Coastal Wetland Restoration Through Improved Tidal Exchange in Maine

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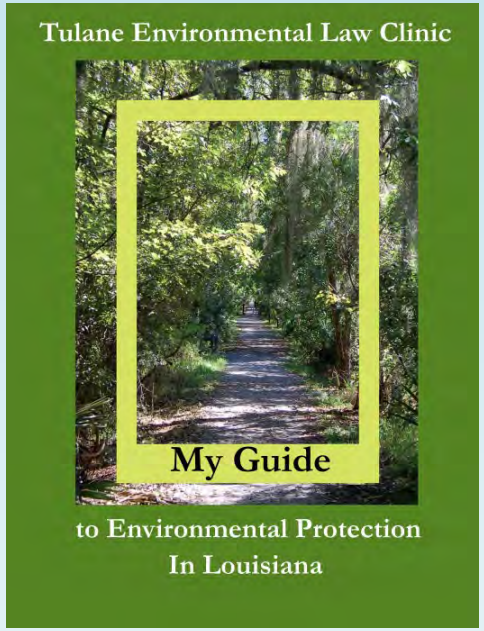
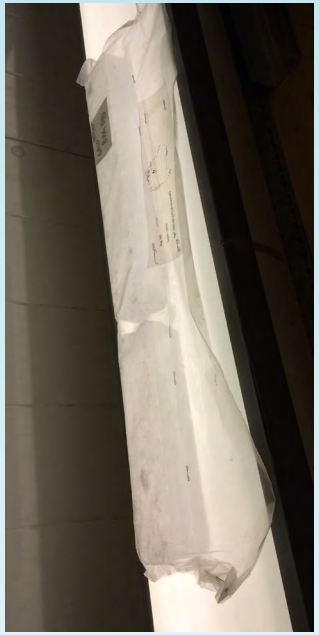
Undergraduate Research and Education

