Nantucket Island's First Eelgrass Management Plan 2025

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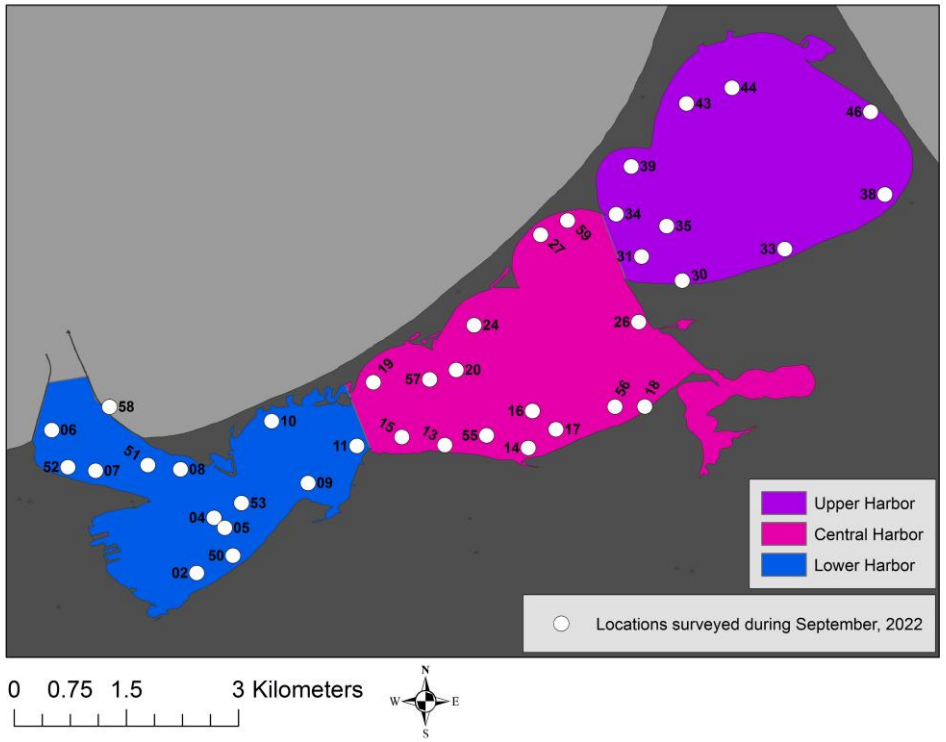
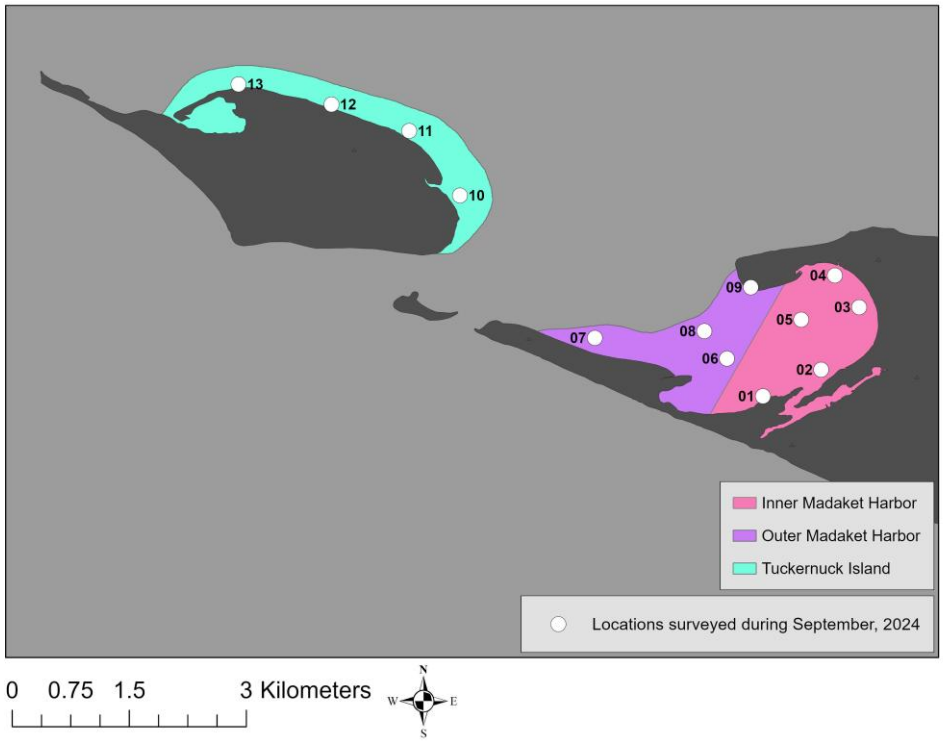
Eelgrass and Ecosystem Services

