North Carolina Estuaries

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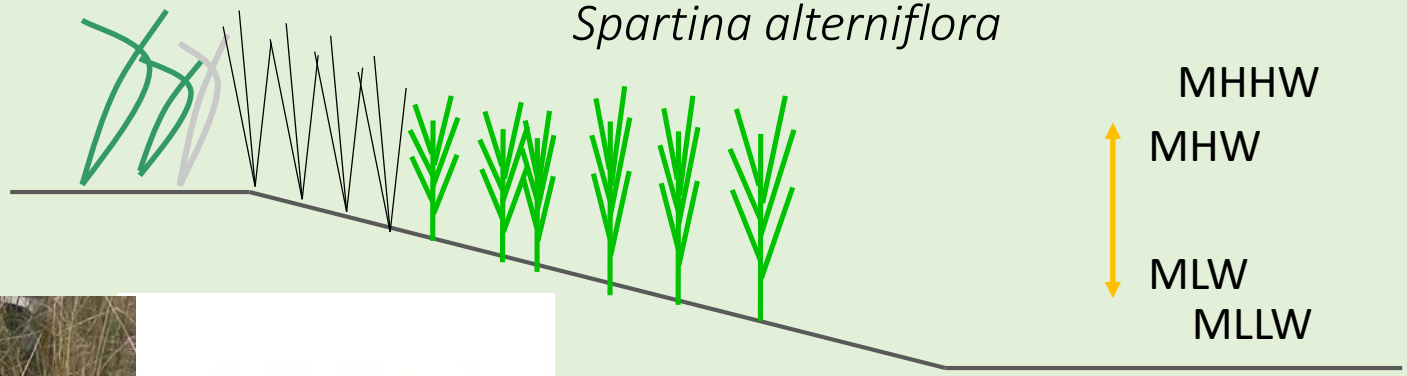
North Carolina Estuaries