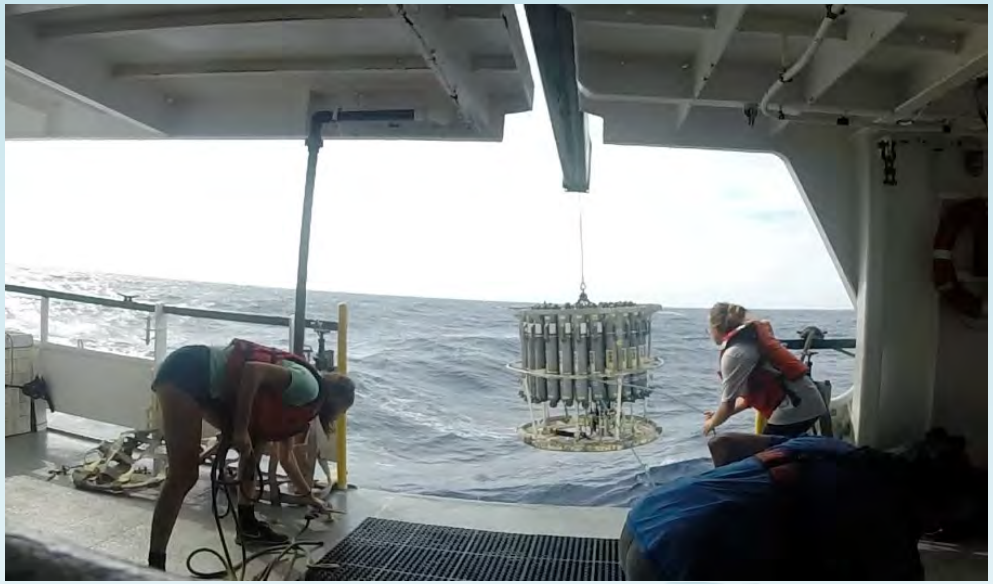
Tulane University

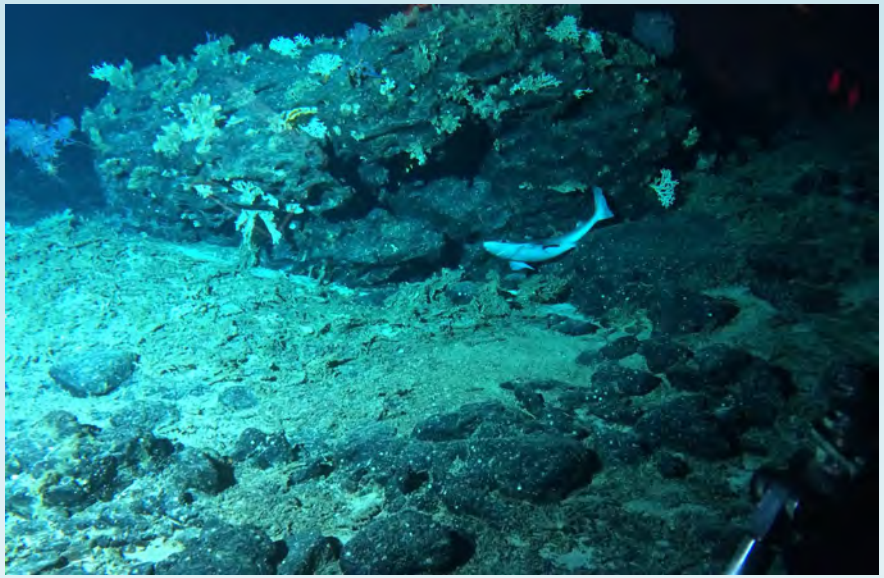




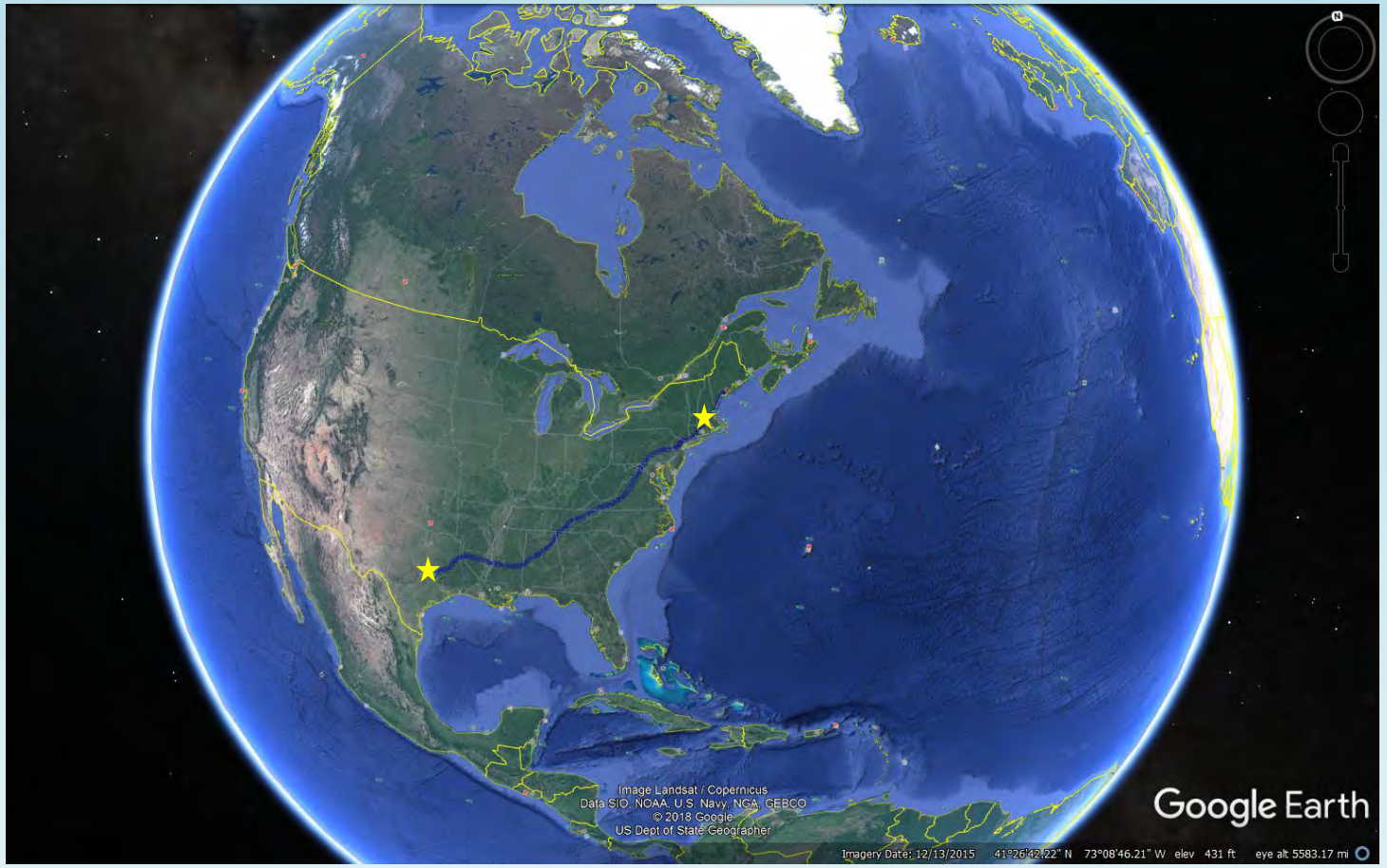
Graduate Research and Education

THE COLLEGE OF GEOSCIENCES
TEXAS A&M UNIVERSITY





Gulf of Mexico to Gulf of Maine



NOAA Fellowship Project

CoastWise: Developing science-based, climate-resilient practices for community-based replacement of tidal road crossings that support coastal wetland restoration

