

Ecosystem Assessment of the Albemarle Pamlico Estuarine System

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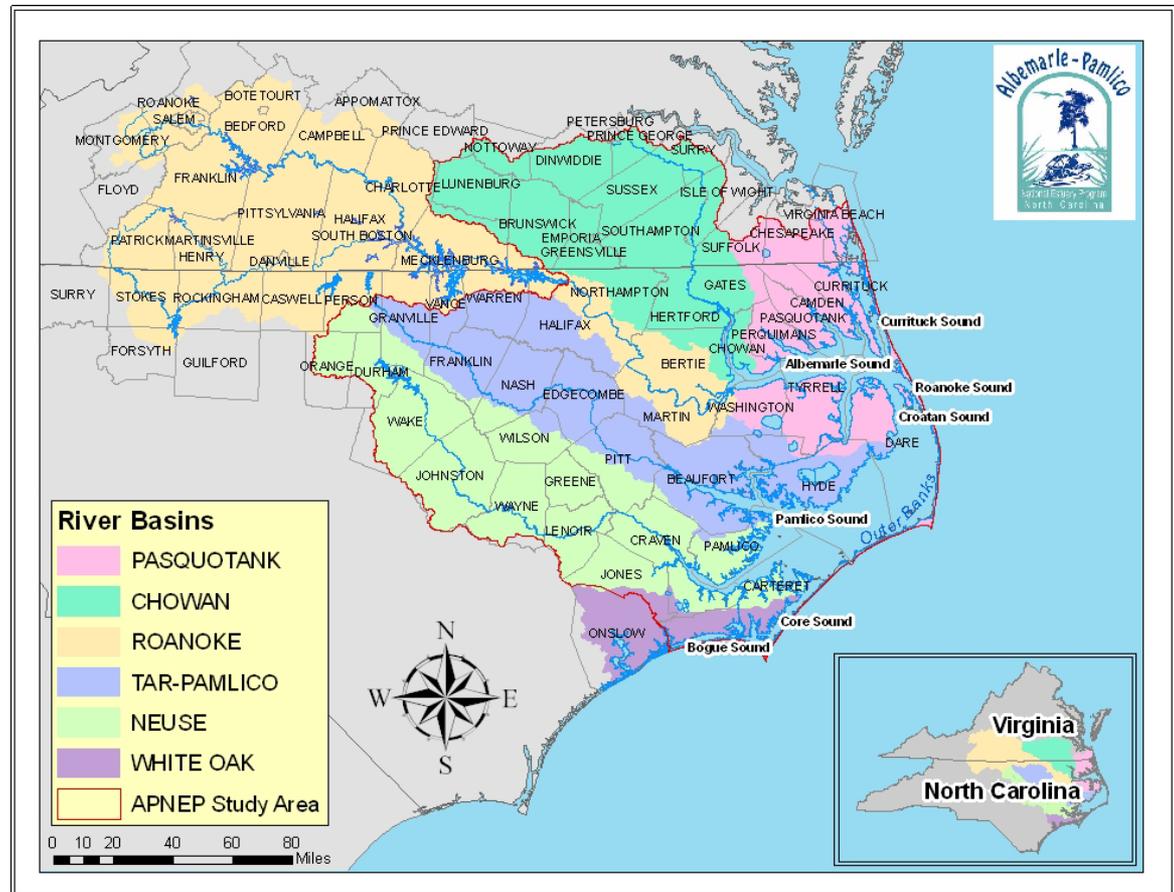
Nov. 17, 2011

The State of Sounds: An Assessment of the Albemarle Pamlico Ecosystem

Where?

