Promoting Collaborative Marsh Adaptation Projects

October 22, 2024

CBP Climate Resiliency Workgroup – Marsh Adaptation Working Meeting with Envision the Choptank Advancing Large-Scale Restoration Working Group

Facilitator: Julie Reichert-Nguyen, NOAA (julie.reichert-nguyen@noaa.gov)

Planning Team:
Climate Resiliency Workgroup: Jamileh Soueidan, Nicole Carlozo, Taryn Sudol, Molly Mitchell, Pam Mason
Envision: Joanna Ogburn, Emily Thorpe, Hilary Gibson, Matt Pluta, Alan Girard, Carrie Decker
Others: John Wolf (CBP GIS Team), Lauren Taneyhill (NOAA)

Chesapeake Bay Program
Science. Restoration. Partnership.

MARYLAND DEPARTMENT OF NATURAL RESOURCES

NOAA FISHERIES

USGS science for a changing world

Skeo

Meeting Goals

- Learn about marsh adaptation strategies with coastal resilience and marsh experts.
- Use the Marsh Adaptation Mapper to consider marsh and social vulnerabilities under different sea level rise scenarios.
- Identify marsh adaptation opportunities, challenges, and potential restoration and/or protection projects that align with Envision the Choptank partner interests.

Agenda

Before Lunch

- Meeting Goals
- Envision the Choptank background
- Choptank R. marshes
- Marsh adaptation presentations

After Lunch

- Intro to data in marsh adaptation mapper
- Marsh adaptation project scoping exercise - breakout groups
- Report outs on marsh adaptation ideas from scoping exercise
- Discuss next steps

Presenters

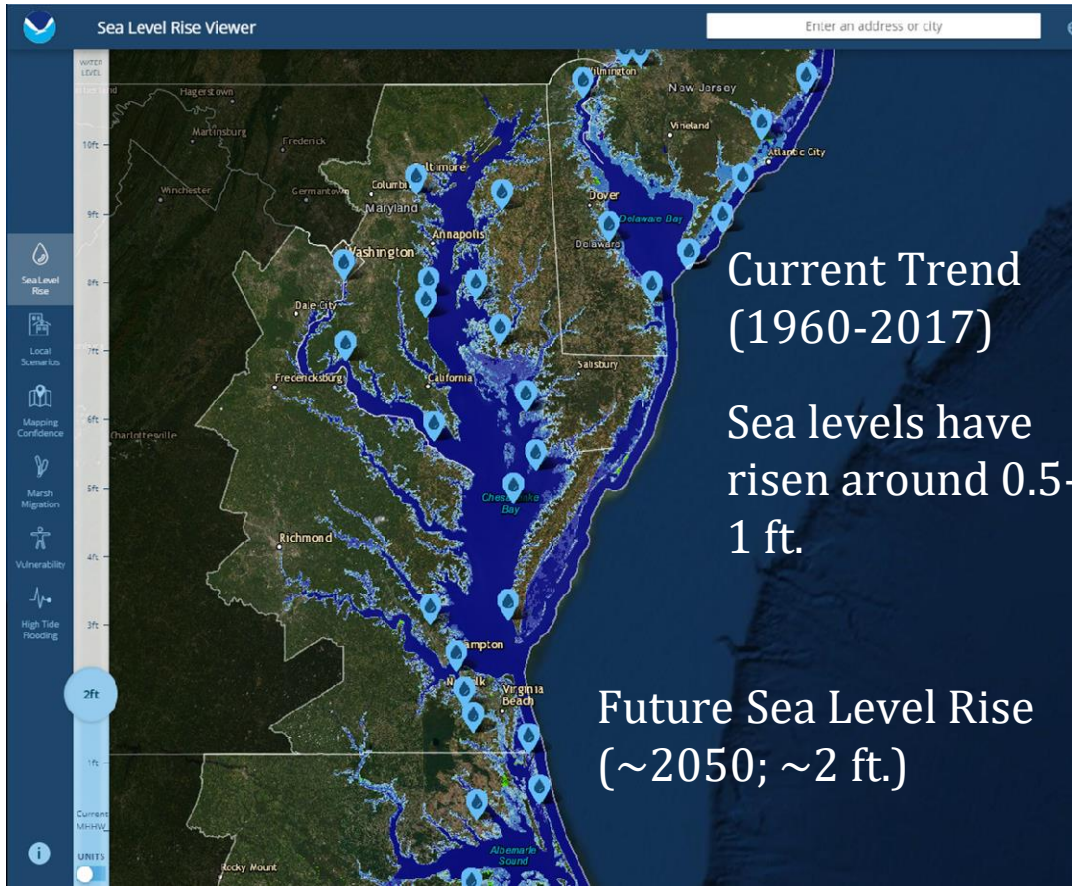
- Julie Reichert-Nguyen, Natural Resources Specialist/ Climate Resiliency Workgroup Coordinator, NOAA
- Joanna Ogburn, Principal/ Envision the Choptank Coordinator, JBO Conservation, LLC
- Matt Pluta, Choptank Riverkeeper & Director, ShoreRivers
- Nicole Carlozo, Section Chief, Waterfront & Resource Planning, Chesapeake & Coastal Service, Maryland Department of Natural Resources
- Pati Delgado, Ph.D., Superintendent – Wetland Ecologist, Jug Bay Wetlands Sanctuary
- Pam Mason, Senior Research Scientist/ Wetland Workgroup Chair, Virginia Institute of Marine Science