Tidal Restrictions in Maine

Tidal Restrictions in Maine

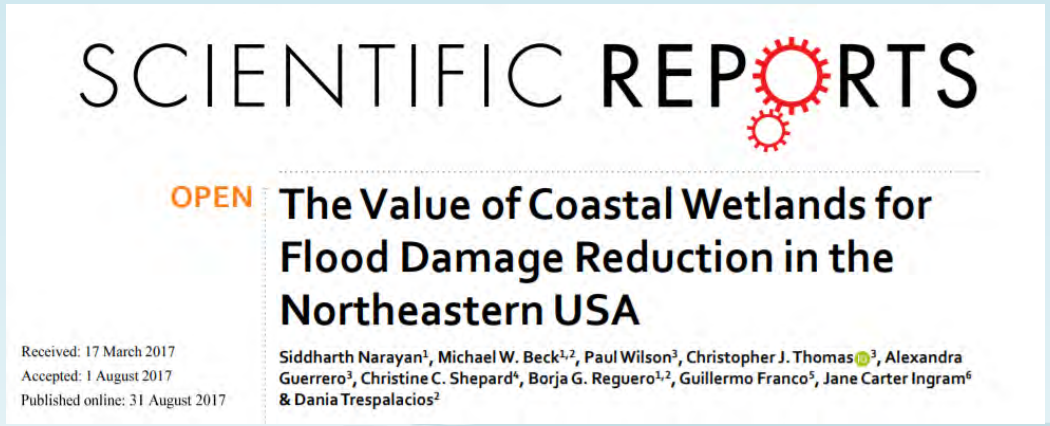
Can affect:

- Plant community
- Fish and wildlife populations

Tidal Restrictions in Maine

Can affect:

- Plant community
- Fish and wildlife populations
- Storm surge and coastal flooding protection
- Pollutant filtering capabilities
- Rate of carbon sequestration
- Recreation and educational uses



SCIENTIFIC REPORTS

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The Value of Coastal Wetlands for Flood Damage Reduction in the Northeastern USA

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Siddharth Narayan[1], Michael W. Beck[1,2], Paul Wilson[3], Christopher J. Thomas[3], Alexandra Guerrero[3], Christine C. Shepard[4], Borja G. Reguero[1,2], Guillermo Franco[5], Jane Carter Ingram[6] & Dania Trespalacios[2]

Restoration of Tidal Exchange

Maine Tidal Wetland Distribution

The “CoastWise” Concept

- Identify and/or develop tidal road crossing practices that can help restore tidal wetland functions.
  - Lower maintenance costs
  - Long-lasting structures
  - Reduced public safety risk
  - Increased resilience to sea level rise

- Create an outreach program that publicizes the tidal crossing standards.

CoastWise Goal: A program analogous to Maine Audubon's successful Stream Smart Workshop

The “CoastWise” Concept

- Voluntary
- Climate resilient design
- Informed by many ecological and feasibility factors
- Standardized but adaptive
- Useful to a wide audience
  - Road owners
  - Contractors
  - Municipalities
  - Other professionals

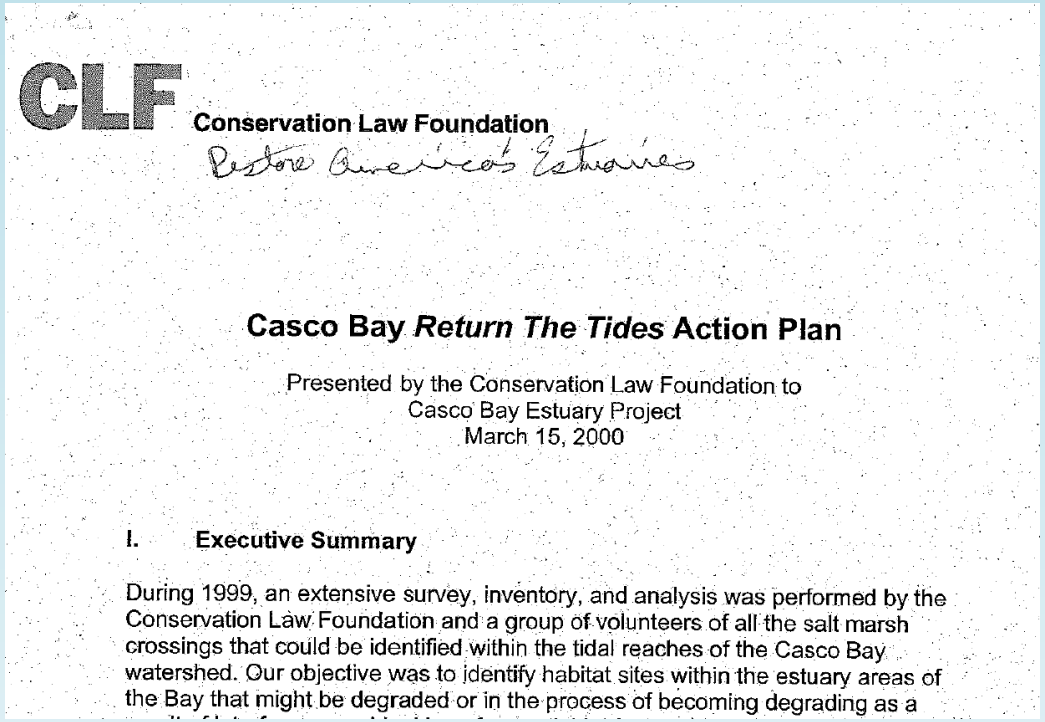
Creating a Tidal Crossing Database for Maine

