

# TIDAL WETLAND PROJECT UPDATES & MARSH MIGRATION --EPA FUNDED PROJECTS

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WETLAND WORKSHOP: KEEPING UP WITH SHORELINE CHANGES

THURSDAY JULY 14, 2022

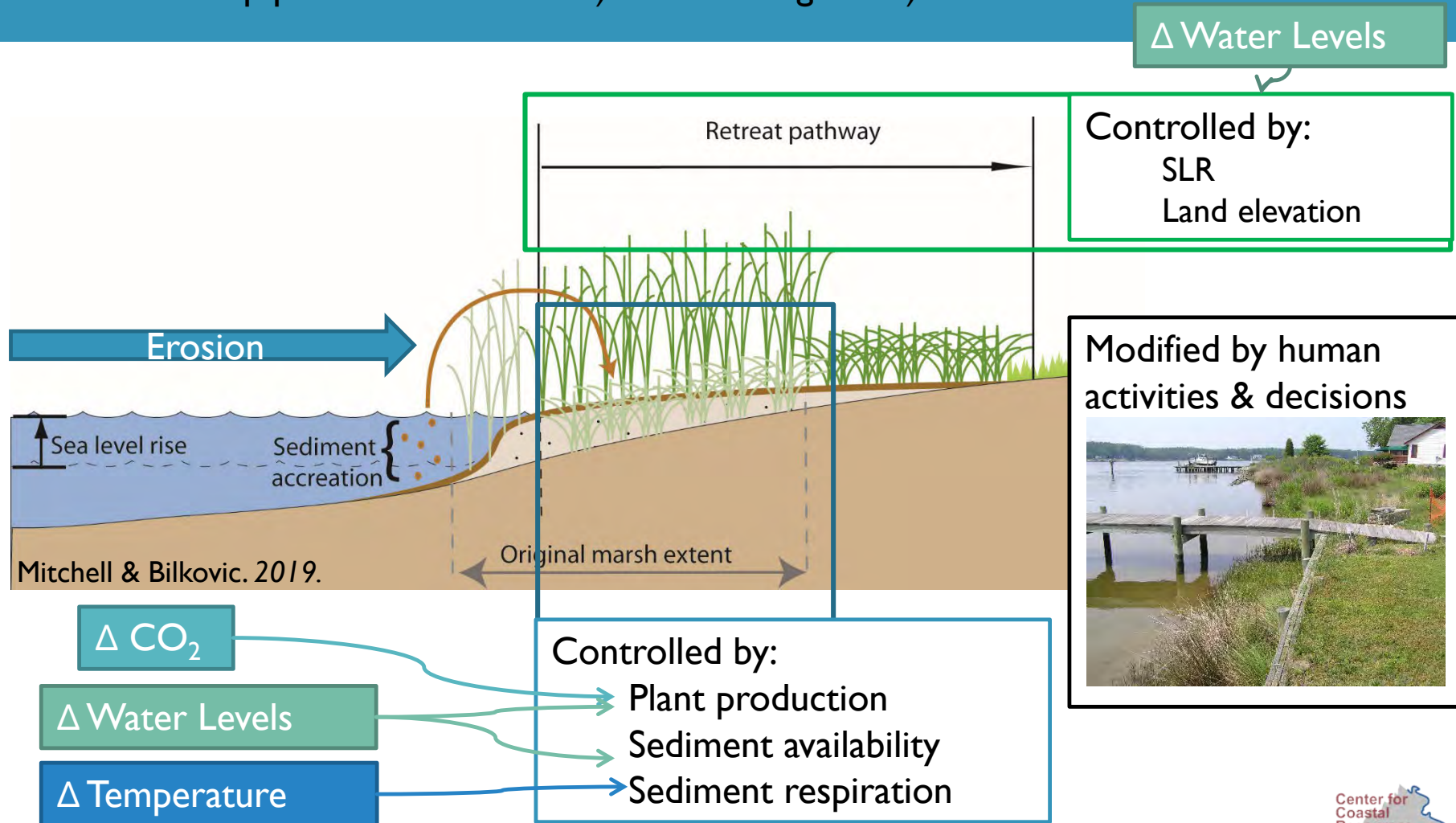
VIRGINIA INSTITUTE OF MARINE SCIENCE

GLOUCESTER POINT, VA



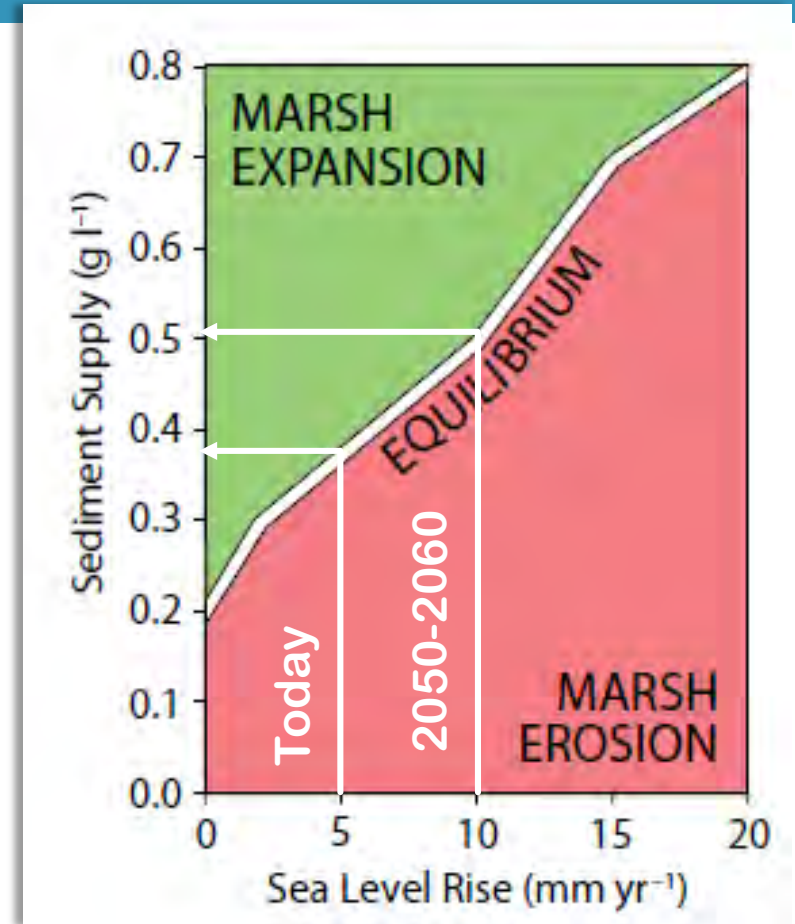
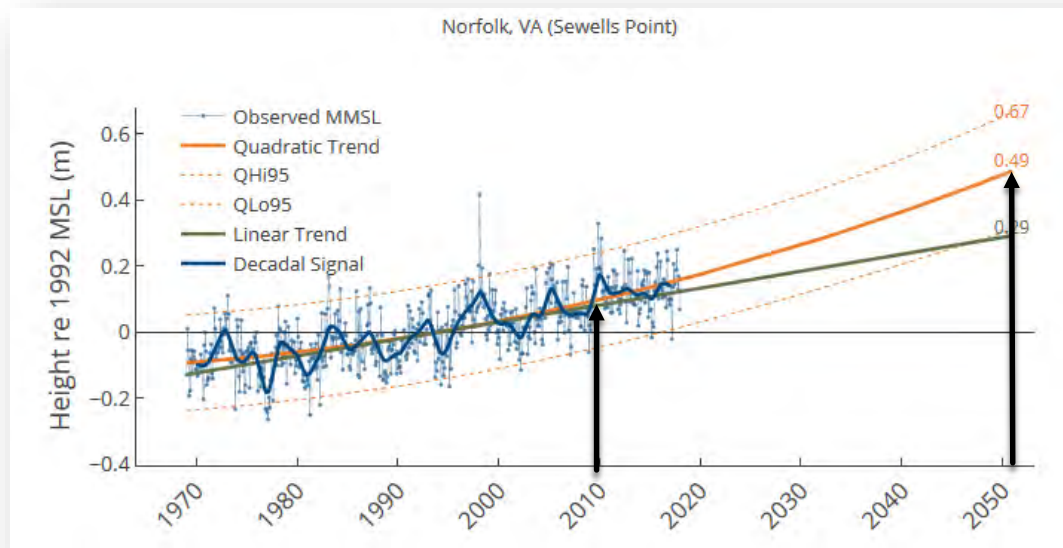
# RESPONSE OF MARSHES TO SEA LEVEL RISE