Chesapeake Bay Watershed Agreement

Chesapeake Bay Program Climate Resiliency Workgroup

Chesapeake Bay Climate Adaptation Outcome:

Continually pursue, design, and construct restoration and protection projects to enhance the resiliency of Chesapeake Bay from impacts of coastal erosion, coastal flooding, more intense and more frequent storms, and sea level rise.



Marsh Adaptation

Working Definition:

Incorporating climate change information and resilience strategies when planning, designing, implementing, and managing marsh restoration and conservation projects to enhance longevity of marsh area and health and ecosystem function.

Climate Change Factors	Resilience Strategies
Sea Level Rise (SLR)	• Identify and conserve marsh migration corridors • Acquire land/easements for marsh migration • Restore/preserve healthy marsh sediment dynamics and vegetation • Ensure habitat connectivity • Pursue conservation incentives/carbon credit programs • Construct living shorelines/natural breakwaters
Increase in Storm Events and Precipitation	

Why We Need Collaborative Marsh Adaptation Projects

- Manage marshes to be **resilient** to sea level rise (SLR) and other climate change impacts to **preserve** ecosystem services.
- Identify **strategic large-scale** marsh adaptation projects that support **multiple benefits** instead of opportunistic, disconnected projects.
- Increase understanding of **geographical and organizational priorities** to build partnerships to support large-scale implementation.
- Align marsh resilience **research opportunities with implementation** to increase data and information on the **success** of strategies.
- Identify **short-term** and **long-term funding** opportunities.

Mapper Approach for Targeting Collaborative Marsh Adaptation Projects

Tier 1
Broader-Scale Targeting

1. Metric Mapping

- Climate Vulnerability/ Adaptive Capacity
- Ecological
- Social Vulnerability

✷ **Identify Areas of Need for Marsh Adaptation**

2. Partner Alignment Mapping

- Collect partner input on where they are actively working or areas of interest

✷ **Identify Regional Focus Areas (1 + 2)**

Tier 2
Finer-Scale Targeting + Customization

3. Identify specific project opportunities

- Add specific regional data
- Connect data with funding priorities/ ecosystem services
- Partnership-building workshops

