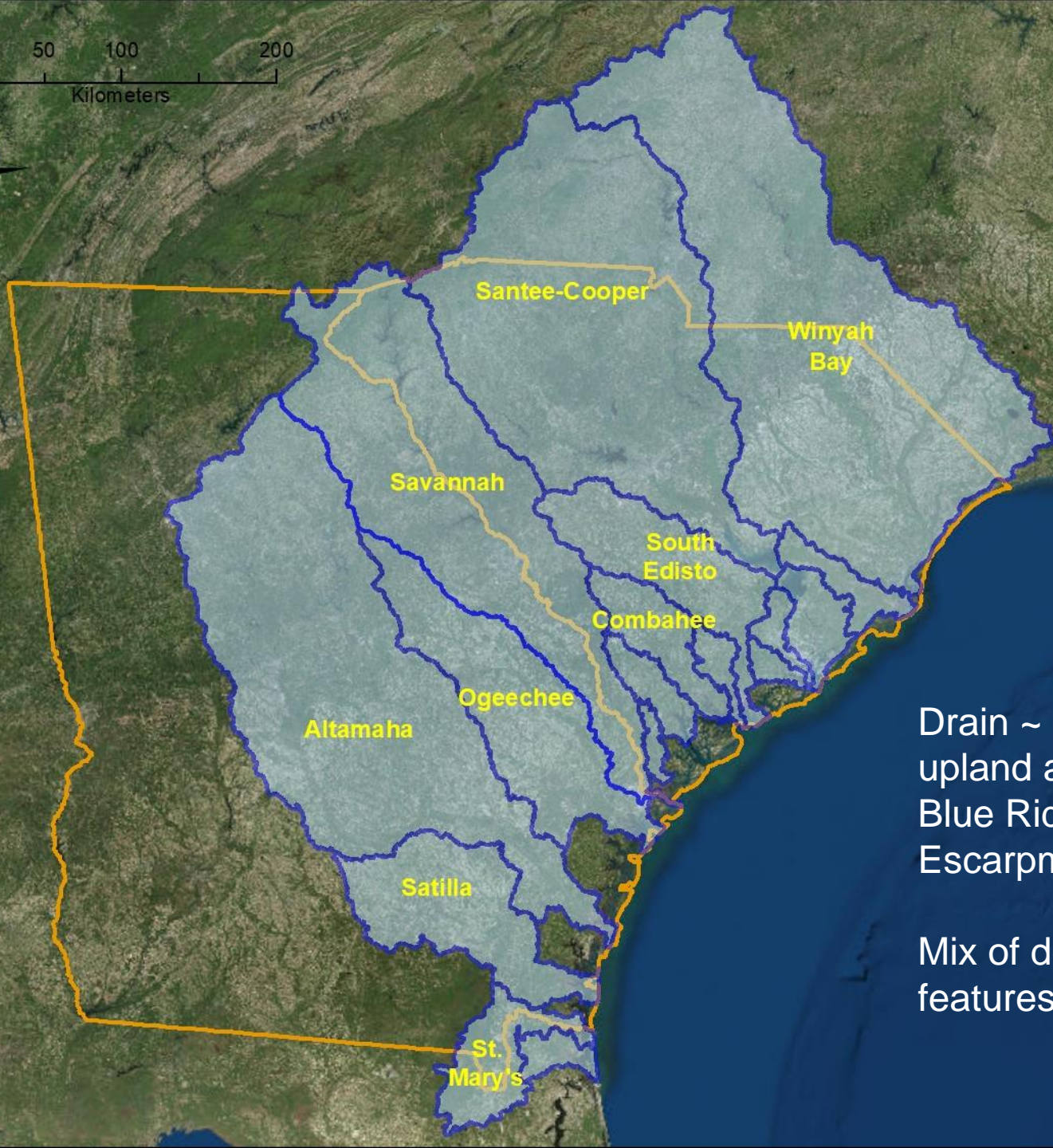
GA

Georgia Bight



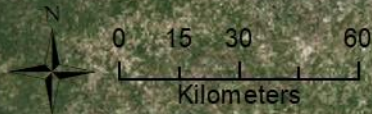
0 75 150 300
Kilometers

0 50 100 200
Kilometers



Drain ~ 200,000 km²
upland acres, to the
Blue Ridge
Escarpment

Mix of deltaic and tidal
features



Regional Estuaries

GA

SC

SC: 1,481 km²

No change in
coverage 1996-2010

GA: 1,508 km²

Land Cover

 Estuarine Wetlands

C-CAP: NOAA's Coastal Change Analysis Program



Creek networks

Flats



Former plantations



Salt Marsh

Dominant Wetland Vegetation Types



Juncus roemerianus (low salinity)



Spartina alterniflora (high salinity)