To keep pace with sea level: a) Marshes migrate b) Marshes accrete



# MARSH ACCRETION AFFECTED BY:

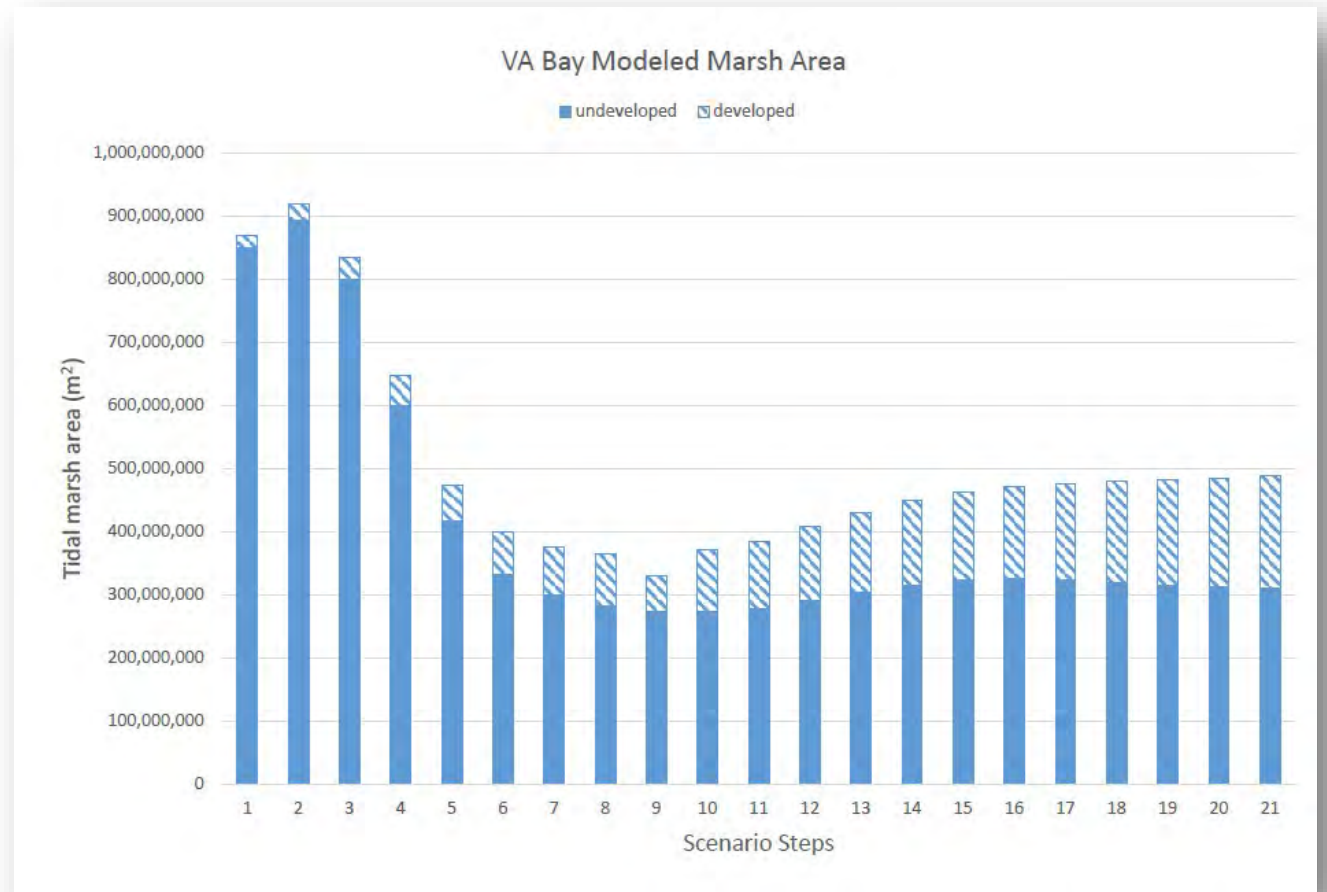
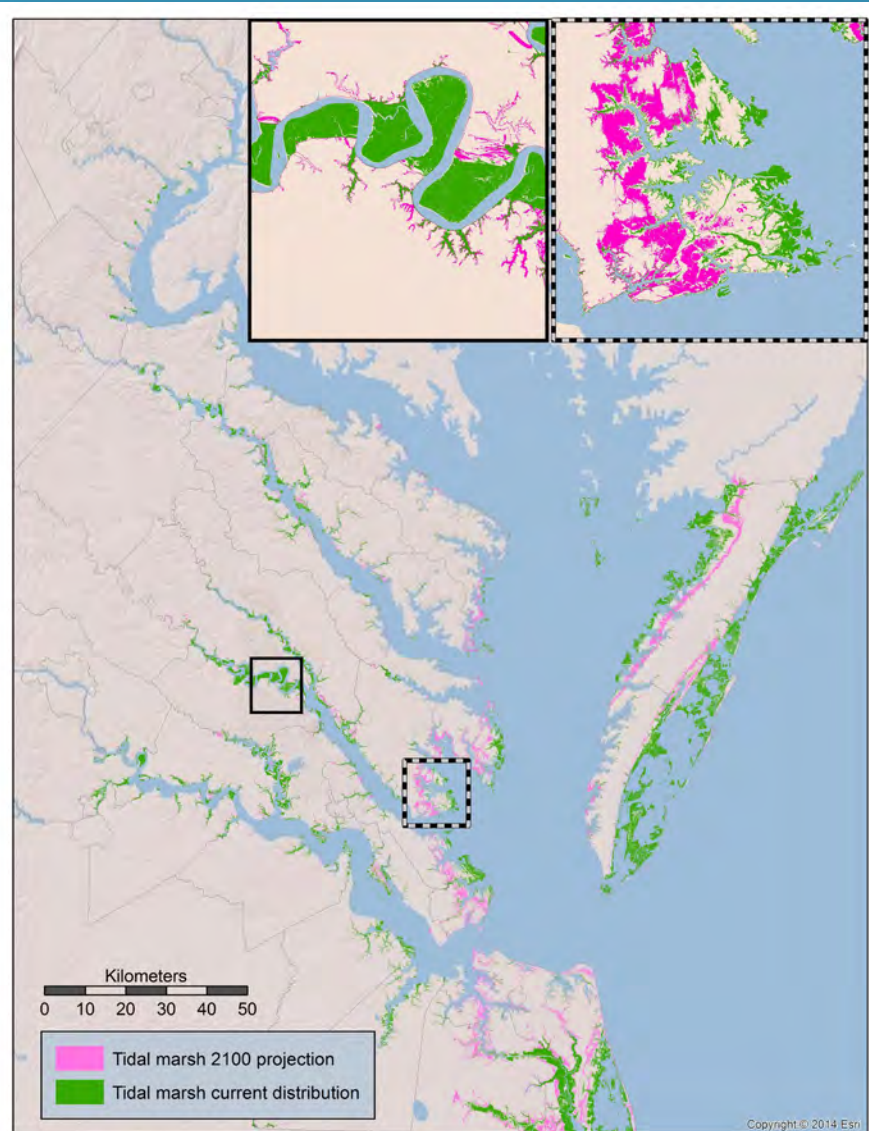
- Sediment supply coming from
  - Watershed
  - Adjacent lands (via runoff or tidal waters)
  - Marsh front edge erosion
- Current management goals are to restrict sediment in waters