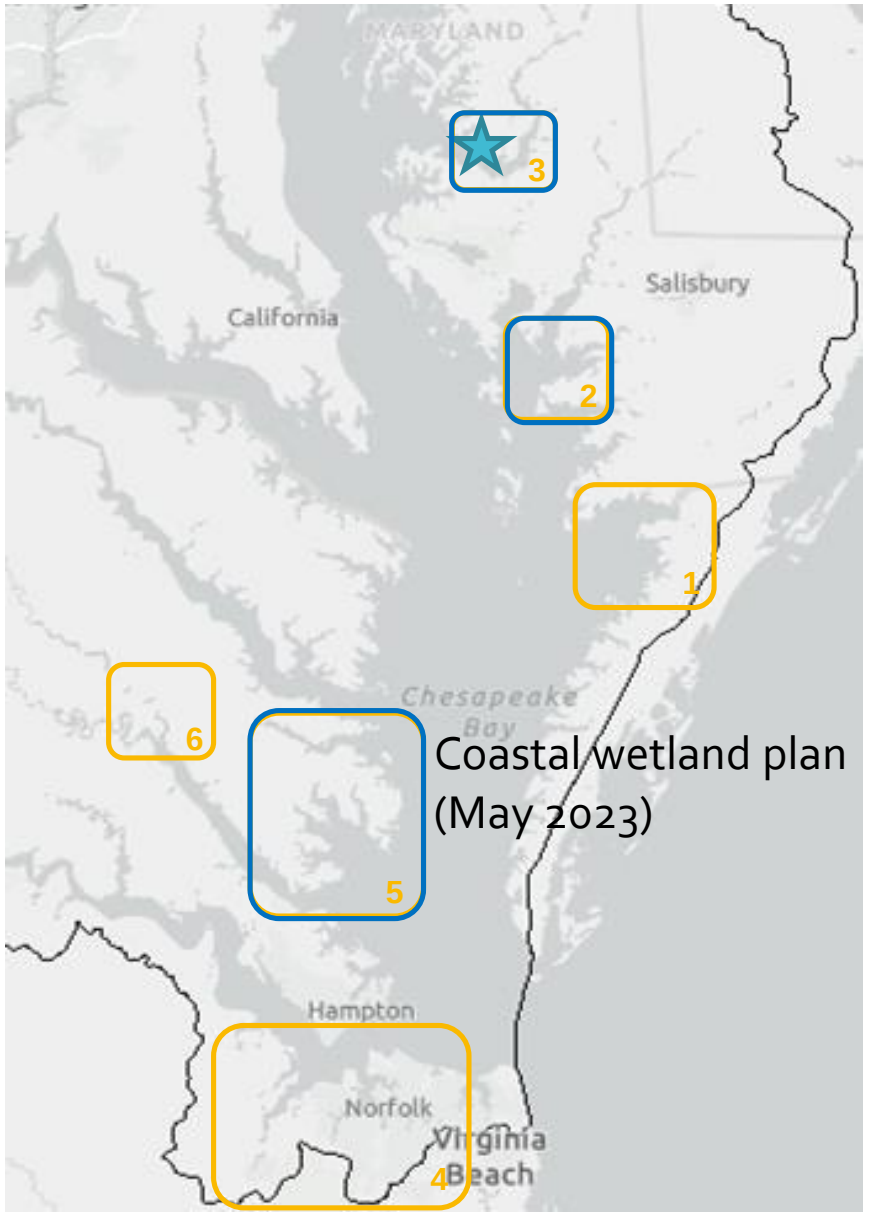
✷ **Identify Collaborative Marsh Adaptation Projects**

Framework utilizes existing datasets

Identified Marsh Adaptation Project Focus Areas

(From GIT-Funded Project)

1. Pocomoke Sound Area (Crisfield, MD to Saxis, VA)
2. Wicomico River (Monie Bay to Deal Island, MD)
3. **Choptank River, MD**
4. Suffolk/Elizabeth River, VA
5. Middle Peninsula, VA
6. Middle Peninsula Tribal Lands (Mattaponi, Pamunkey)



Coastal wetland plan (May 2023)

LUNCH BREAK

In-Person Attendees – During lunch decide on which breakout group you want to go to and sit in that area after lunch:

- Brackish tidal marshes (downriver)
- Forested and non-forested tidal freshwater marshes (upriver)

Tidal Marsh Adaptation Scenarios & Mapper

Marsh Adaptation Scenario Examples

Protection Scenario

Use data to identify ***healthy marshes*** that are susceptible to SLR and have the potential to migrate.

- Good Existing Marsh Condition
- High Climate Change Risk
- High Adaptive Capacity