Oysters

Primarily Intertidal

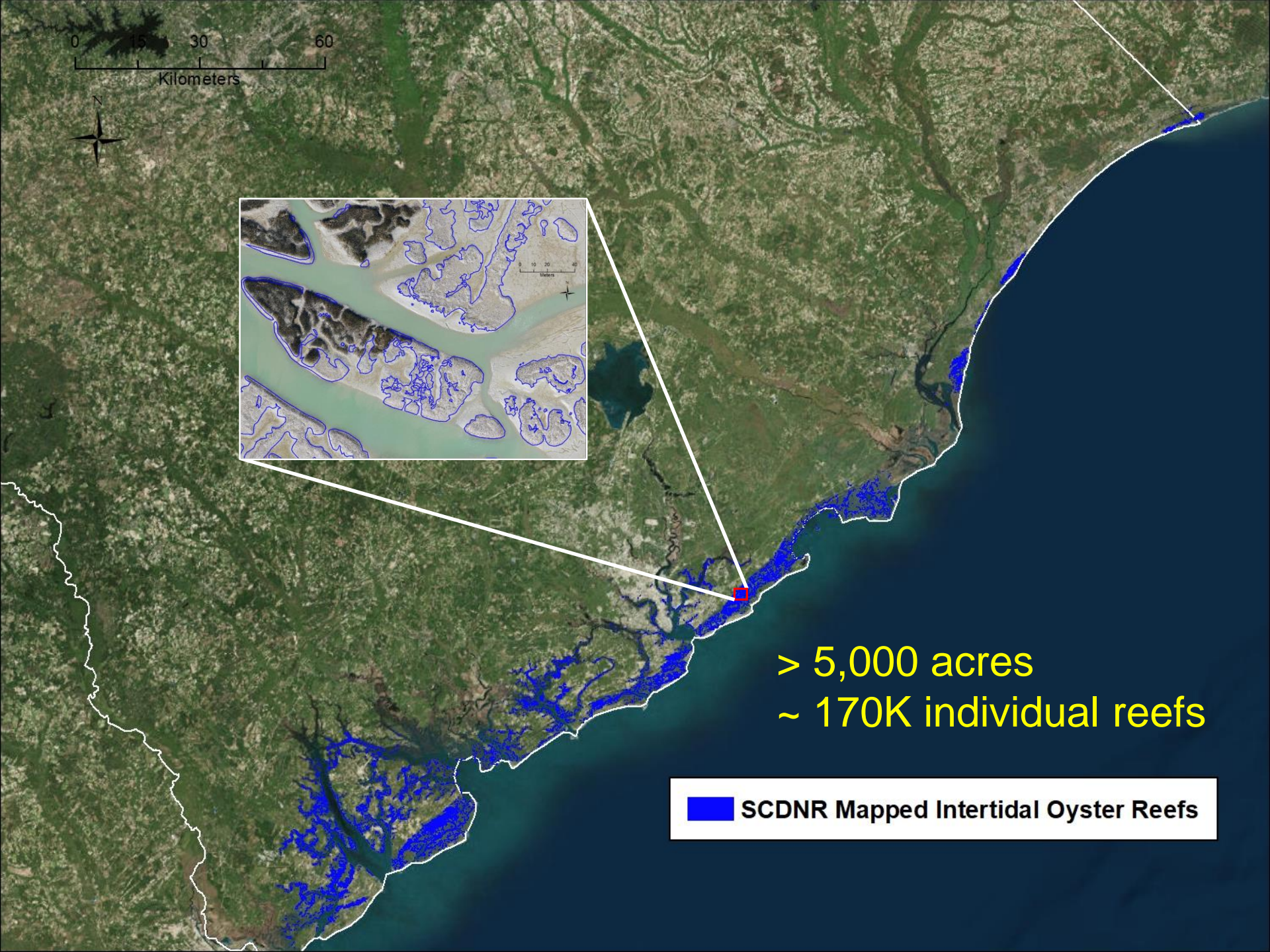
Natural Breakwaters



Fringing reefs

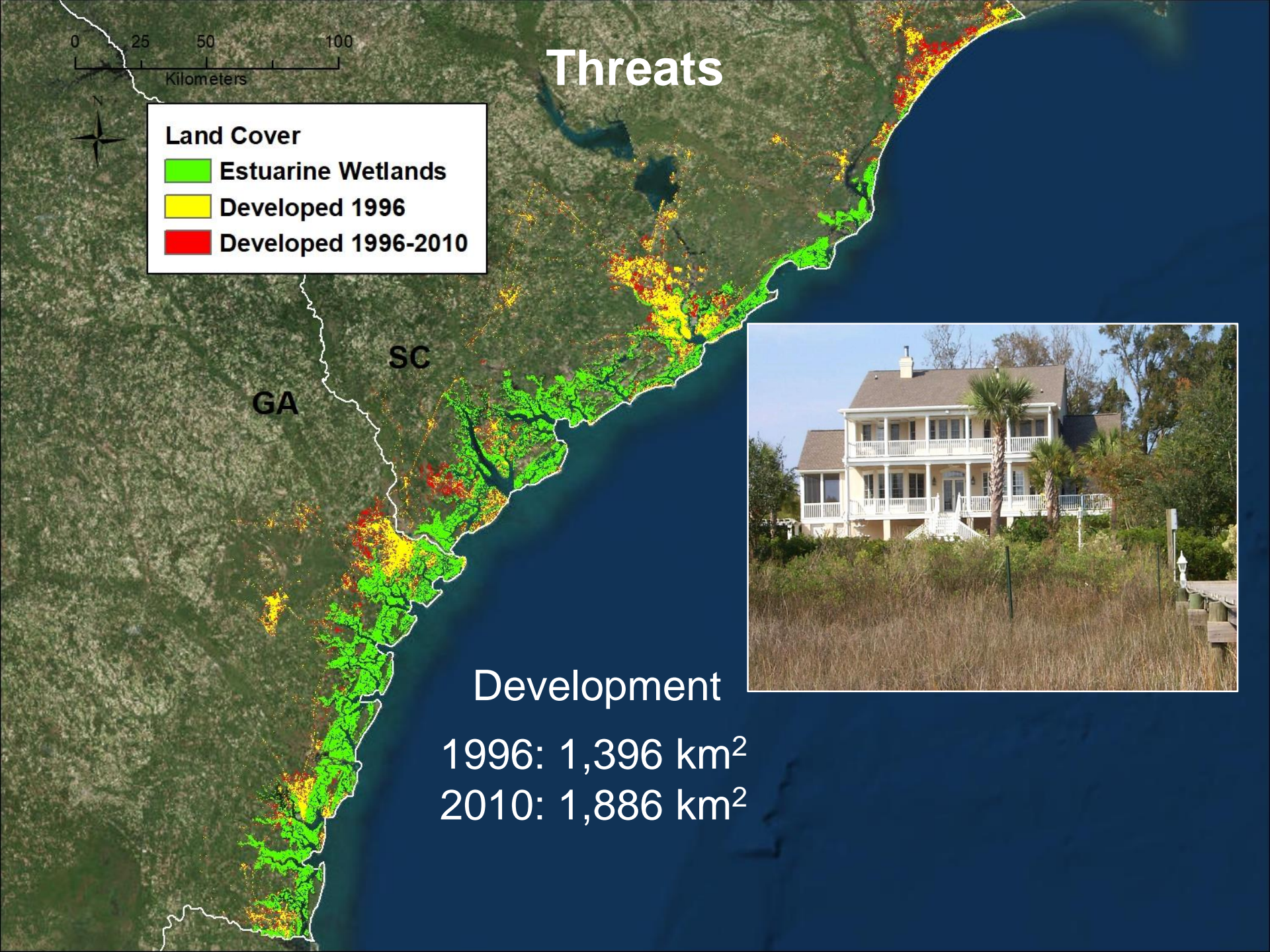


Patch reefs

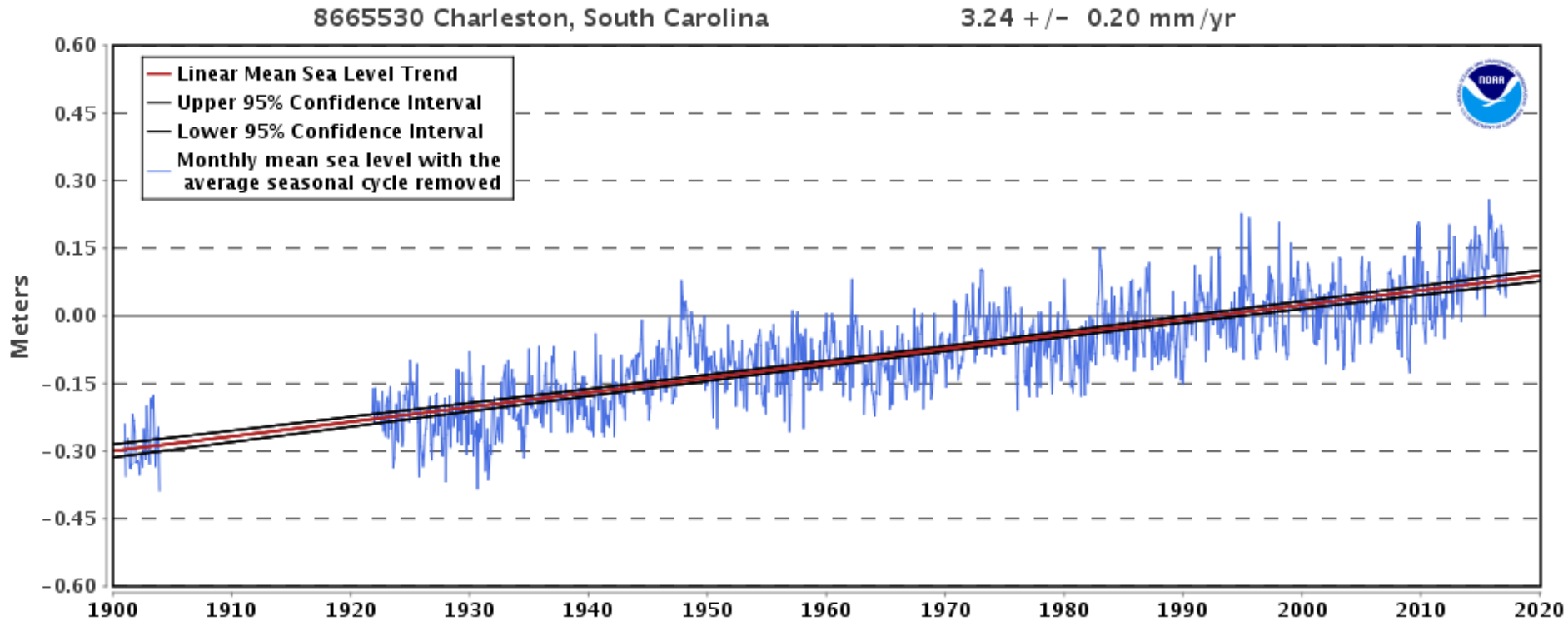


> 5,000 acres
~ 170K individual reefs

SCDNR Mapped Intertidal Oyster Reefs



Sea Level Rise

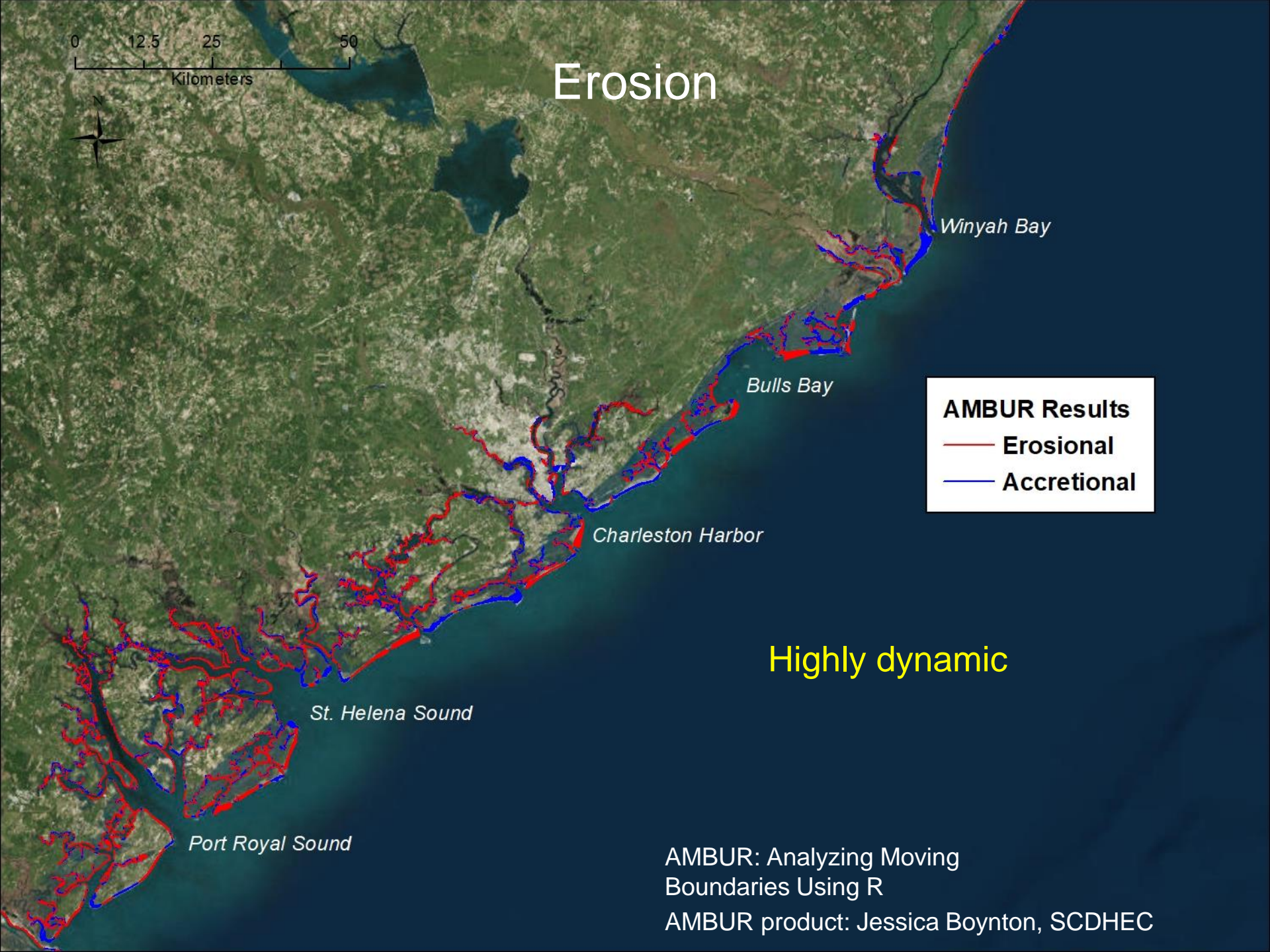