# MARSH MIGRATION

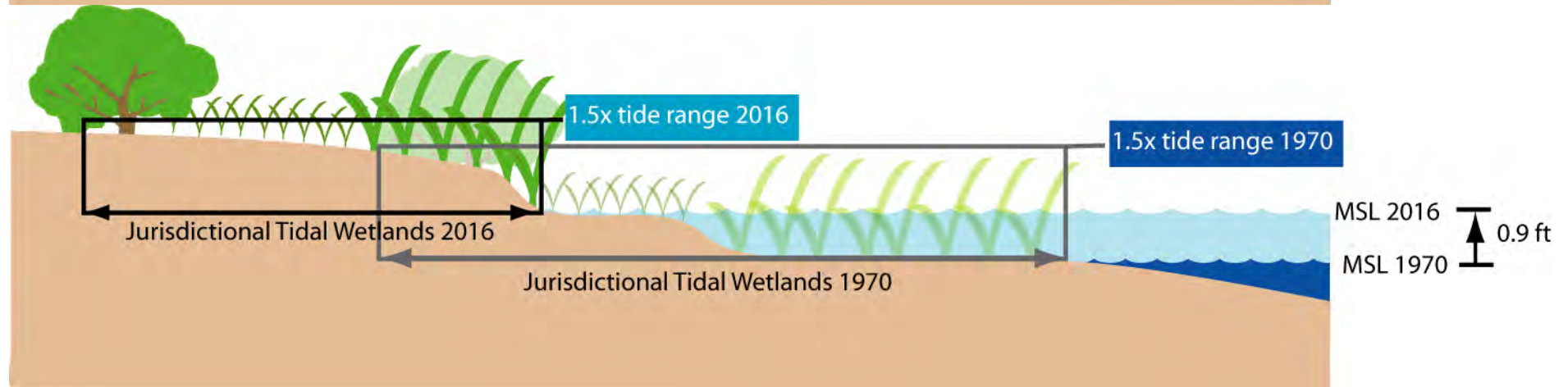
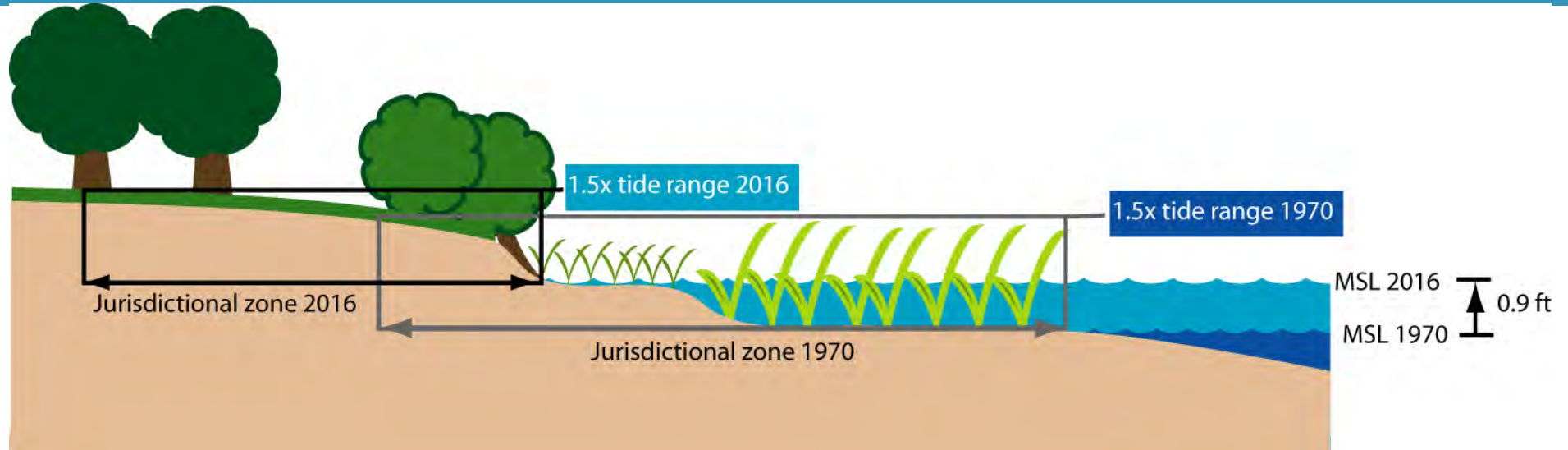