- Underwater marine flowering seagrass species
- Plant structure provides a three-dimensional habitat for feeding, refuge, and nursery for many different species
- Eelgrass roots and rhizomes stabilize sediment, reducing erosion and dissipate wave energy
- Sequesters carbon/produces oxygen/ buffers against acidification
- Key to the survival and sustainability of bay scallop populations and restoration programs

Bay Scallop Bushel Counts

Nantucket and Madaket Harbor Eelgrass Survey Sites

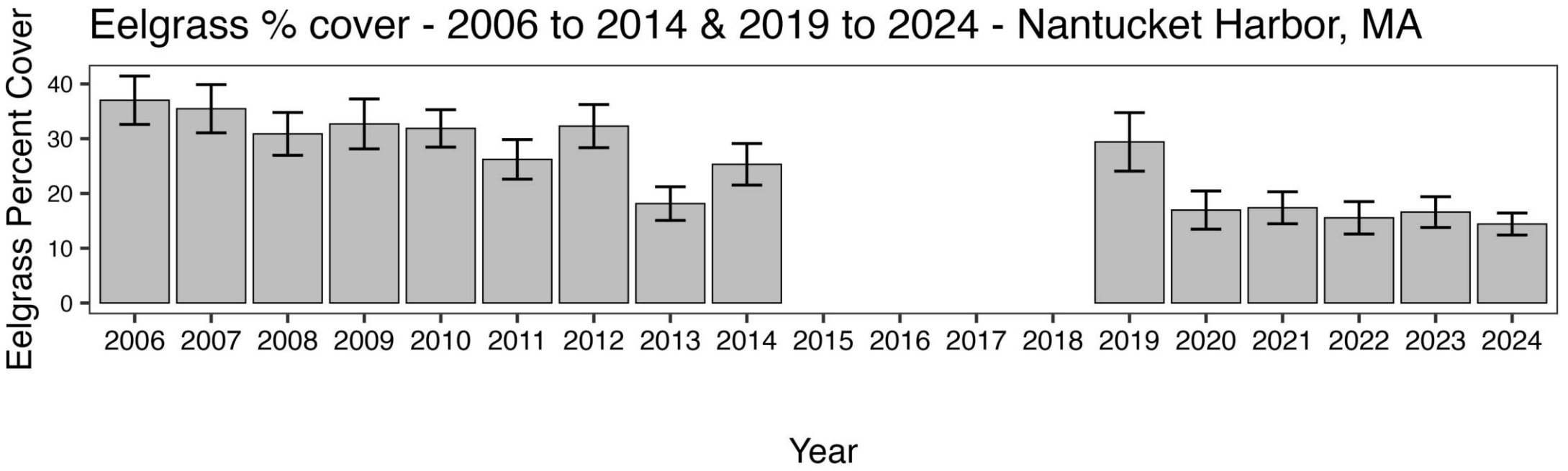




Annual Habitat and Physical Parameter Data Collected

- Total % Coverage (eelgrass, macroalgae)
- Separate % for eelgrass, branching, filamentous, codium, sheet algae, and boring sponge
- Blade Length and Fouling Scale
- % Bare
- Sediment Characteristics
- Underwater photos of each site
- **Physical Parameters**: cloud cover, wind, sea state, beaufort scale, water depth, temperature, dissolved oxygen, % saturation, and salinity

% Eelgrass Cover Nantucket Harbor



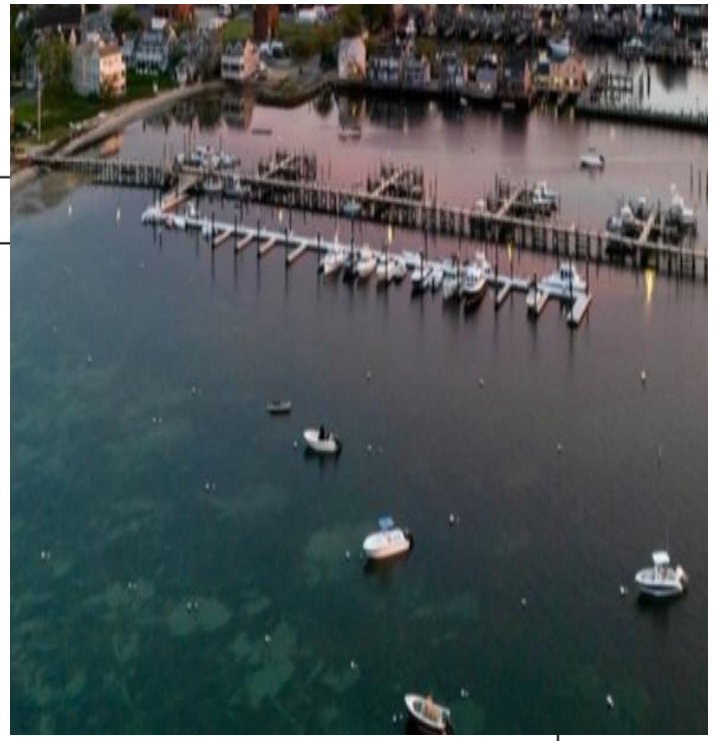
Process

GHYCF Scientific Advisors

Dr. JJ Orth~VIMS
Dr. Stephen Heck~SB Univ.
Dr. Bradley Peterson~SB Univ.
Dr. Bill DuPaul~VIMS
Dr. Stephen Tettlebach~Cornell
*Dr. Alyssa Novak~ BU