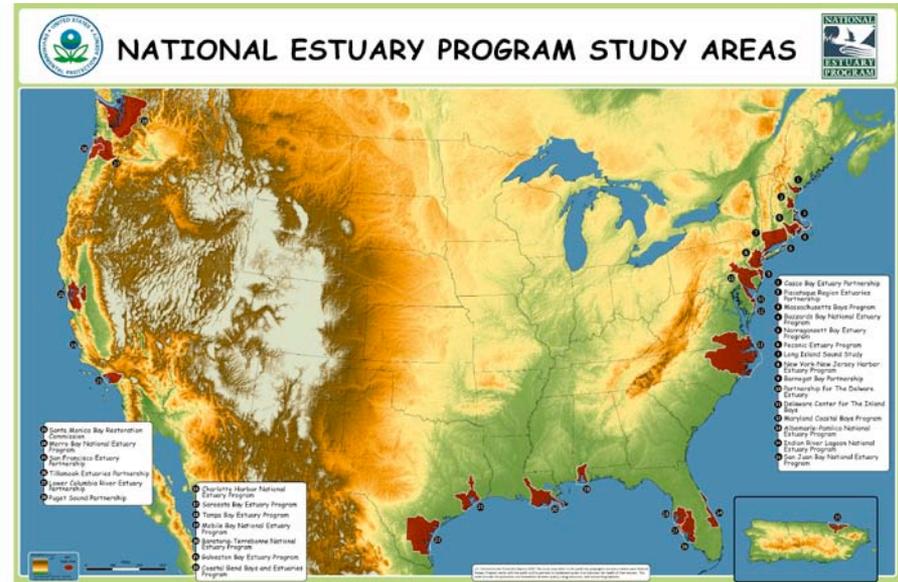
What?

- compilation of scientific indicators
- environmental condition of the air, water, and land
- status and trends regarding ecological systems



APNEP Assessment History

- 1987-APES research commenced
- 1991-Status and Trends Report
- 1994-CCMP



2012 Assessment

- Fewer resources available to support research
- Completion parallel to completion of the CCMP
- Consideration of new issues and ways of valuing ecosystems
- Heinz report format

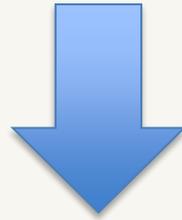
Vision without action is a daydream.
Action without vision is a nightmare.
- Japanese proverb

Vision = EBMP and Monitoring Plan

Action = Volunteers

Indicators: holistic but realistic

~250 candidates considered



~20 reported

System-wide Indicators

Extent and Pattern

- Ecosystem Extent (T. Crawford and S. Terziotti)
- Human Population (T. Crawford)

Chemical and Physical Characteristics

- Nitrogen & Phosphorus Loading (T. Spruill)
- Total Inorganic Nitrogen Deposition (R. Dennis)
- Metals Standards Violations (L. Dubbs and M. Piehler)
- Water Quality Bacteria Standard Violations (L. Dubbs and M. Piehler)
- Ground-Level Ozone Concentrations (R. Dennis)
- Flows, Severity, Frequency, Duration of Droughts and Floods (T. Spruill)
- Ambient Air Temperature (D. Figurskey)
- Storm Frequency and Intensity (D. Figurskey)

