Marsh Migration: A Survival Mechanism to A Changing Climate

Division of Watershed Stewardship

Wetland Monitoring and Assessment Program

Olivia Allread – Outreach and Communications Coordinator

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Wetland Monitoring and Assessment Program

- Track health and acreage of wetlands across Delaware

  (not the permit department!)

- Monitoring, research, restoration, conservation, stabilization, BMP's, etc.

  (lots of field work)

- Collaborate with government agencies, businesses, non-profits and universities

- Education and outreach

  (trainings, workshops, communities/HOAs, school groups, public events, municipalities, etc.)

Ecological superheroes!

The Basics: What is Marsh Migration?

- The act of tidal wetlands moving from their current locations, **due to the impacts from climate change**, towards higher and drier land to avoid drowning
  - *Areas that wetlands migrated from are eventually flooded and become open water*

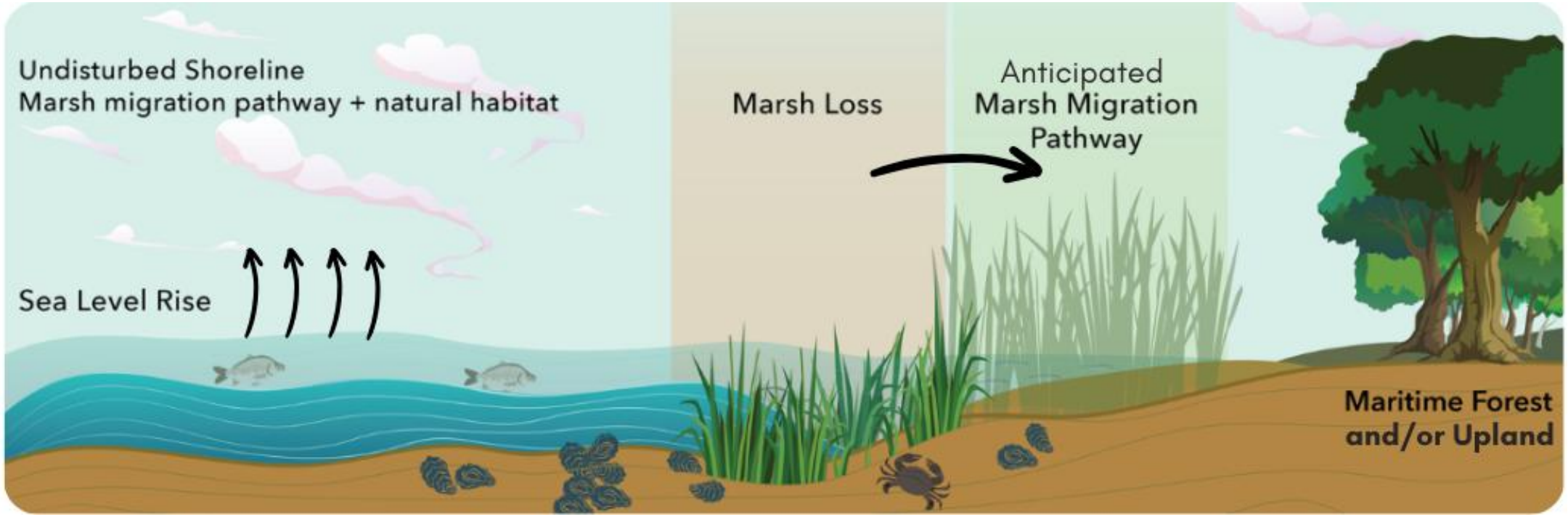

Image Credit: The Georgia Conservancy

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Dead trees near wetlands and their upland edges AKA “ghost forests”

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Flooded areas or open water sections within wetland AKA ponding

Image Credit: Virginia Institute of Marine Science (VIMS)

Image Credit: Carolina Wetlands Association

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Plants growing further inland or an ongoing shift of vegetation aka transition zones

Image Credit: Virginia Institute of Marine Science (VIMS)

Image Credit: United States Geological Survey (USGS)

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But Why Are They Moving?