# CHANGING MARSH AREAS IN RESPONSE TO SEA LEVEL RISE



Mitchell, M., Herman, J. and Hershner, C., 2020. Evolution of tidal marsh distribution under accelerating sea level rise. *Wetlands*, 40(6), pp.1789-1800. Funded in part through U.S. EPA's Wetland Program

# REGULATING MIGRATING MARSHES?

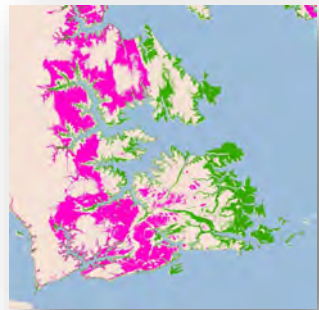


# MARSH RISK ASSESSMENT

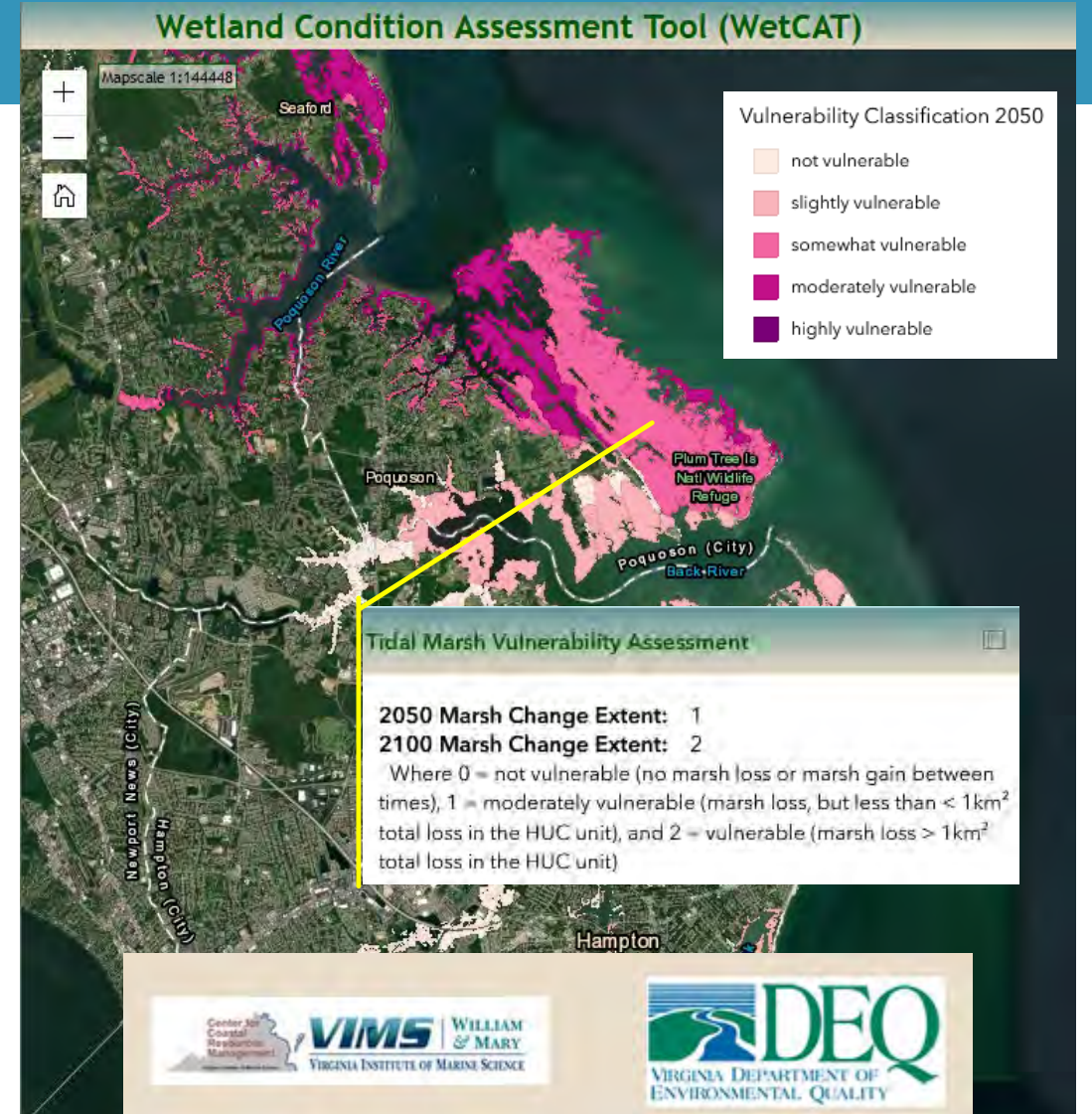
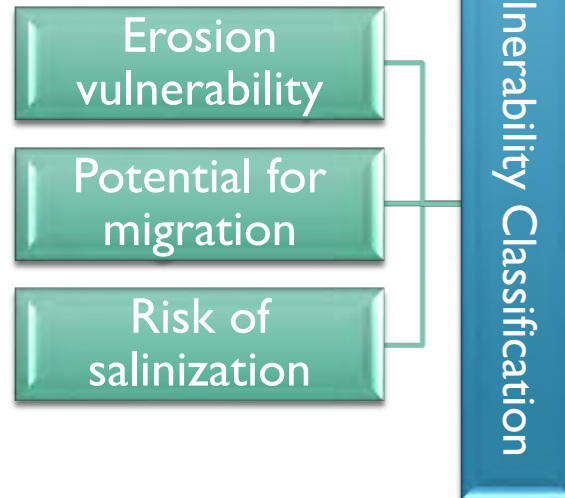
CD96347001-0, CD963819-01-1