Biological Components

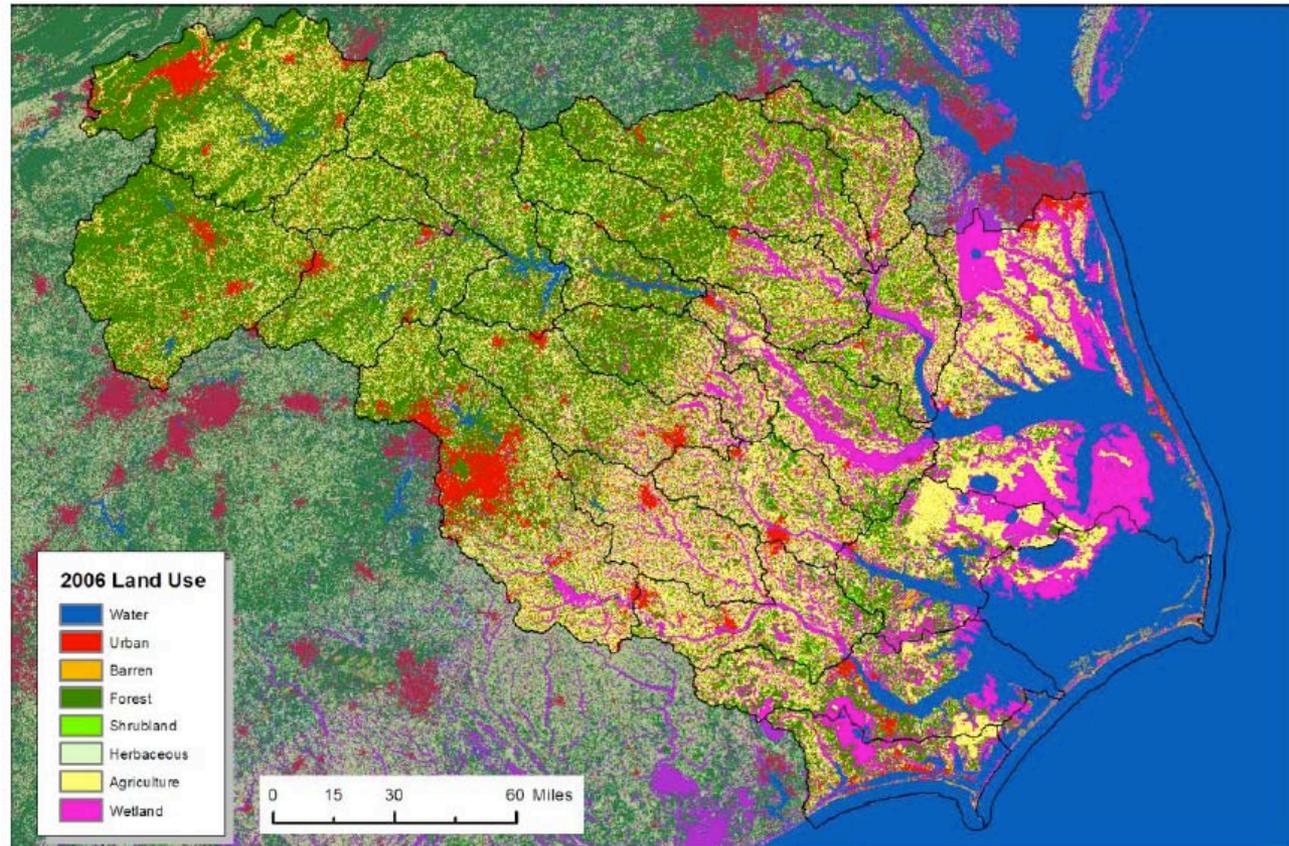
- River Herring Population Condition (D. Carpenter, W. Laney, and others)
- Shad Population Condition (D. Carpenter, W. Laney, and others)
- Sturgeon Occurrences & Population Status (D. Carpenter, W. Laney, and others)

Ecosystem Extent (Draft)

Tom Crawford and Silvia Terziotti

Metrics:

- Ecosystem Extent: Area and % of ecosystem types by basin and sub-basin for the year 2006 (**pictured**)
- Ecosystem Conversion: Total acres and % of change for selected ecosystem types by basin and sub-basin for change occurring during 1992-2001. Changes within the entire basin for 2001-2006.