- Sea level rise (SLR)
  - *As waters rise, saltwater pushes further inland and drowns existing plants that can't keep up vertically, prompting them to move onto higher ground*

- Increased storm surge
  - *Dangerous, abnormal rise of seawater above normal tide levels inundate upland areas, increasing salinity and killing non-marsh plants, creating space for marsh vegetation to establish*

- Groundwater changes
  - *Drought, development, vegetation die-off, lots of rainfall etc.*

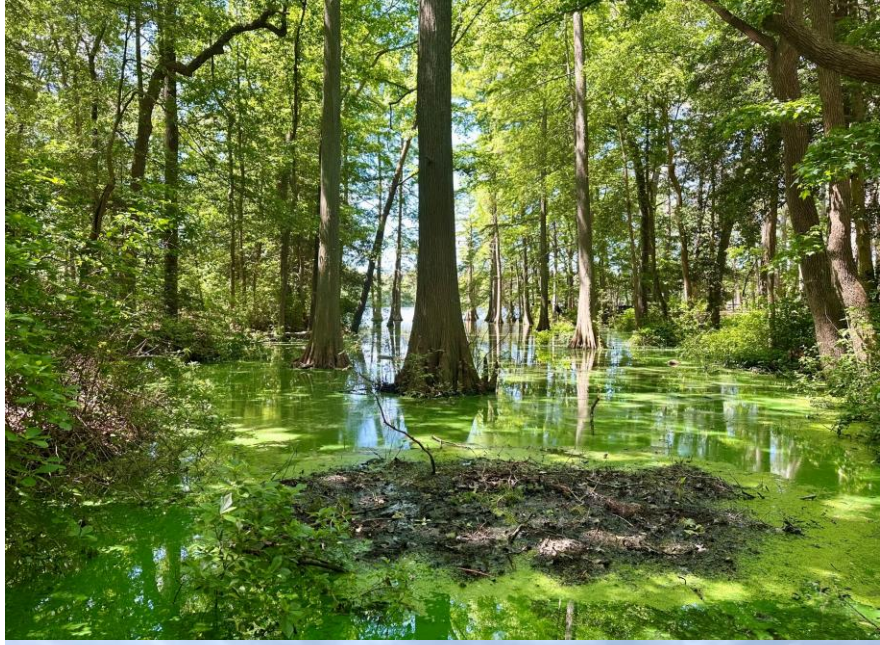
ALL IMPACTS FROM CLIMATE CHANGE!

A Survival Mechanism Important to All

- **Remember – wetlands are ecological superheroes!**
  - *Erosion control*
  - *Habitat preservation*
  - *Carbon storage*
  - *Storm protection*
  - *Water quality improvement*

Knowing where these habitats could migrate to is critical for land management, property owners, and to ensure that wetlands have a future along our coasts!

This landward movement can only happen where there are no natural or human-made physical barriers in the way, such as seawalls or roadways



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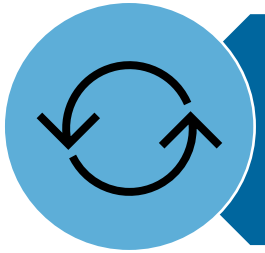
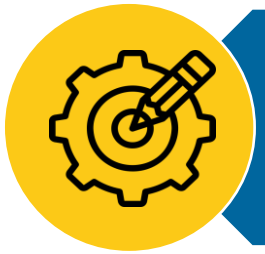
Marsh Migration in the First State