Goal: A well-organized, comprehensive, and updatable tidal crossing map database to identify potential targets for restoration

Return the Tides (RTT) Project

- Established in 1999 by Conservation Law Foundation in the Casco Bay watershed

- The effort to inventory, survey, and analyze potential tidal restrictions to identify salt marshes in need of restoration throughout Maine



CLF Conservation Law Foundation

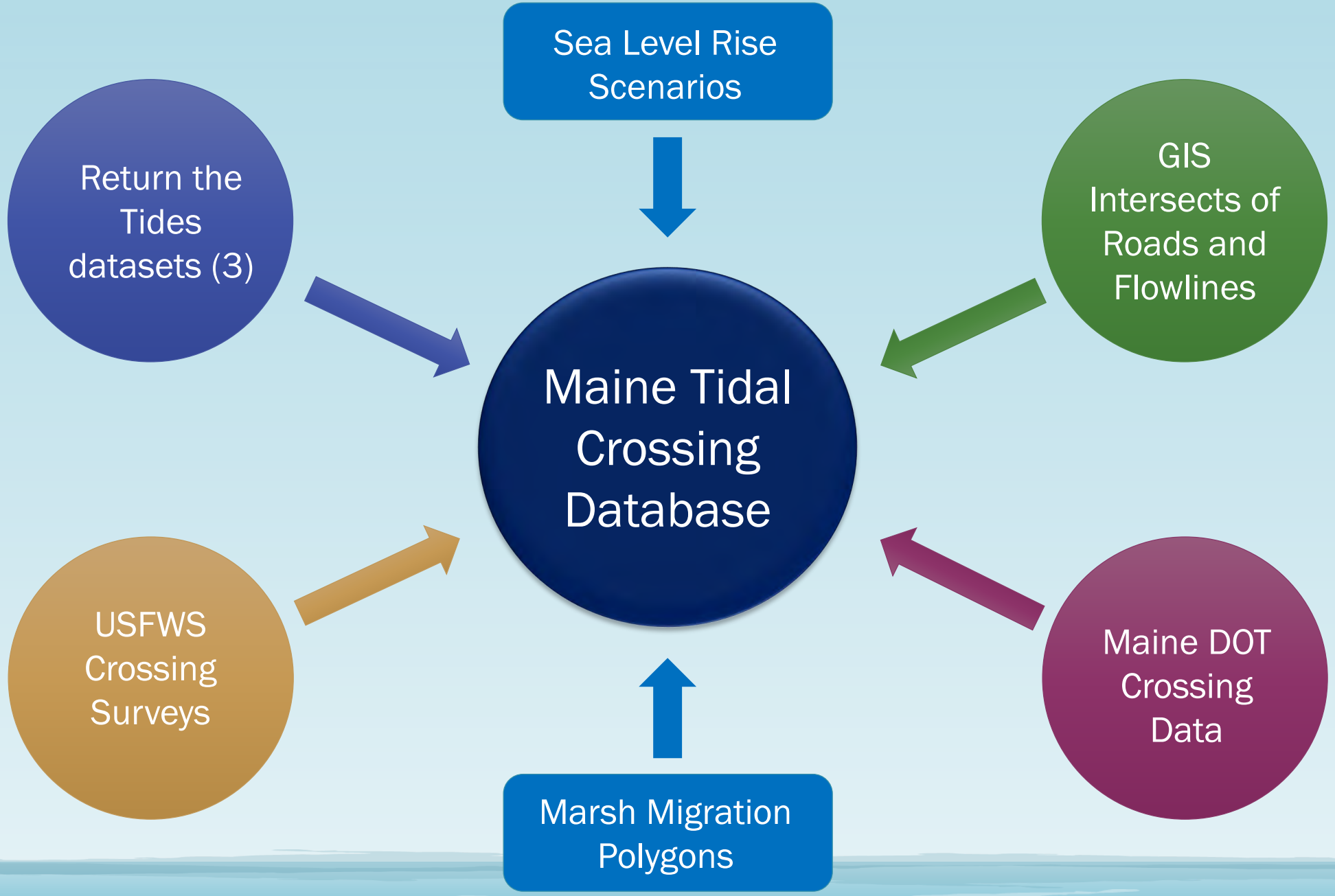
Restore America's Estuaries

Casco Bay *Return The Tides* Action Plan

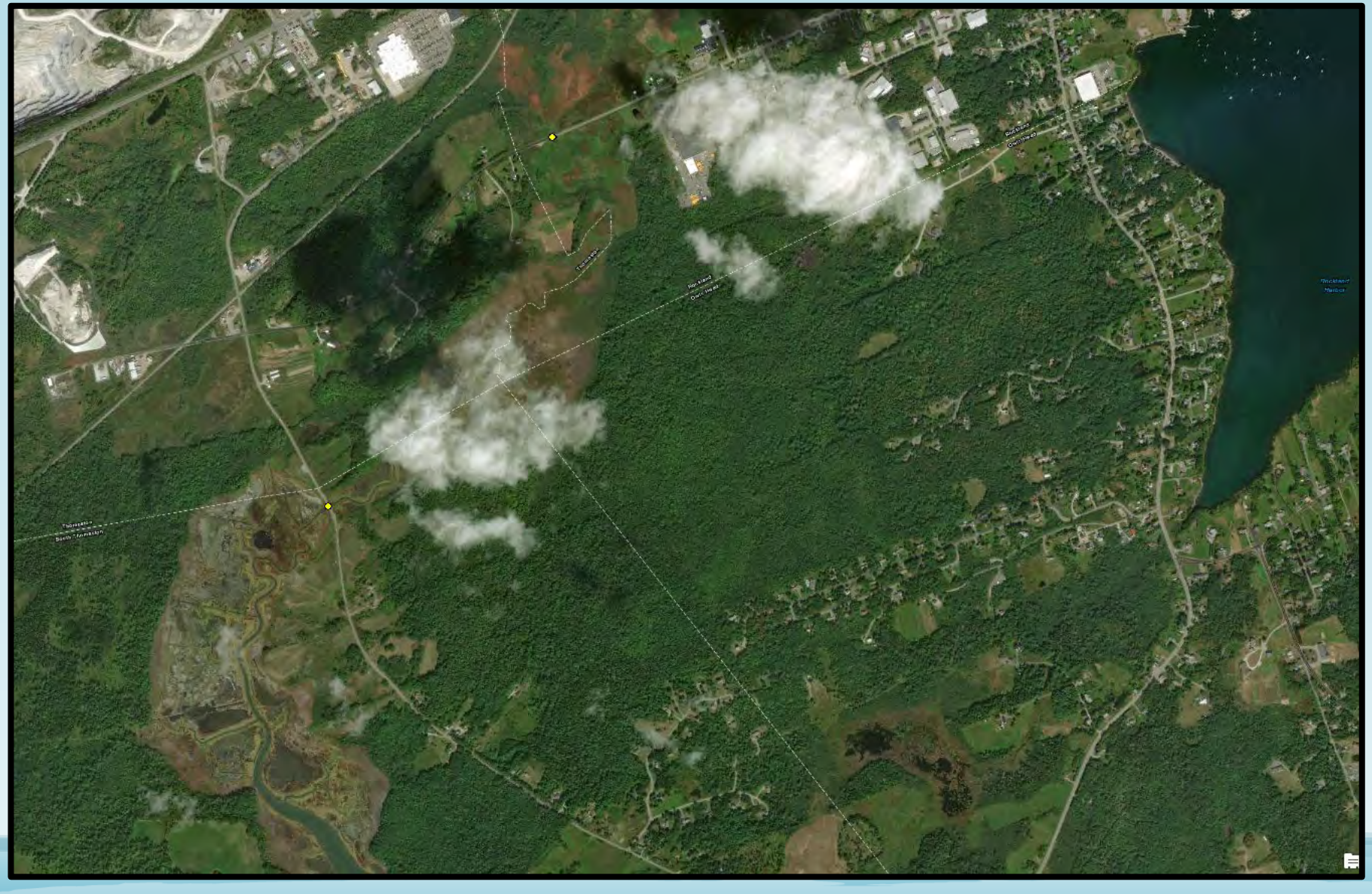
Presented by the Conservation Law Foundation to
Casco Bay Estuary Project
March 15, 2000

