

An aerial photograph of a coastal town. The foreground shows a large, flat, light-colored area, likely a wetland or marsh, with some faint grid lines. In the middle ground, there is a residential neighborhood with numerous houses and buildings. A road or highway is visible on the right side of the image. The overall scene is a mix of urban development and natural coastal features.

Modeling the Effects of Sea Level Rise on Massachusetts Wetlands

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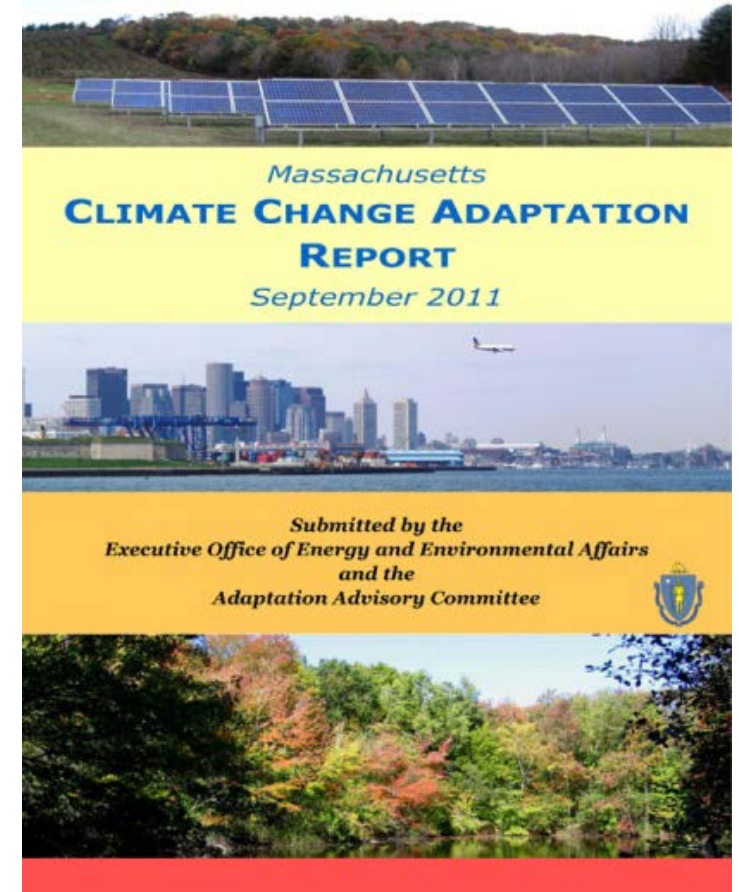
Massachusetts Office of Coastal Zone Management

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Category: Management

Why: Project Purpose/Identified Need

- What question(s) are you asking?
 - What is the potential for coastal wetland **habitat conversion/loss** under multiple scenarios of SLR?
 - What are the opportunities for and barriers to **marsh migration** under those scenarios?
 - How can this information be used to educate decision-makers and other stakeholders on the potential for wetland conversion/loss?
- Why is this project needed?
 - Identified as coastal strategies to pursue under the 2011 Massachusetts Climate Adaptation Report.
 - Scientific data and anecdotal reports support notion that some tidal marshes are being impaired, by an inability to keep pace with SLR and/or a combination of stressors; statewide datasets on potential for change is critical for managing wetlands at state and regional/local levels.