Recent DNREC study to where marshes might migrate, **a suitability analysis**



Update 2017 DNREC marsh migration model

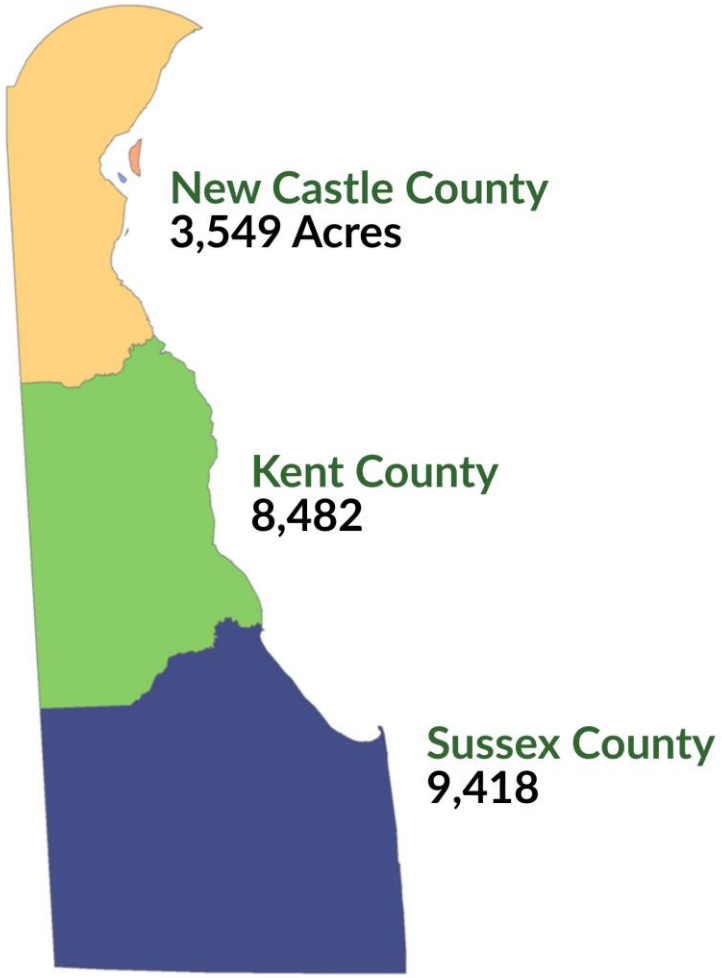


Enable access to landowners and professionals

Deliver information and resources to key stakeholders

- Ground truthing
- Inputting layers of data
- SLR predictions
- Land use and land cover information
- Distance to tidal wetland
- Resources from other states