I. Executive Summary

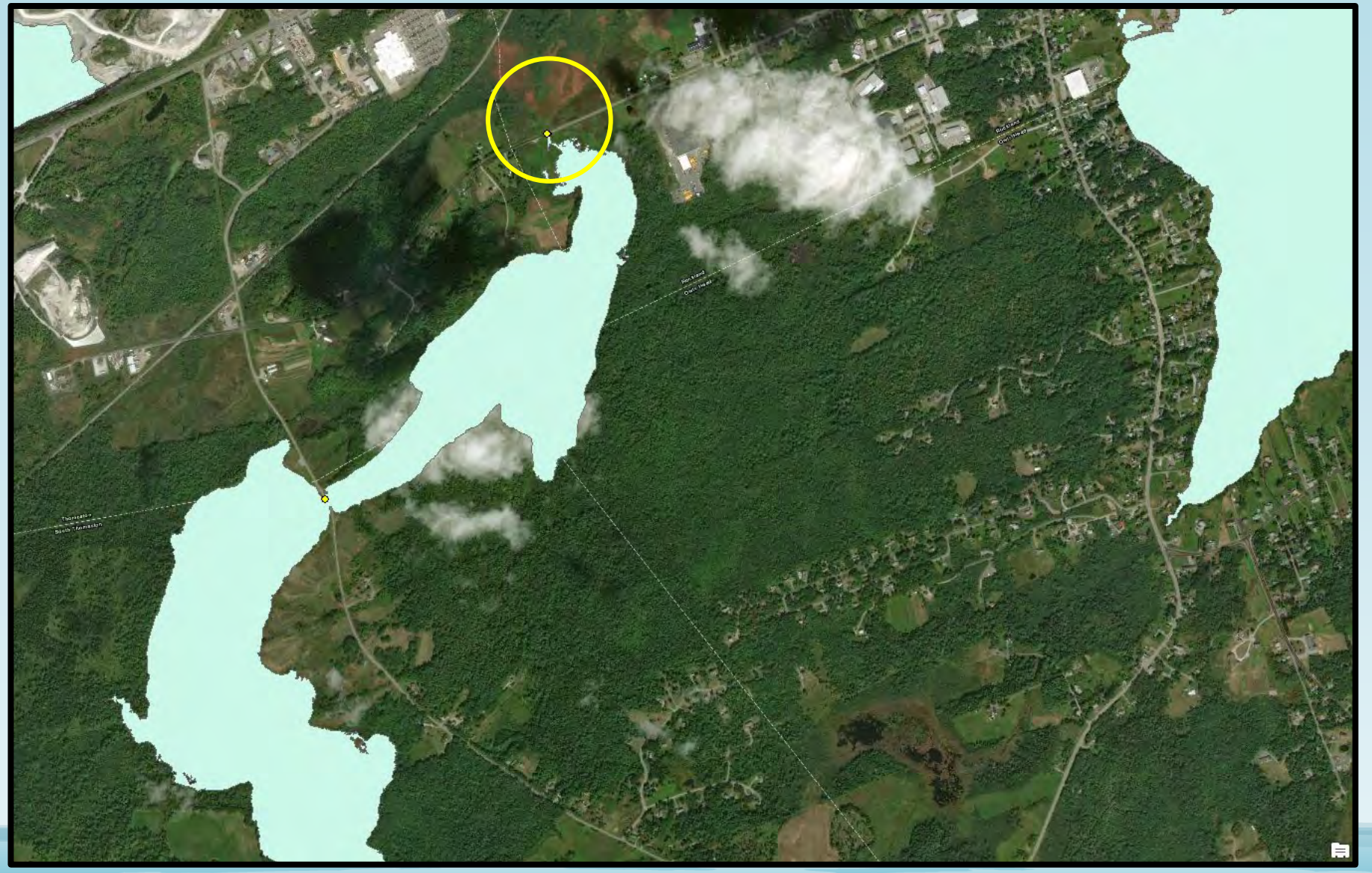
During 1999, an extensive survey, inventory, and analysis was performed by the Conservation Law Foundation and a group of volunteers of all the salt marsh crossings that could be identified within the tidal reaches of the Casco Bay watershed. Our objective was to identify habitat sites within the estuary areas of the Bay that might be degraded or in the process of becoming degrading as a


Sea Level Rise Scenarios
Return the Tides datasets (3)
GIS Intersects of Roads and Flowlines
Maine Tidal Crossing Database
USFWS Crossing Surveys
Maine DOT Crossing Data
Marsh Migration Polygons