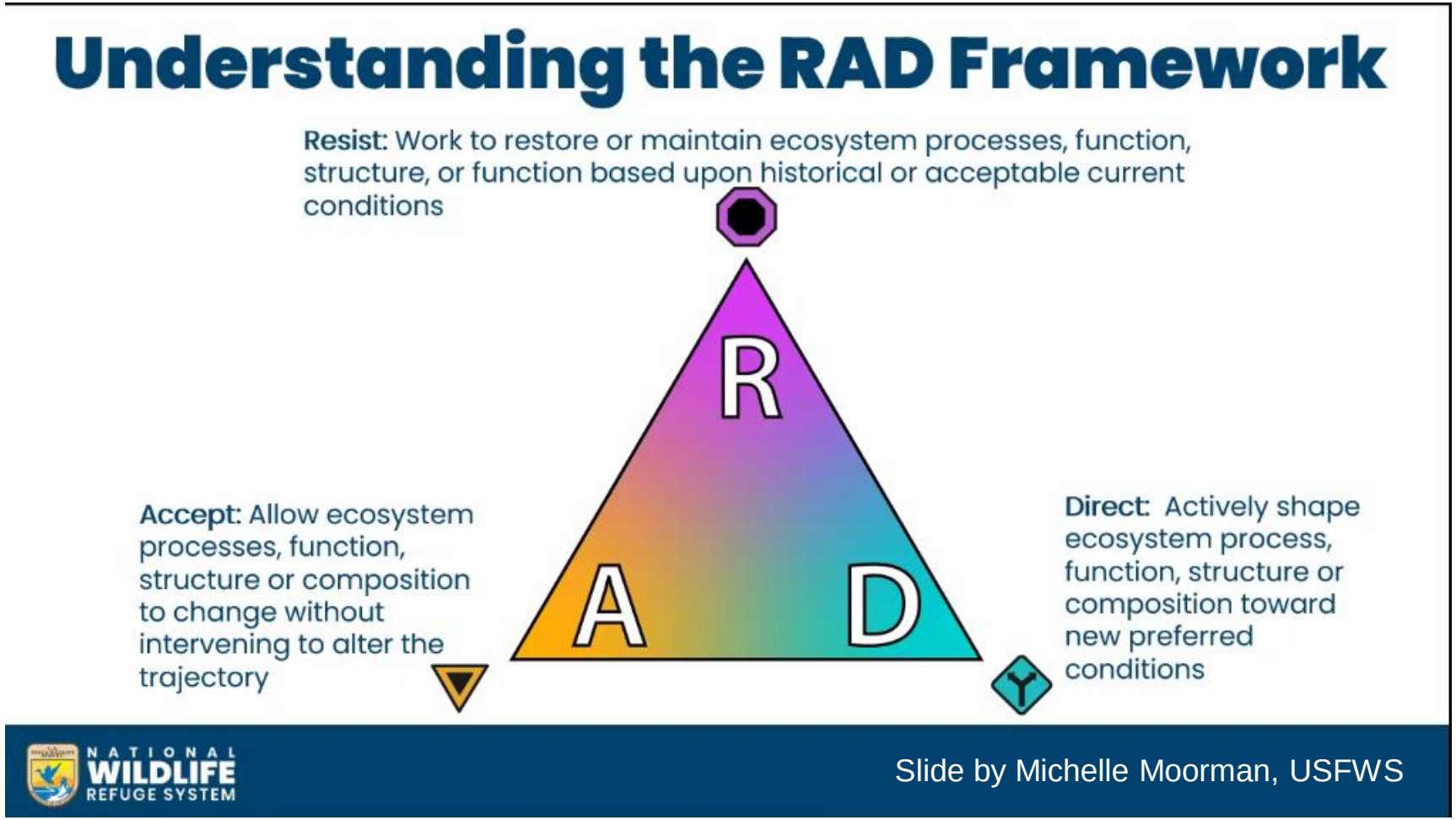
Restoration and/or Enhancement Scenario

Use data to identify ***degraded marshes*** that are susceptible to SLR and have the potential to migrate.