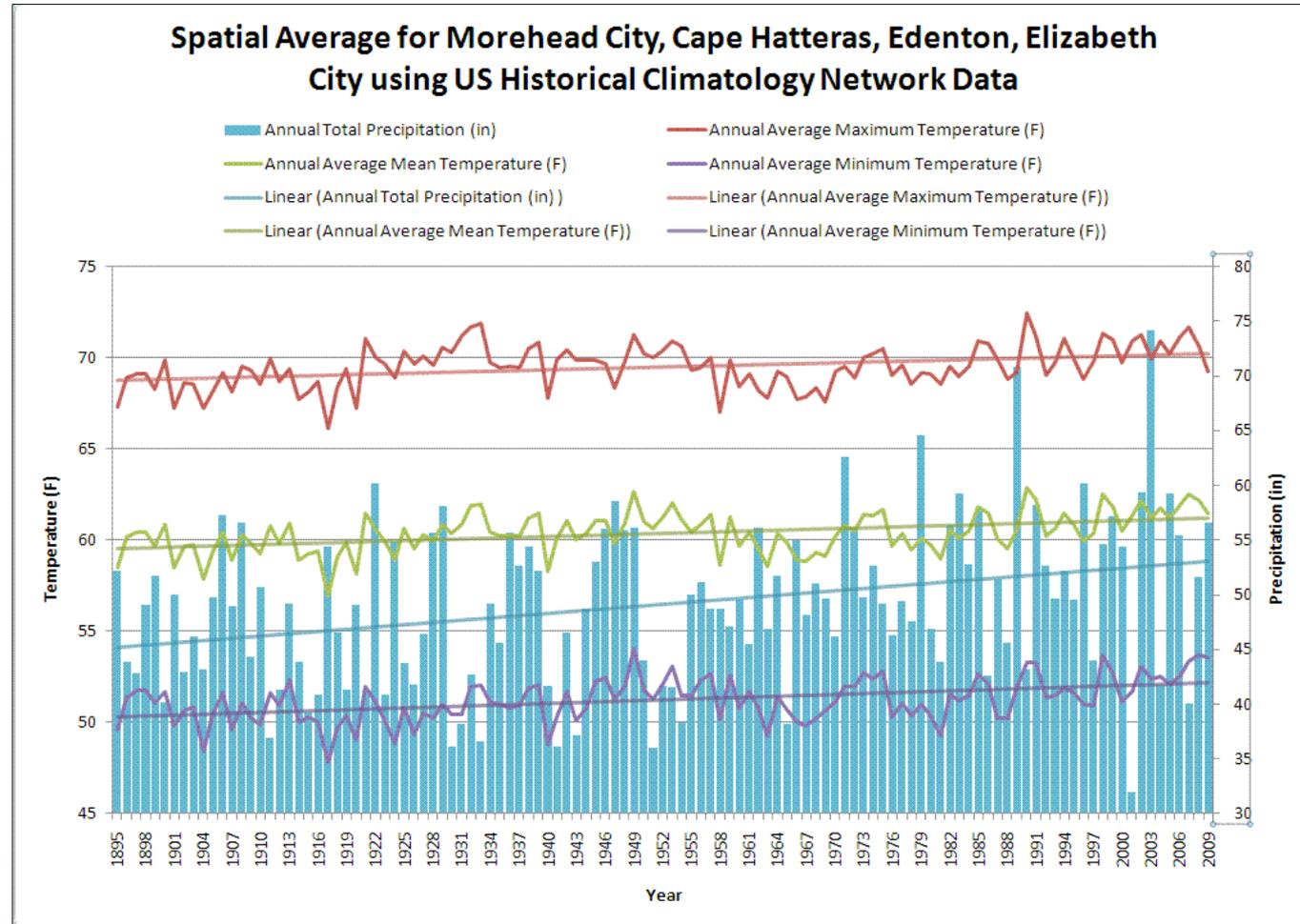


Air Temperature (Draft)

Darin Figurskey

Metrics:

- Change in annual avg. temperature, annual max. temperature, and annual min. temperature from 1895 to 2009



Data courtesy of the State Climate Office of North Carolina through the U.S. Historical Climate Network.

Coast, Sounds, and Near Marine Indicators

Extent and Pattern

- Eastern Oyster Bed Extent and Densities (D. Carpenter)
- SAV Extent by Density Class (D. Carpenter, D. Field, and J. Kenworthy)

Chemical and Physical Characteristics

- Chlorophyll-a Concentration (L. Dubbs and M. Piehler)
- Suspended Sediments (T. Spruill)
- Dissolved Oxygen Standard Violations (L. Dubbs and M. Piehler)
- Shoreline Change (R. Corbett and H. Mitasova, M. Overton, R. Oliver, and E. Hardin)
- Salinity Concentration ((L. Dubbs and M. Piehler)
- Relative Sea Level (L. Dubbs and C. Zervas)