Weskeag Marsh, Knox County

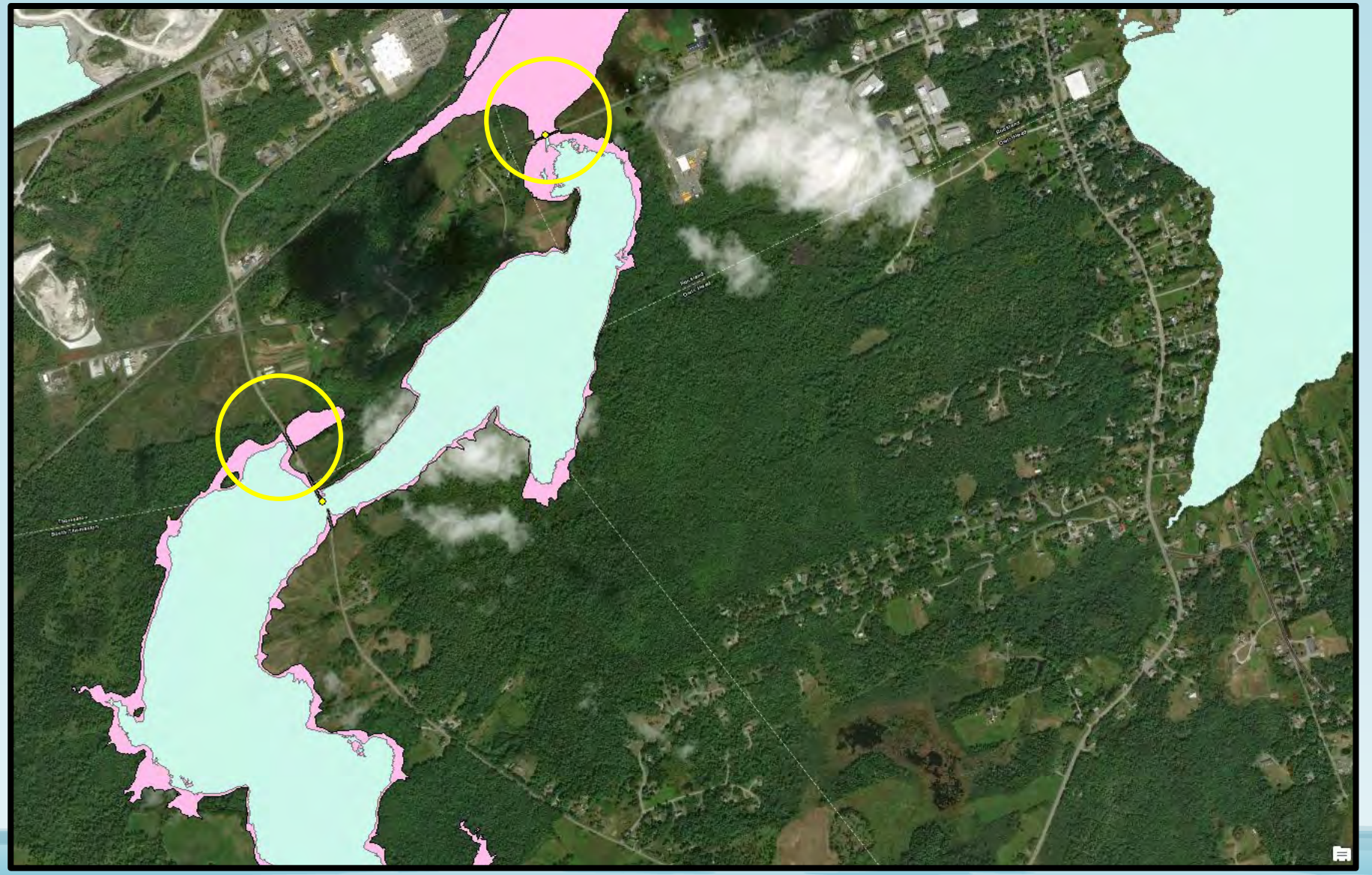


Weskeag Marsh, Knox County



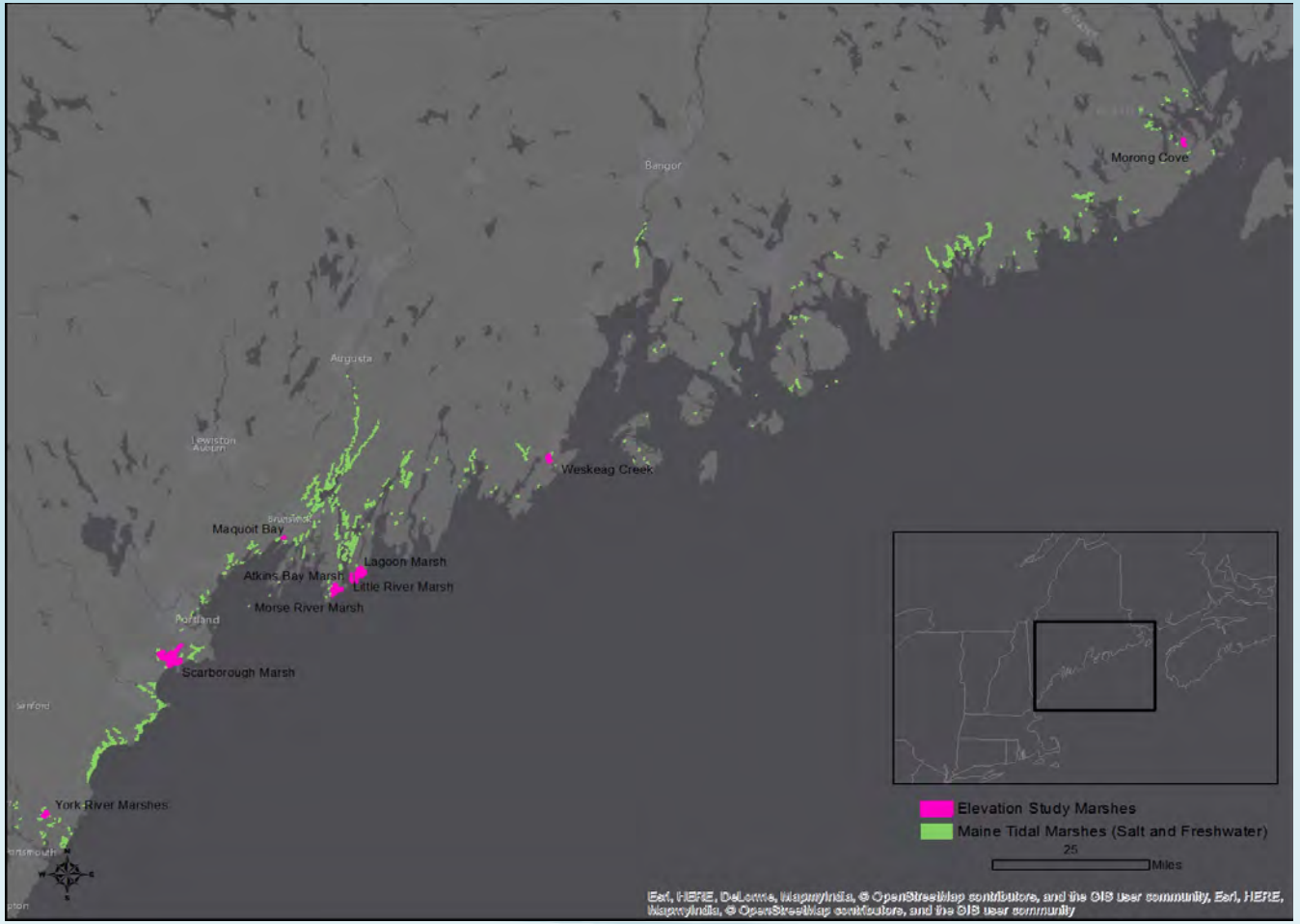
Highest Annual Tide (HAT)