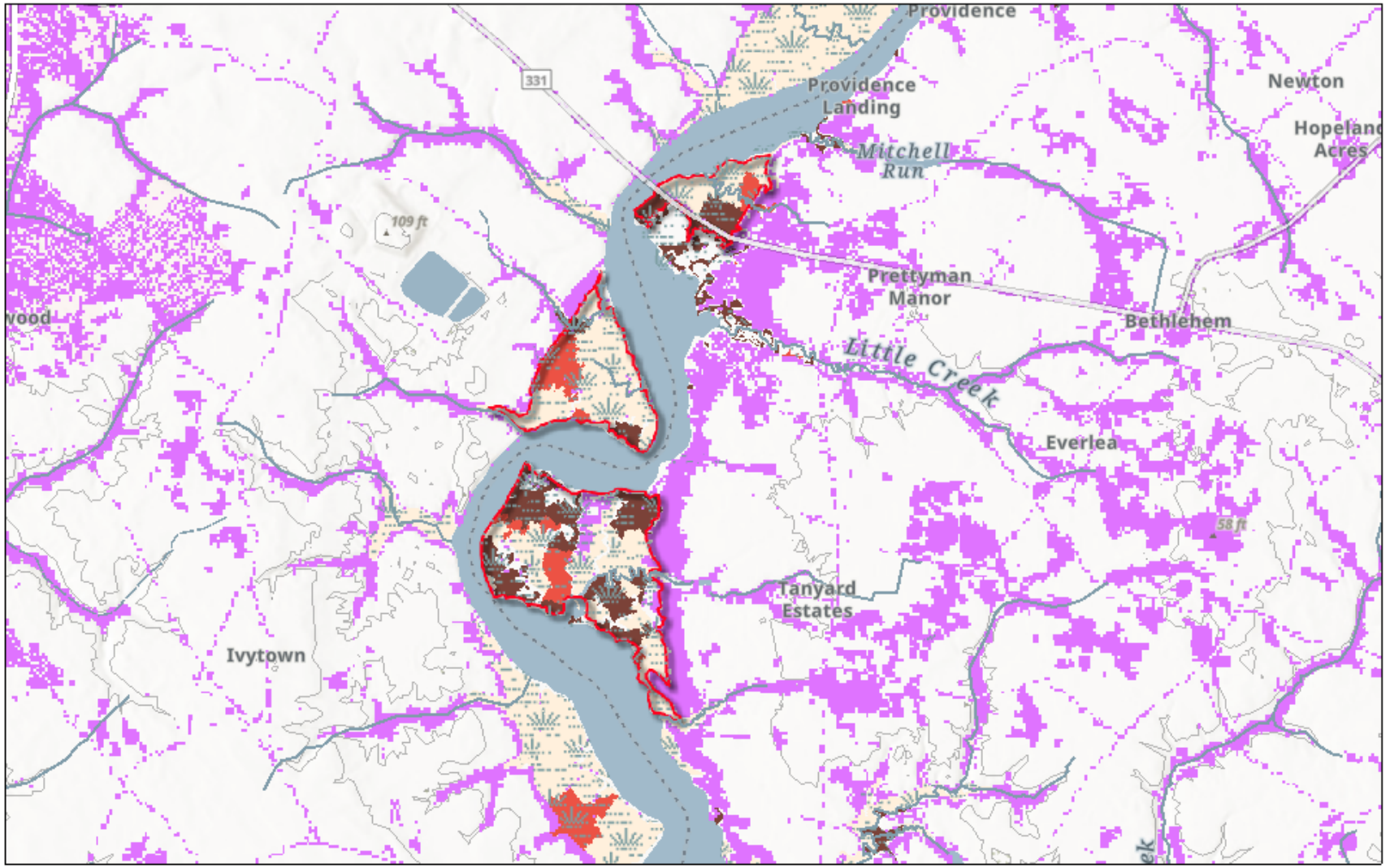
- Degraded Existing Marsh Condition
- High Climate Change Risk
- High Adaptive Capacity

Based on the NOAA Landscape Scale Marsh Resilience Framework and Unvegetated to Vegetated Ratio (UVVR) decision matrix by USGS (Ganju et al. 2023)

Example Decision Framework



Marsh Migration (Future 2' Sea Level Rise Scenario) and Marsh Health (UVVR) Upriver