## Wetland Condition Assessment Tool (WetCAT) (Governor's Technology Award and Environmental Council of States Award winner)

Funded in part through U.S. EPA's Wetland Program Development Grants, WetCAT can provide information for assessing comprehensive and cumulative wetland stress condition at multiple scales.

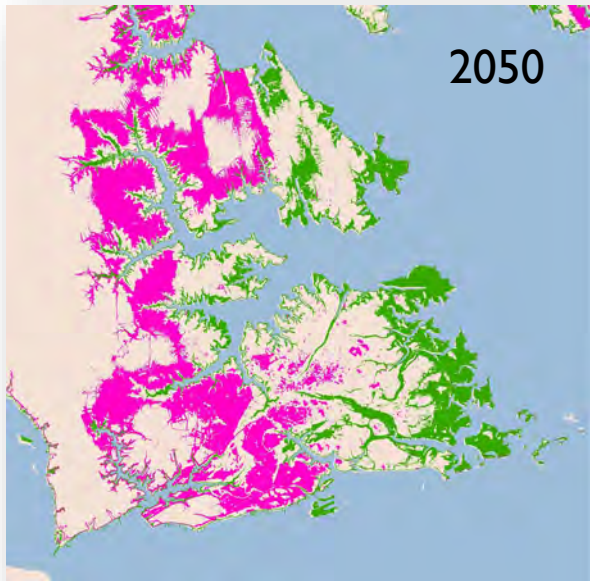


2050  
→  
2100



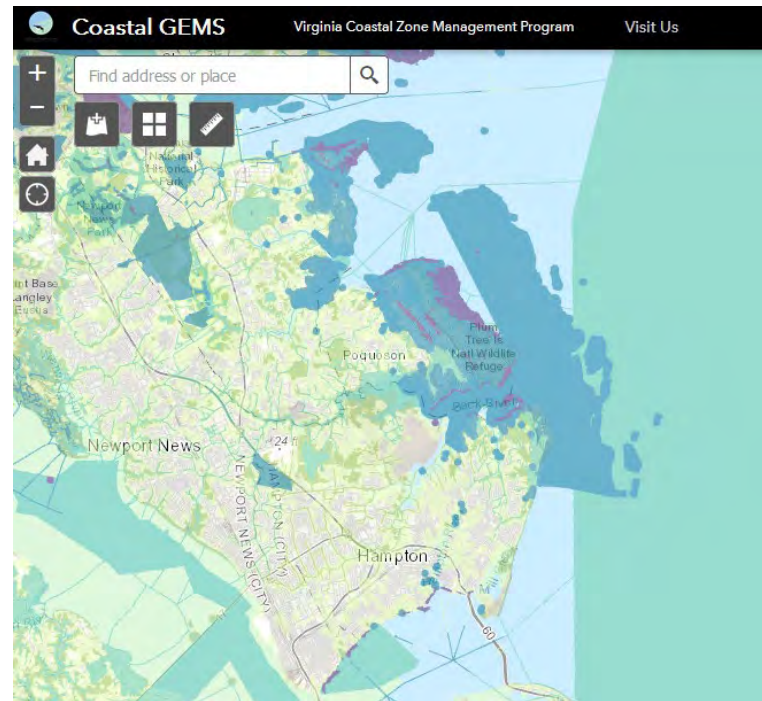
# CONSERVATION PRIORITIZATION

Migration potential



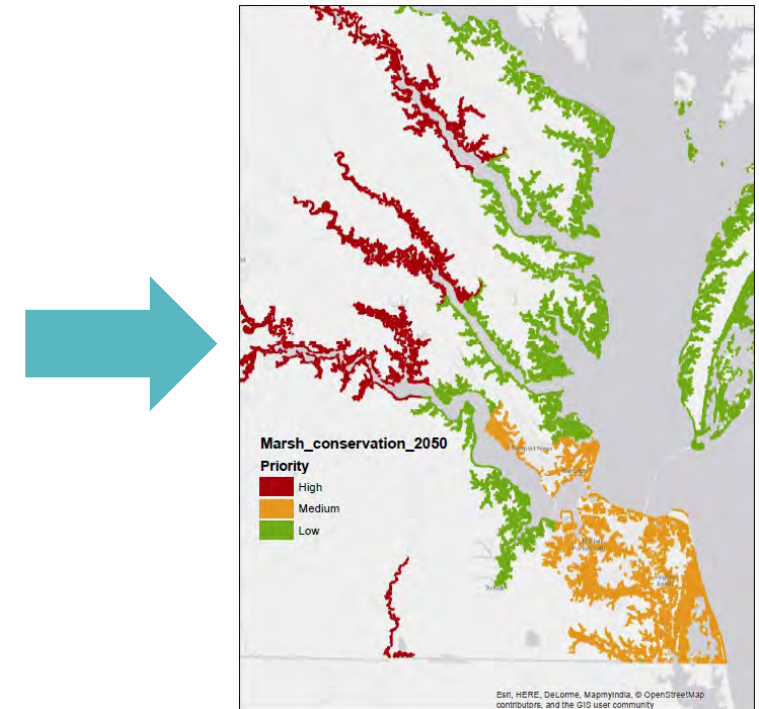
Mitchell, et al., 2020.

High Value conservation lands



**Virginia Ecological Value Assessment (VEVA)**  
Virginia Coastal Zone Management Program, 2018

Marsh Migration Conservation Priorities



Conservation priorities for promoting marsh migration “DNH\_marsh\_conservation\_2050” shapefile. Developed by Center for Coastal Resources Management, Virginia Institute of Marine Science. Nov 2018. Contact M. Mitchell ([molly@vims.edu](mailto:molly@vims.edu)) or J. Herman ([herman@vims.edu](mailto:herman@vims.edu)).



# BIRD SURVEY RESULTS (BRYAN WATTS, CENTER FOR CONSERVATION BIOLOGY)

- Comparison of results from 1992-2021 show that abundances across all groups declined over time and that the composition of the assemblage shifted toward salt marsh obligates.
- Community-wide and group occupancy and abundance patterns show declines by all groups but higher declines for facultative marsh nesters and obligate marsh nesters compared to salt marsh nesters