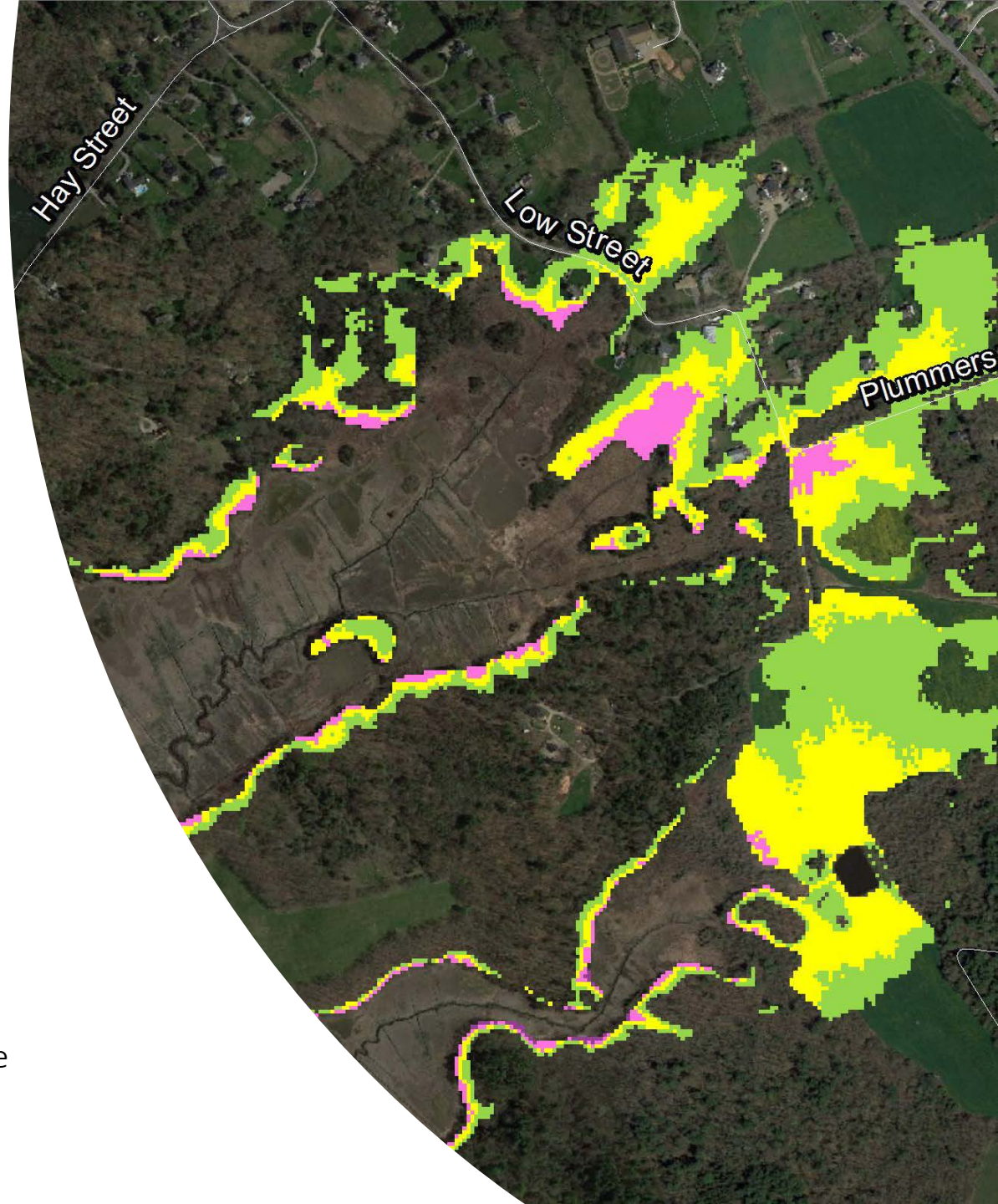
What: Project Goals and Desired Outcomes

Project Goals

- Develop and report on geospatial datasets that describe the potential impacts of sea level rise on wetlands under four scenarios based on Parris et al. 2012 for 2030, 2050, 2070, and 2100.
- Identify marsh migration corridors to inform land protection and management practices.
- Communicate results and engage land conservation and wetland restoration communities, and coastal managers to inform adaptation/resilience planning efforts.

Desired Outcomes

- **short-term:** an informed coastal management community
- **long-term:** land protection and management decisions based on model outputs and derivatives; incentives to allow for or facilitate marsh migration; inform comprehensive strategy for marsh resilience