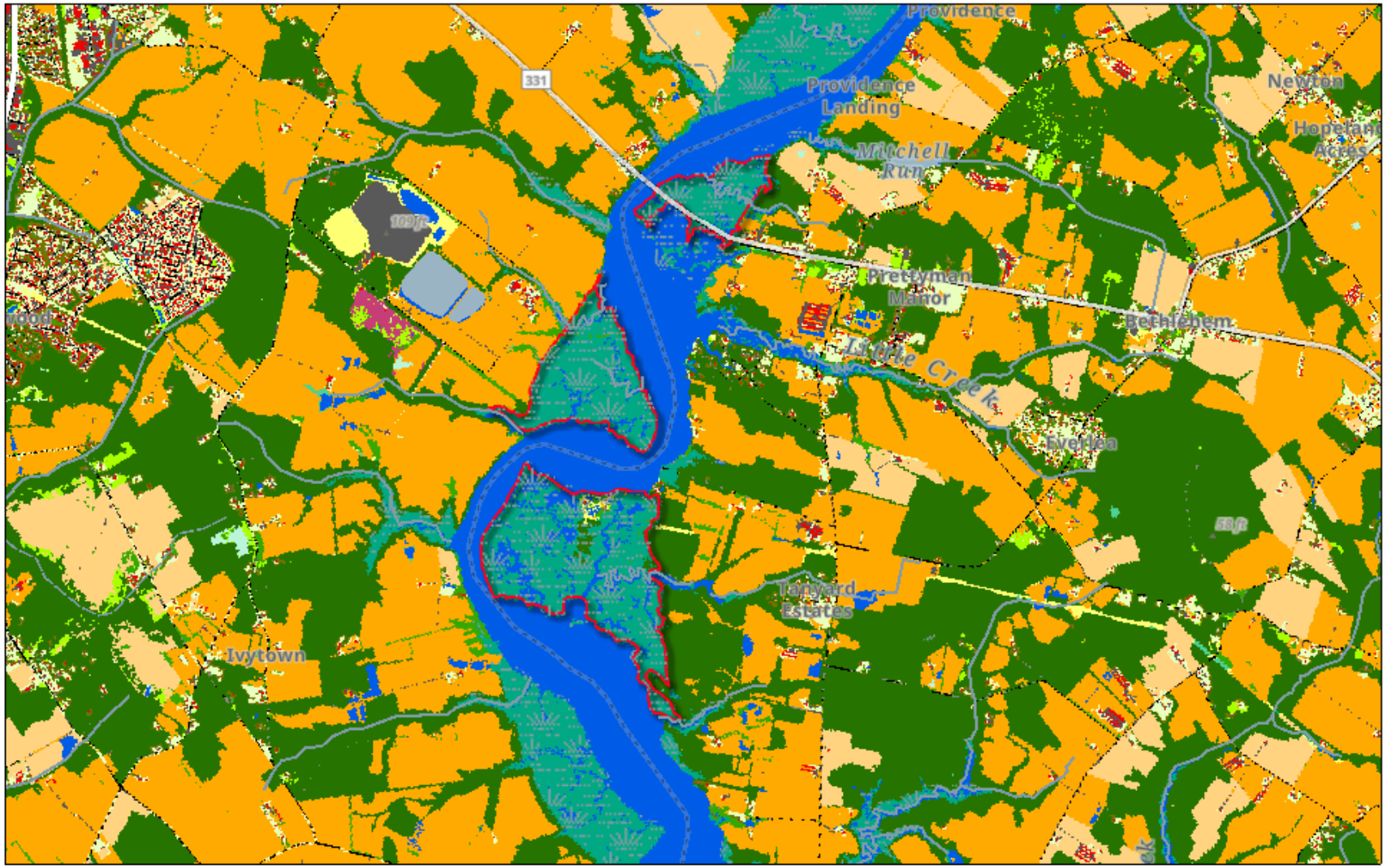
Considerations:

- What sorts of restoration or protection strategies can be implemented to help these marshes (burgundy and beige) persist
- How can we allow for transition of upland/migration corridors (pink/purple)