Biological Components

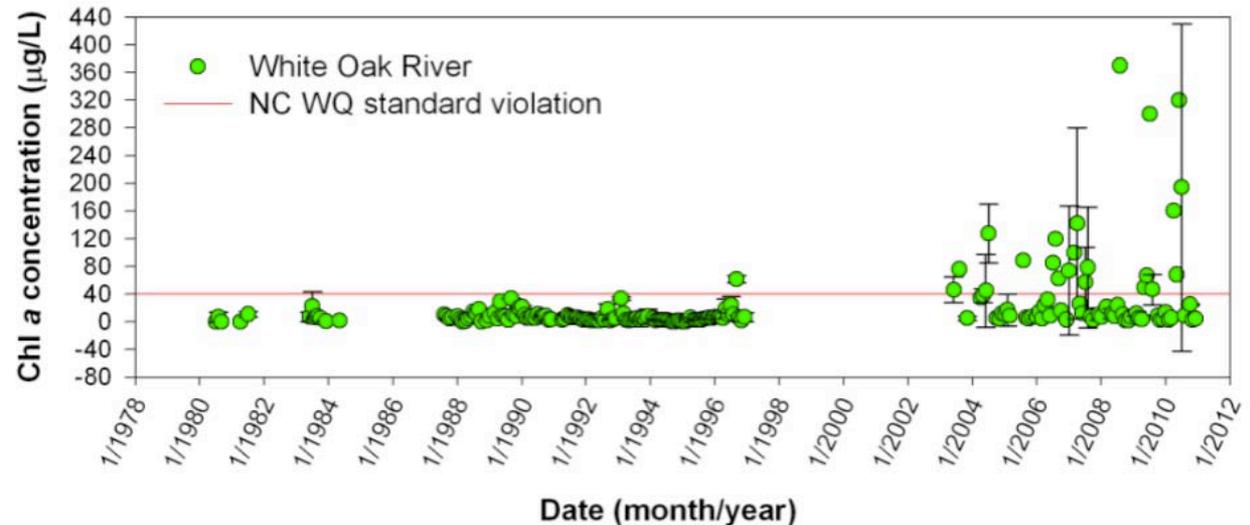
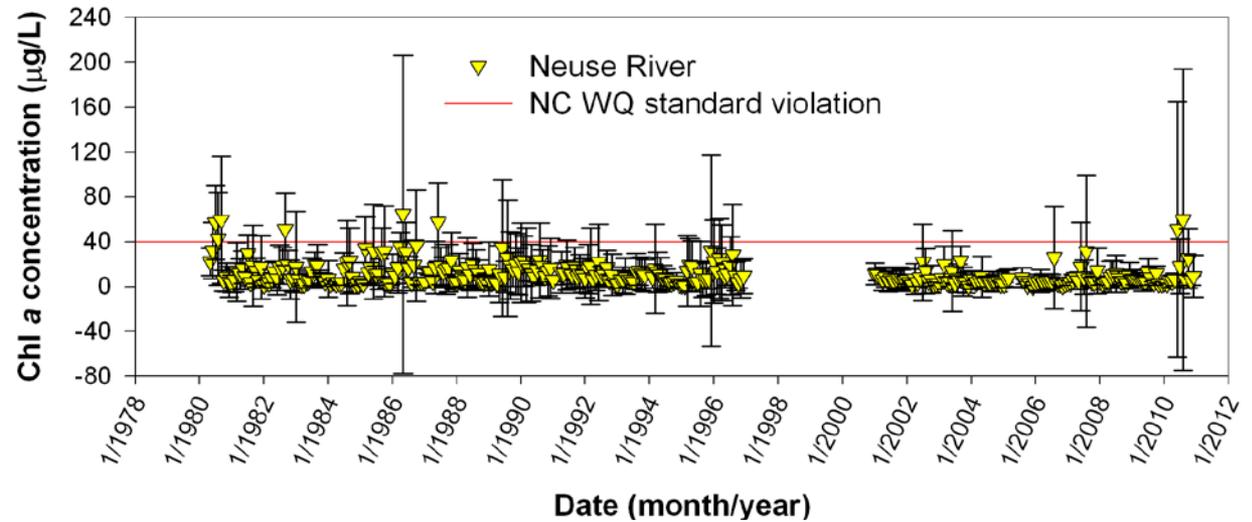
- Unusual Fish Mortalities (W. Laney)
- Phragmites Extent (D. Carpenter, K. Havens)

Chlorophyll a (Draft)

Lindsay Dubbs and Michael Piehler

Metrics:

- Chl a concentrations in fresh and estuarine surface from 1980 to 2010 (pictured)
- Listed 303 (d) chl a violations in fresh and estuarine water in 2010