Compression: with development, where can oysters and estuarine wetlands go?

Figure: Denise Sanger, SCDNR

Increased boat traffic and storminess





Erosion

Winyah Bay

Bulls Bay

Charleston Harbor

St. Helena Sound

Port Royal Sound

AMBUR Results

— Erosional

— Accretional

Highly dynamic

AMBUR: Analyzing Moving
Boundaries Using R

AMBUR product: Jessica Boynton, SCDHEC

2011



0 0.125 0.25 0.5
Kilometers

2013



0 0.125 0.25 0.5
Kilometers

2018



0 0.125 0.25 0.5
Kilometers

0 12.5 25 50
Kilometers



Management Efforts

Winyah Bay

Bulls Bay

Charleston Harbor

St. Helena Sound

Port Royal Sound

Active Restoration

> 250 SCDNR restoration
sites since 2001

• SCDNR Oyster Restoration and Living Shoreline Sites





NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM

28 reserves, protects >1.3 million acres in 22 states and Puerto Rico

WEST COAST

- Padilla Bay, Washington
- South Slough, Oregon
- San Francisco Bay, California
- Elkhorn Slough, California
- Tijuana River, California



Kachemak Bay, Alaska

Lake Superior, Wisconsin

GREAT LAKES

Old Woman Creek, Ohio

NORTHEAST

- Wells, Maine
- Great Bay, New Hampshire
- Waquoit Bay, Massachusetts
- Narragansett Bay, Rhode Island

MID ATLANTIC

- Jacques Cousteau, New Jersey
- Delaware
- Chesapeake Bay, Maryland
- Chesapeake Bay, Virginia

SOUTHEAST

- North Carolina
- North Inlet-Winyah Bay, South Carolina
- ACE Basin, South Carolina