UVVR = Unvegetated to Vegetated Ratio

Marsh Migration Scenario represents ~2060 timeframe

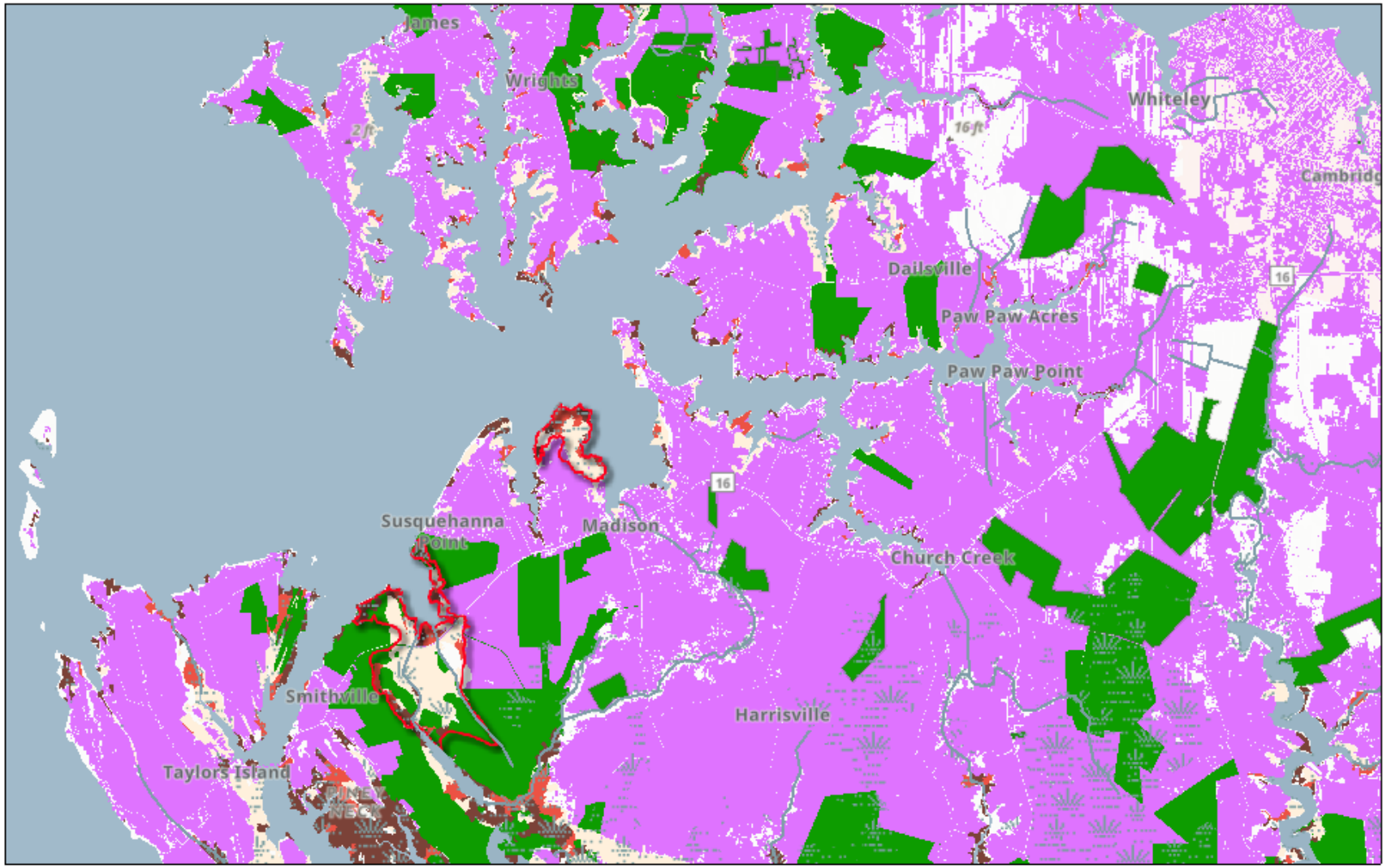
Land-Use Upriver



Considerations:

- What sorts of land-use are adjacent to these marsh complexes
- How to approach facilitating land transition on agricultural lands