NC Estuarine Wetlands

Juncus roemerianus
Distichlis spicata

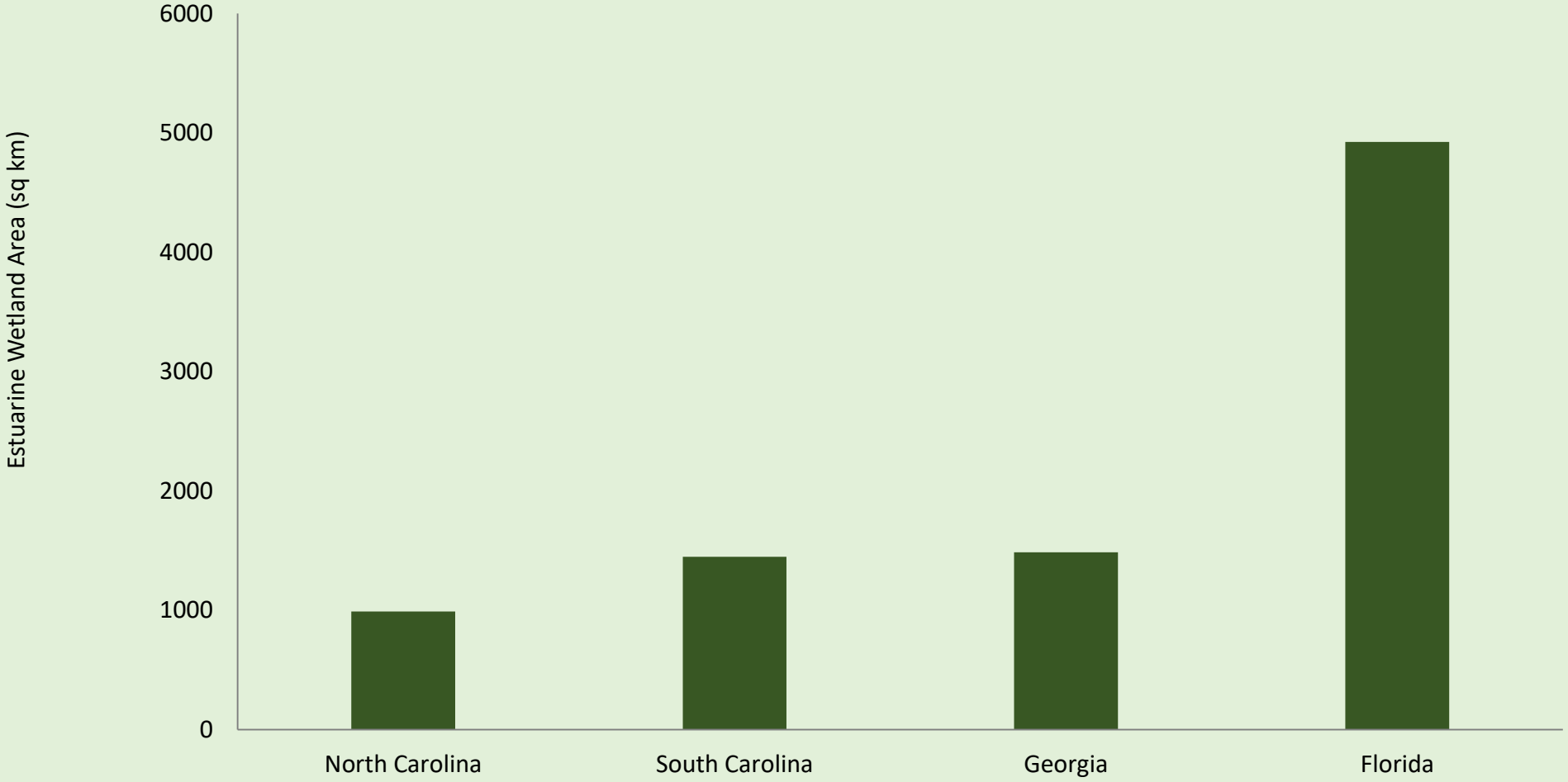
S. patens
Salicornia virginica

Spartina alterniflora



- In NC, estuarine tidal range varies between 20 cm and 100 cm, increasing N to S
- Wind tides can significantly extend marsh distribution