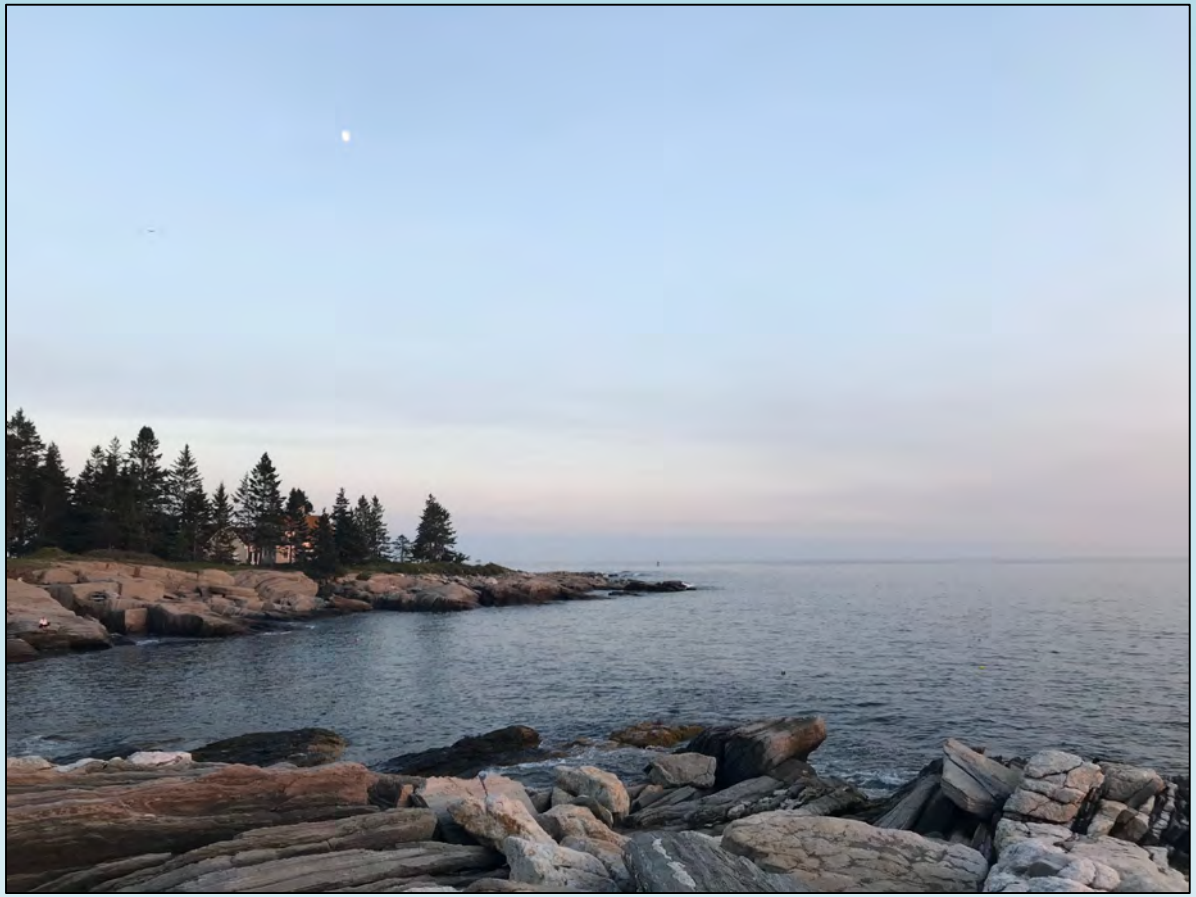
Weskeag Marsh, Knox County



6 feet sea level rise

Measuring Sediment Accretion





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