Table xx: Eelgrass Stressors

Note that an * indicates that this stressor is addressed in the recommendations



Physical Stressors from Harbor Activity		**Other Physical Stressors**	
Boating and Ferry Transportation Vessels (type and speed)* Vessel engine type Number of engines Vessel holding tank* Trip frequency Acoustics Shading from boats, docks, pier structures Anchoring (chain scour)*	***Harbor Projects*** In-water construction* • Pile driving • Breakwaters Shoreline armoring Dredging for navigation Barges (anchored and moored)	Sedimentation and turbidity • Boating activity* • Shading* • Nutrients* Macroalgae competition • Shading • Nutrients* • Oxygen Depletion Predation Disease* Invasive species Marine snails Foliar organisms Benthic diatoms Storms*	
Moorings Location and type* Improperly sited moorings* Number of moorings Chain scour*	***Fishing and Shellfishing*** Scallop dredging* Dredge design, weight, tow time, number of dredges deployed Clam raking*		
Chemical Stressors		**Environmental Stressors**	**Contaminants of Emerging Concern**
Nutrient inputs • Nonpoint/ point sources* • Non-controllable sources • Nitrates • Sulfides • Oxygen depletion Harmful Algal Bloom toxins	Stormwater* Groundwater Ocean acidification Fuel spill Grey water* Cleaning products Surfactants*	Sea level rise Thermal stress* Increased severity and frequency of storms*	Microplastics Tire dust* Sunscreen* Per- and polyfluoroalkyl substances (PFAS)* Pesticides and herbicides*

FIRST STEPS: PROTECTING WHAT WE HAVE

Goal 1: <u>Protect</u> existing stable and growing eelgrass beds located in Nantucket waters.

Objective 1: Identify and protect stable eelgrass beds to prevent their loss.

Recommendation 1: The Town should select and define indicators that aid in identifying which eelgrass beds are considered "stable" (*e.g.*, amount of time without eelgrass loss), which are growing, and which are declining and/or degraded. Indicators should be integrated into regular monitoring activities if they are not already included. Sites identified as "stable" or "growing" should be prioritized for protection.

Recommendation 18: Pursue a regulation to ban anchoring in eelgrass. The Town of Tisbury's ban on anchoring in Lake Tashmoo may serve as an example.

EMP Draft Available this week!

(Town of Nantucket Natural Resources Department Website and Social Media)

Eelgrass Management Plan

The Town of Nantucket is partnering with the Urban Harbors Institute at UMass Boston and a team of advisors to develop an Eelgrass Management Plan for Nantucket Harbor, Madaket Harbor, and Tuckernuck.

Eelgrass is a critical component of our coastal ecosystem, supporting marine biodiversity, improving water quality, and helping to stabilize the shoreline. This planning effort aims to support the long-term health and sustainability of eelgrass habitats in our local waters.

Eelgrass (*Zostera marina L.*) is a subtidal seagrass found on both the east and west coasts of North America. Over the last 40 years, eelgrass has declined worldwide as a result of increased turbidity, algal blooms, physical disturbances, disease, and a host of other stressors. Specifically, in Massachusetts, the eelgrass population has declined approximately 50% in the last 30 years. Historic levels were also much more plentiful until a "wasting disease" caused a 90% die-off of meadows in the 1930s. The decline has also been observed locally, with a loss of 30% of eelgrass in Nantucket waters between 1995 and 2015 and an estimated 2,000 acres remaining.

Understanding the importance of eelgrass to the local ecosystem, history, and social fabric of Nantucket Island, the Town initiated the development of an Eelgrass Management Plan to gather historic and baseline conditions, document stressors to eelgrass, and identify actions to protect, stabilize, and enhance/restore eelgrass. This plan builds on recommendations

PROJECT TIMELINE

Final Plan Completion
Summer 2025

SUPPORTING DOCUMENTS

- Nantucket Harbor Benthic Survey 2020
- Nantucket Harbor Benthic Survey 2021
- Nantucket Harbor Benthic Survey 2022
- Nantucket Harbor Benthic Survey 2023
- Nantucket Madaket And Tuckernuck Benthic Surveys 2024

Public Engagement Session Coming Soon!

Town of Nantucket Natural Resources Department · Nantucket Land & Water Council · Est. 1974 · Great Harbor Yacht Club Foundation

UMass Boston Nantucket Field Station · UMass Boston URBAN HARBORS INSTITUTE

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Thank You!

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