Sapelo Island, Georgia

Weeks Bay, Alabama

Guana Tolomato Matanzas, Florida

Apalachicola, Florida

Rookery Bay, Florida

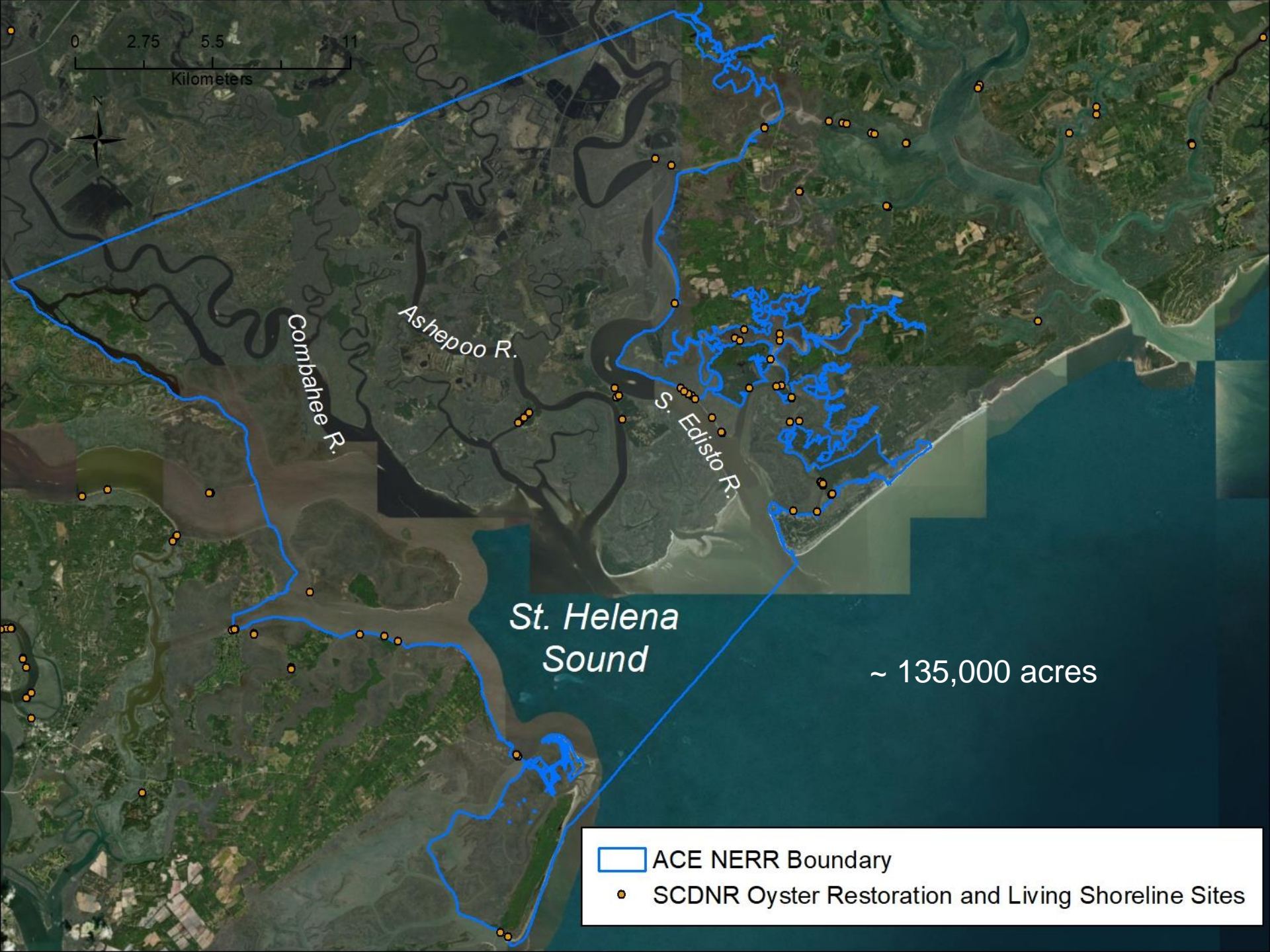
Grand Bay, Mississippi

Mission-Aransas, Texas

GULF OF MEXICO

CARIBBEAN

- Jobos Bay, Puerto Rico



0 2.75 5.5 11
Kilometers



Combahnee R.

Ashepoo R.