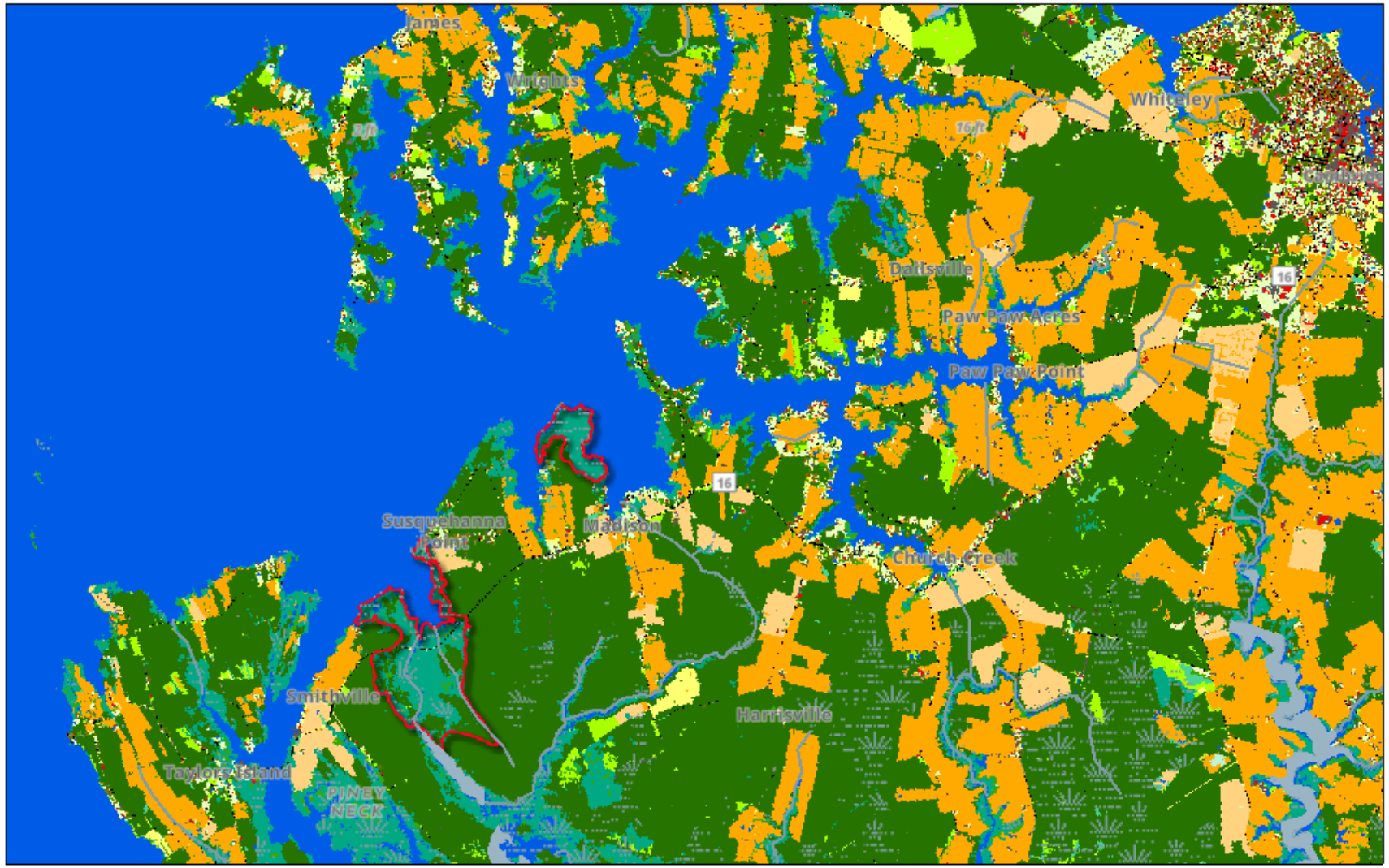
Marsh Migration (Future 2’ Sea Level Rise Scenario), Marsh Health (UVVR), and Protected Lands Downriver



Considerations:

- Where are protected lands (green) in relation to marshes
  - Provide opportunities for restoration of degraded marshes (burgundy)
- Where are protected lands in relation to marsh migration corridors (pink/ purple)
  - Provide opportunities to facilitate marsh migration of healthy marshes (beige) in the future

Land Use Downriver



Considerations:

- What sorts of land-use are adjacent to these marsh complexes
- How to approach facilitating land transition on agricultural lands
- How to approach protecting undeveloped lands to allow for marsh migration

Breakout Groups

Groups

- In person: Two groups
  - 1) Brackish tidal marshes (downriver)
  - 2) Forested and non-forested tidal freshwater marshes (upriver)
- Virtual: One group – discuss any of the marshes

Scoping Exercise

- Identify marsh on map to discuss
- Use maps and knowledge to discuss what is known about the marsh
  - Marsh/social vulnerabilities
  - Ecosystem functions/ cultural or community significance
  - Adaptive capacity (e.g., marsh migration, adjacent land use / ownership)
- Identify marsh adaptation ideas (e.g., improve marsh condition, sediment placement to keep pace with sea level rise, land easements, outreach with private landowners, etc.)
- Select an idea to share with the full group during report out.

Next Steps

- **October-December 2024**:
  - Provide summary of meeting and resource/partner list to Envision the Choptank
  - Incorporate marsh adaptation mapper in a public-facing website (e.g., ChesapeakeData).
  - Apply to University of Michigan SEAS Master's Project Program to develop communication materials and landscape change visualizations.
- **2024-2025**: Seek funding to support additional marsh adaptation efforts on follow-up topics and/or support of analyses or workshops.


Photo Credit: Matt Pluta

Marsh Adaptation Project Report:

cbtrust.org/wp-content/uploads/Collaborative-Marsh-Adaptation-Project-Final-Report_Final_08.05.2024-3.pdf

Marsh Adaptation Report Appendix:

cbtrust.org/wp-content/uploads/Collaborative-Marsh-Adaptation-Project-Appendix.pdf

Chesapeake Bay Program
Science. Restoration. Partnership.

Email: julie.reichert-nguyen@noaa.gov