Southeastern Estuarine Wetland Coverage



Source: NOAA C-CAP 2010

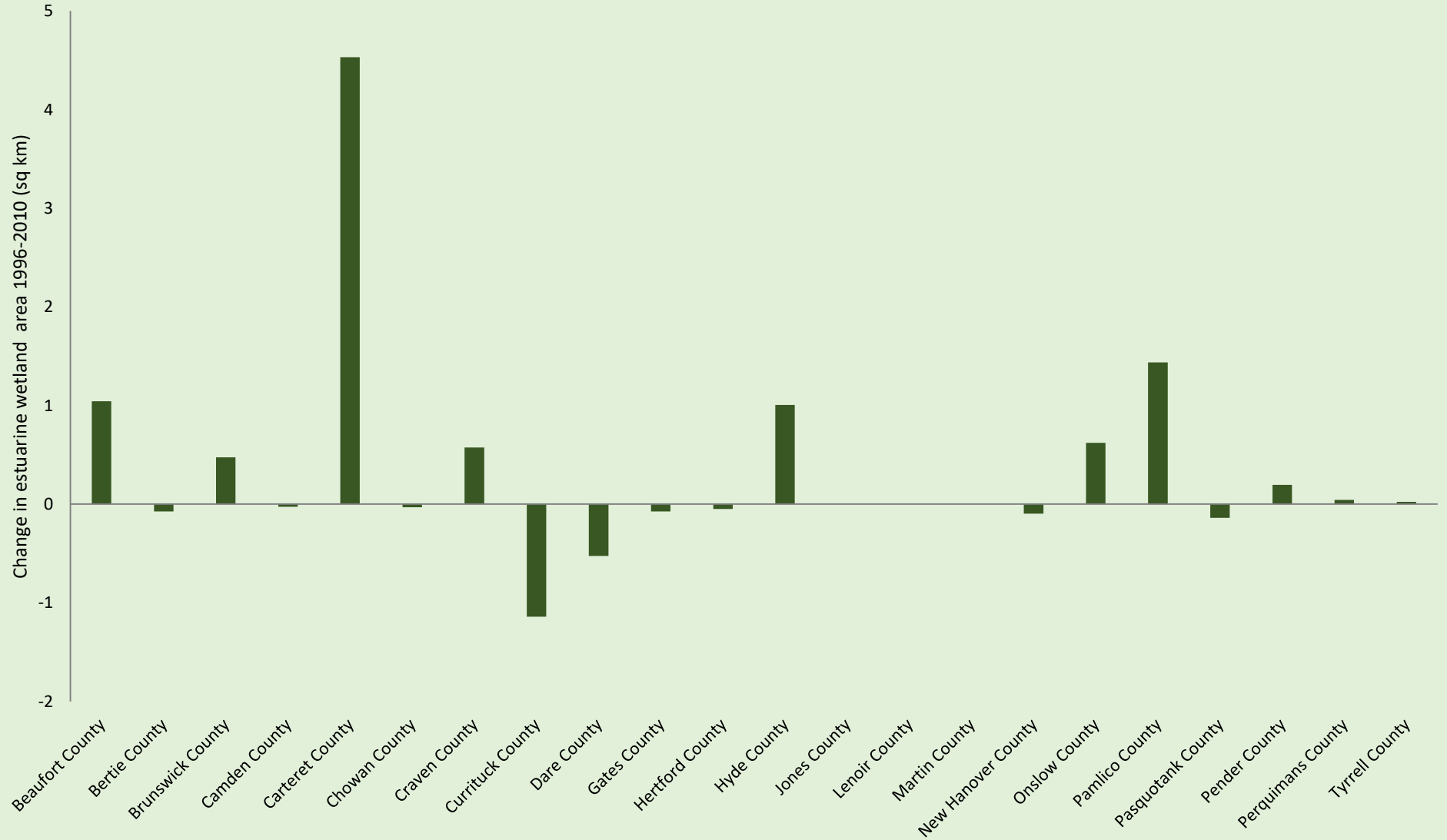
Coastal development

Phragmites australis

Erosion

Threats to estuarine wetlands

NC Estuarine Wetland Change



Source: NOAA C-CAP 2010

NC Oyster Reefs

Threats to Oyster Reefs

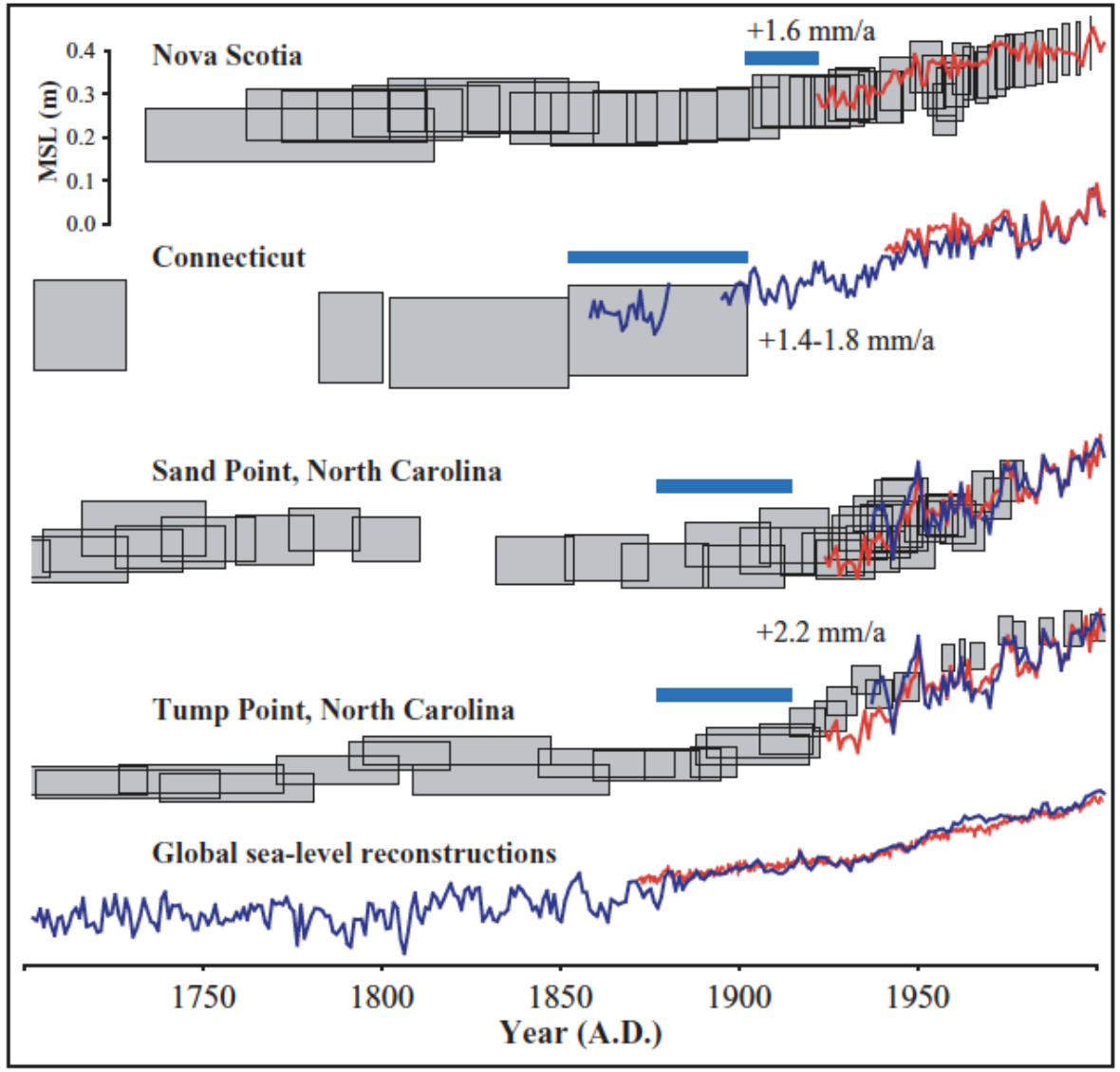
Predator range shifts

Wave energy

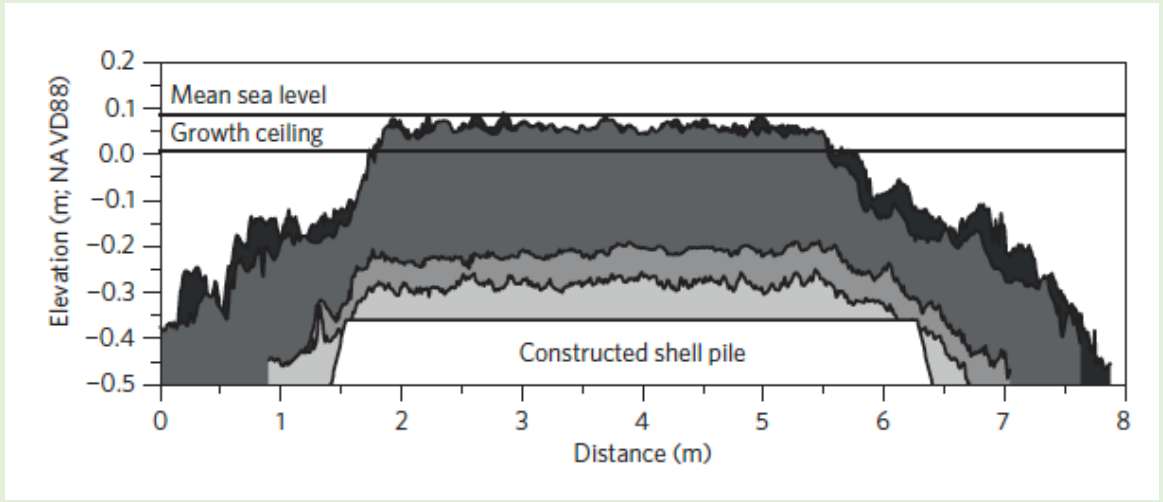
Storms

Harvest

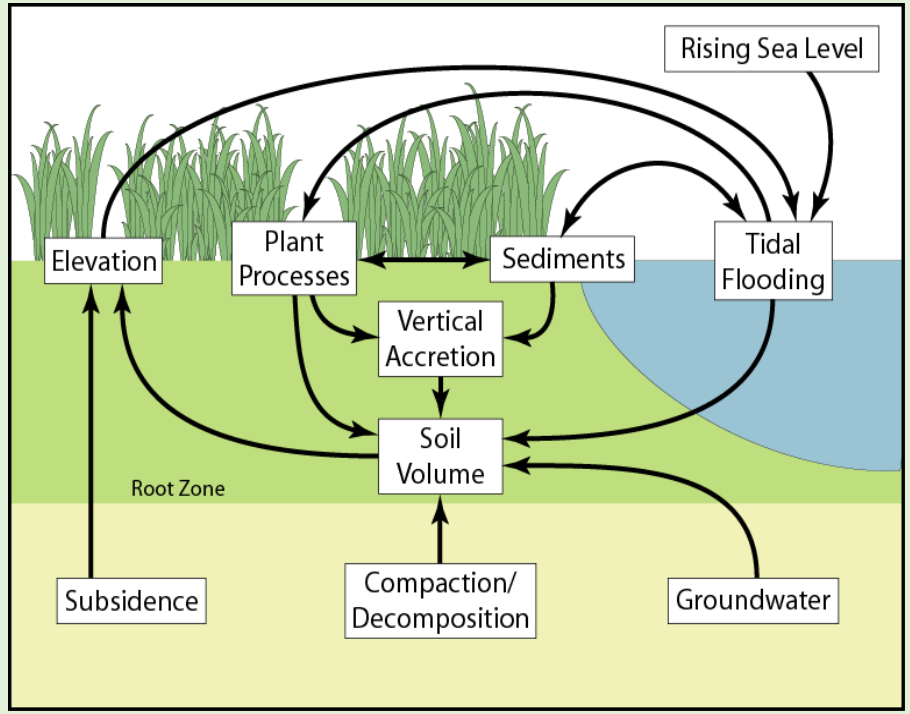
Sea Level Rise



Kemp et al. 2009



Rodriguez et al. 2014



Modified from: Cahoon, DR., J.W. Day, Jr., and D. J. Reed. 1999.

Wetland Management and Restoration Efforts

- From 2006 to 2015, more than 5,000 acres of estuarine wetlands have been restored in North Carolina, funded directly by Federal agencies.
- This restoration does not include mitigation-driven restoration efforts or state or local-funded restoration.
- Many of the funded projects are living shoreline projects, completed by groups such as the NCCF and TNC.

Gittman et al. in prep, SNAPP Coastal Restoration Working Group

Oyster Management and Restoration Efforts

- From 2006 to 2015, more than 175 acres of oyster reefs have been restored in North Carolina, funded directly by Federal agencies.
- This restoration does not include mitigation-driven restoration efforts or state or local-funded restoration.
- Funded projects include subtidal sanctuaries and living shoreline projects, completed by groups such as the NCCF and TNC.

Grabowski et al. in prep, SNAPP Coastal Restoration Working Group

Research Needs

- Long–term performance of restoration approaches and effectiveness in sustaining ecosystem services over time
- Testing of alternative materials to enhance restoration efforts
- Resilience of extant and restored habitats to storm events, sea level rise, and other environmental stressors
- Applicability of restoration techniques used in NC to other regions

Pre-Florence

Post-Florence

Acknowledgements

SNAPP Coastal Restoration Working Group Members

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NORTH CAROLINA MARINE FISHERIES

NOAA

NSF

NC COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

The Nature Conservancy
Protecting nature. Preserving life.™

Thank You!