S. Edisto R.

St. Helena
Sound

~ 135,000 acres

- ACE NERR Boundary
- SCDNR Oyster Restoration and Living Shoreline Sites

Loose oyster shell



Bagged oyster shell



Oyster castles



Crab traps



Experimental Living Shorelines

Installed 2015



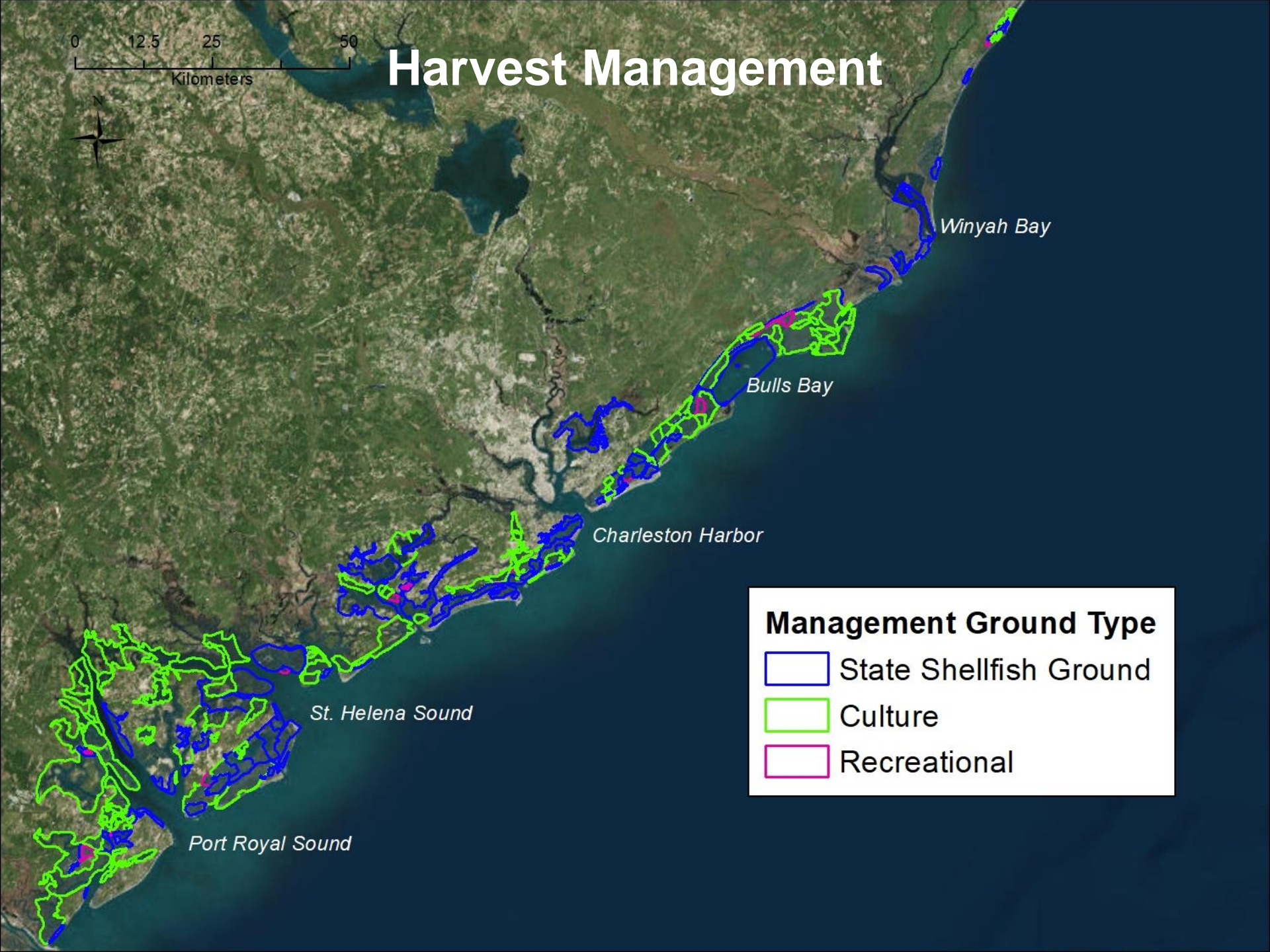
Installed 2016






0 12.5 25 50
Kilometers



Harvest Management



Management Ground Type

-  State Shellfish Ground
-  Culture
-  Recreational



Thank You

Kaitlyn Dietz
GTM NERR



SCDHEC
Jessica Boynton



SCDNR
Andrew Tweel
Denise Sanger
Greg Sorg



An aerial photograph of a coastal wetland. The landscape is a mosaic of dark blue water, light brown mudflats, and patches of vibrant green marsh grass. In the background, a dense line of green trees marks the horizon under a clear blue sky with a few wispy clouds. The word "Questions" is superimposed in the center in a bold, yellow font.

Questions