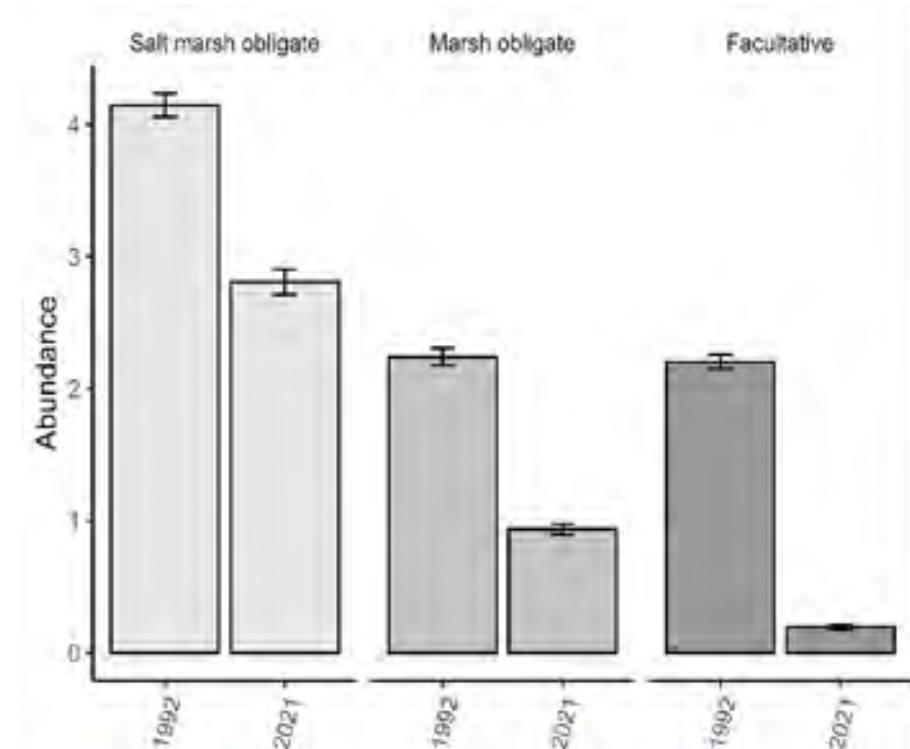


Figure 1. Abundance patterns for marsh bird usage of species surveyed within the Lower Chesapeake Bay. Bars represent mean values +/- 1 standard error unit.

# ADDING BIRD HABITAT INTO THE MARSH ASSESSMENT

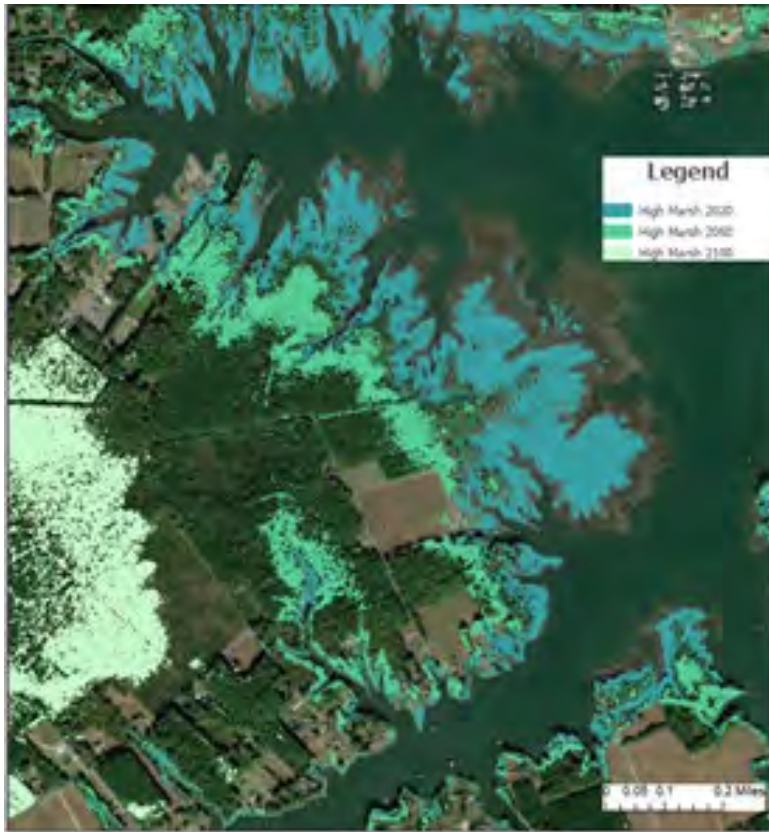


Figure 1. Projected high marsh habitat for 2020, 2050, and 2100 in an area of Gloucester County.

- Total projected high marsh habitat area declined over time from 251 km<sup>2</sup> (2020) to 133 km<sup>2</sup> (2050) and 125 km<sup>2</sup> (2100).
- However, there were significant variations between localities. The largest losses were predicted in localities with significant amounts of current potential habitat, such as Accomack, Northampton, and Virginia Beach.

Adding the Habitat Vulnerability into the overall Marsh Vulnerability Scoring had a slight impact on the composite score:

- Fewer marshes are Highly Vulnerable and Not Vulnerable after additional category added.
- Marshes tended to move into the Somewhat and Slightly categories.

# CURRENT PROJECT

- The goal of this project is: 1) a detailed and recent inventory of the extent and composition of coastal wetlands and 2) an understanding of the ecosystem functions supported by the coastal wetlands.
- Key products will be *i)* development of a remote tidal marsh monitoring protocol, *ii)* an analysis of newly migrated marsh habitat function for a sentinel marsh obligate species, and *iii)* a framework for anticipating and incorporating climate change impacts into management options for sustaining coastal wetland acreage.



THANK YOU!

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