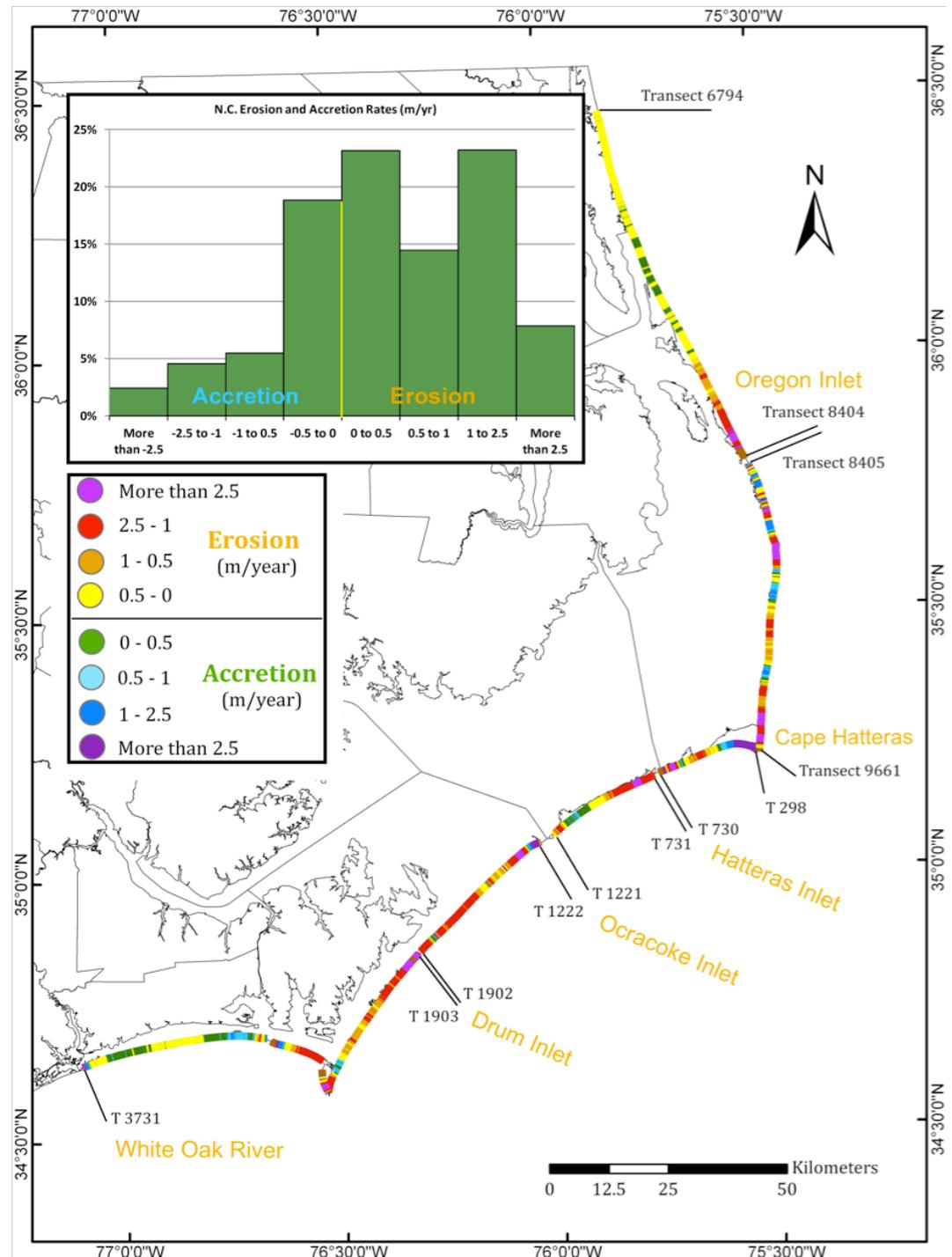


Ocean Shoreline Migration (Draft)

Helena Mitasova,
Margery Overton,
Ross Oliver, Eric
Hardin

Metrics:

- Long-term *shoreline erosion/accretion rate* (m/yr) based on the 1933-52 and 2009 shorelines (**pictured**)
- Short-term *range of shoreline position* (m) for the years 1996-2008



The Ecosystem Assessment as a Tool

Data sets summarized

→ reference points for moving forward with research, management, and education

Temporal frequency and spatial extent of monitoring efforts provided

→ target monitoring efforts: expand and fill gaps

Data sources provided

→ springboard for research and collaboration

THANK YOU!

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