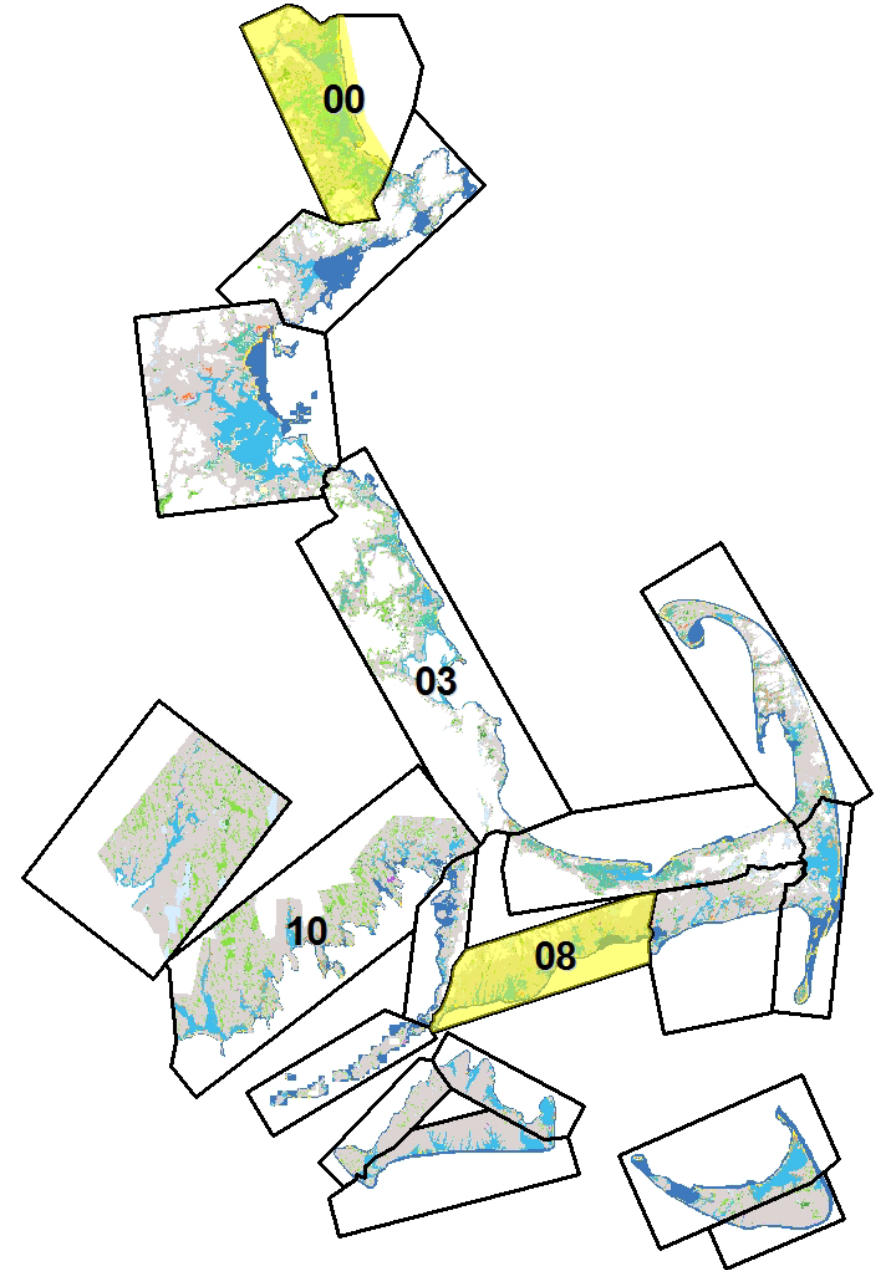


Where are you working?

- Sea Level Affecting Marshes Model (SLAMM) applied to 18 project panels for **statewide** coverage.
- Great Marsh (00) has two iterations with different accretion inputs: static rate and time-variable rates (the latter derived from running the Marsh Equilibrium Model (MEM)).

What is your unit of measure?

- Areal distribution and extent of wetland types in hectares/acres.



Who is doing the work and When are you doing it?

- Project lead: MACZM
 - Project partners: MA Division of Ecological Restoration; MassDEP; Marine Biological Laboratory; Woods Hole Group
 - Start & End dates: 2014-2016; derivatives ongoing
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Planned Next Steps and Those for Future Consideration

- Prioritizing marsh migration in state and local **land conservation efforts**.
- **Incentivize marsh migration projects** through Commonwealth grant programs (land acquisition, conservation restrictions, resilience/adaptation projects, etc.).
- **Scenario analysis** for maximizing marsh migration potential under multiple management options.
- **Prioritize restoration sites** and adaptation approaches (improved hydrology, elevation capital, migration).
- Identify and pursue **policy enhancement** opportunities (CZM Program Policies).

How is your work being funded?

- Federal and state funds

How is your work being communicated to your target audience(s)?

- Presentations at a variety of conferences and symposia, stakeholder meetings; soon-to-be-released story map / data viewer and Mass.gov landing page with comprehensive report and additional project information