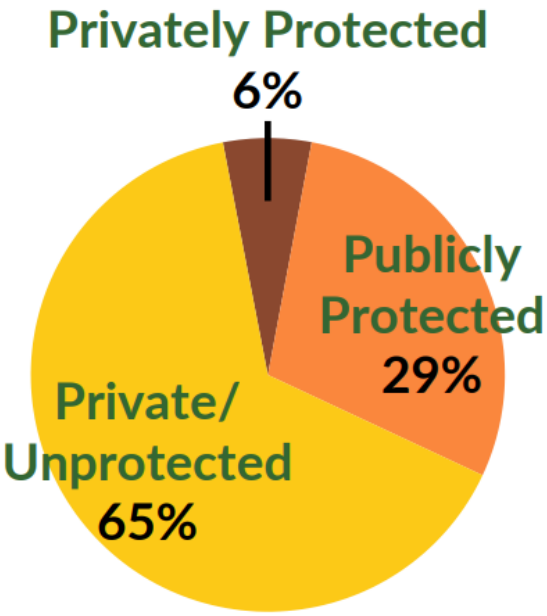
Highly Suitable Acres by County

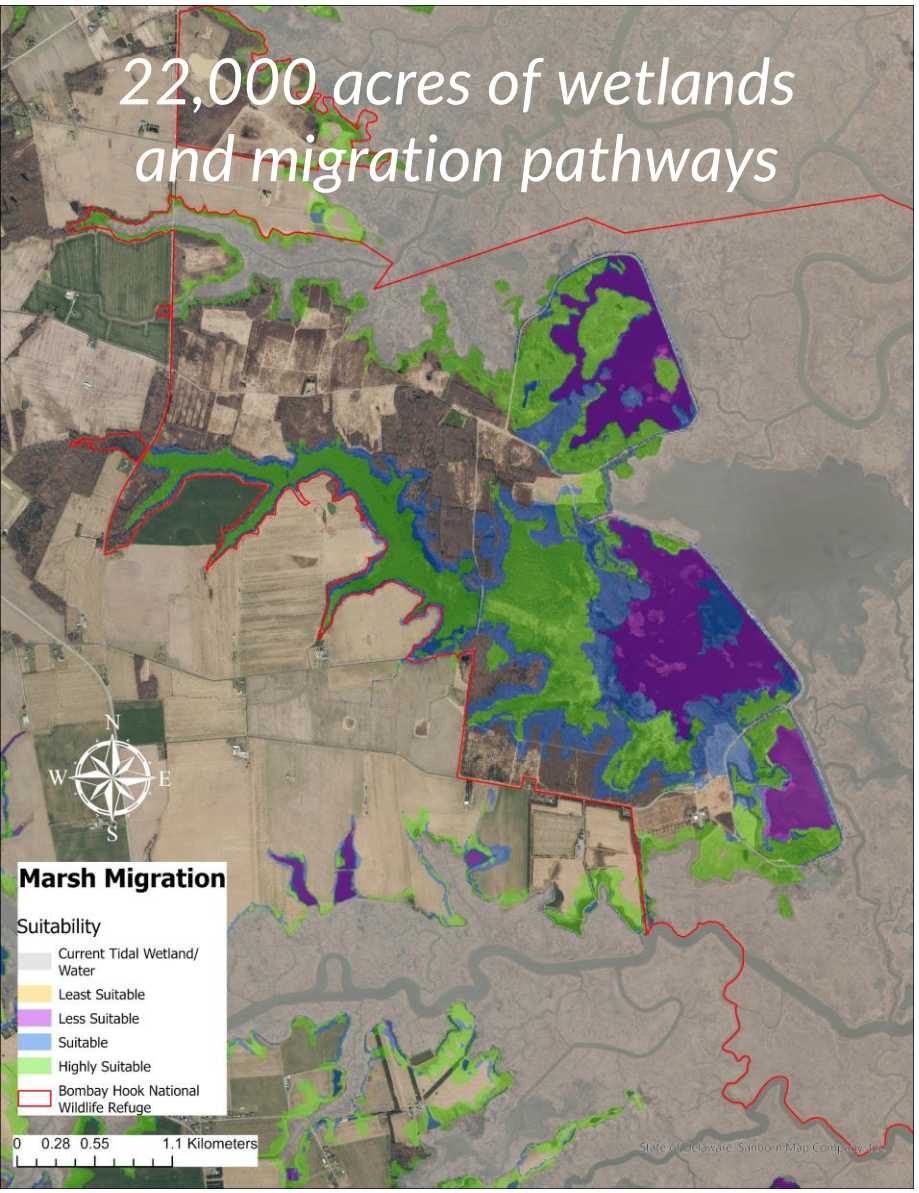


Major findings

- *Highly suitable areas by county (areas scoring 10-12 in the analysis)*
- *Non-tidal wetlands and agriculture lands make up 70% of highly suitable areas*
- *Slightly more than half of the non-tidal wetlands that were highly suitable for marsh migration are currently unprotected*

Suitability + Ownership Status





Bombay Hook National Wildlife Refuge

- NWRs are some of the largest natural areas found throughout the state. BHNWR has extensive highly suitable land for marsh migration, with very little areas being not suitable
  - *The combo of low elevations and natural land uses has provided pathways ranked from 7-12*

- This area is already managed for wildlife and has environmental protocols for conservation and preservation put in place
  - *Could be a prime example on how to work with marsh migration and integrate proper land-use decisions into management strategies*

The Next Steps: How Marsh Migration Impacts You

Gather Information

Dig into the Report and Mapper

Open to Feedback

Continue Partner Involvement

Share Resources

Build Your Coastal Resiliency

Webpage and Digital Content

Education and Outreach

Outreach and Connection

Prioritization of Land Areas

Land Management Adjustments

Targeted Messaging

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Thank You!

Follow us!

@DNRECwetlands

Olivia.Allread@delaware.gov

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