



Mitigation of Nitrogen Pollution in North Haven

June 22, 2023 North Haven Town Hall



Peconic Estuary Partnership

- EPA designated National Estuary Program
- PEP works to restore clean water, protect and enhance vibrant ecosystems, and communicate sound science for nature-based coastal planning in the Peconic Estuary and its watershed.





Peconic Estuary Partnership





Research

- Nutrients, Pathogens, Toxics, Algal Blooms
- Atmospheric Deposition: Nitrogen and Mercury
- Eelgrass, River Herring, Wetlands

















Sources of Excessive Nutrients and Pathogens

Agriculture





Septic Systems

Cesspools



Residential Fertilizer



Stormwater



Sewage Treatment Plants



Animal Waste





Impact: Loss of Critical Habitat



Source: Gobler, 2016

- Salt Marsh is critical for a wide variety of marine and avian life
- Salt marsh filters terrestrial pollutants
- Increased Nitrogen suppresses roots and accelerates salt marsh disappearance on Long Island

- Eel grass is critical for marine life
- Nitrogen accelerates the loss of eel grass habitat on Long Island





Impact: Harmful Algal Blooms



Cochlodinium, or rust tide algae, have brought kills to populations of fish and shellfish on eastern Long Island.

Dinophysis can cause Diarrhetic Shellfish Poisoning

Hypoxia, or lack of dissolved oxygen, can cause dead zones deadly for aquatic life

PEP Water Quality Report 2022



Available online: https://www.peconicestuary.org/peconic-estuary-water-quality-report/

How do we assess Water Quality?



Harmful Algal Blooms

- Chl A
- Water Clarity (Secchi Disk)
- Total Nitrogen
- Dissolved Oxygen

- Photosynthetic pigment in algae
- Algae concentration increases water turbidity
 - Light limitation for beneficial macroalgae and eelgrass
- Nitrogen is a necessary nutrient for algal growth
- Decaying algae will be decomposed and D.O. levels will drop
 - Benthic organisms suffer from hypoxia/anoxia



Human Pathogens



• Enterococcus

Water Clarity (SD) PEP WQ Report 2022



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| 2020 - | | met | met | met |
| 2021 - | not met | met | met | met |
| 2022 - | not met | not met | met | met |

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PEP WQ Report 2022

Dissolved Oxygen

Shelter Island Sound at Shelter Island NY -01304650



https://waterdata.usgs.gov/monitoring-location/01304650/#parameterCode=00300&period=P30D

PEP WQ Report 2022

Pathogens (Enterococcus)





Gannet Creek Shellfish Closure



Shellfish Closures

Part 41: Sanitary Condition of Shellfish Lands

(xvi) Genet Creek. During the period January 1 through December 31, both dates inclusive, all that area of Genet Creek and its tributaries lying south of a line extending easterly from the northernmost point of the western jetty at the entrance to Genet Creek to the northernmost point of the eastern jetty at the entrance to Genet Creek.

https://www.dec.ny.gov/outdoor/103483.html



Peconic East Blue Carbon-Shoreline Protection Project

Seagrasses, salt marshes, and mangroves are the aquatic habitats most commonly associated with the term blue carbon, which is the carbon sequestered in vegetated coastal habitats.

• Support local food web, prevent erosion, sequester carbon

\$600,000 of Bipartisan Infrastructure Law funds will be directed through PEP to this project over two years, to be leverages for continued increased funding going forward



Figure 1: Eelgrass can occur in thick extensive meadows (photo: Phil Colarusso)





EPA - Blue Carbon Report

New York Times / Mike Doall

Peconic East Blue Carbon-Shoreline Protection Project



Year 1 will have the following tasks:

- Assess the suitability of the aquaculture of kelp, the establishment of oyster reefs, cages, and/or balls, and for eelgrass restoration.
- Perform experimental and pilot scale deployment of aquacultured kelp, oyster reefs, cages, and/or balls, and eelgrass.
- Quantify carbon sequestration, nitrogen bioextraction, and shoreline protection afforded by sundry experimental and pilot scale approaches, and
- To estimate carbon sequestration, nitrogen bioextraction, and shoreline protection afforded by full scale deployments.
- In-shore and open water sites across North Haven, Sag Harbor, and Shelter Island.
- In-land sites to be assessed will include Gannet Creek in North Haven, Menatic Creek on Shelter Island, and Sag Harbor Cove, in Sag Harbor.
- Open water regions will include the eastern shore of North Haven, the region near the south ferry site of Shelter Island, and the region north of Northwest Harbor in East Hampton.

Peconic East Blue Carbon-Shoreline Protection Project



Deliverables:

1. Comprehensive site evaluations for the feasibility of oyster reefs, seagrass restoration, and kelp lines as means to sequester carbon, bioextract nitrogen, and protect shorelines.

2. Estimates of carbon sequestration, bioextraction of nitrogen, and shoreline protection via oyster reefs, oyster cages, seagrass restoration, and kelp lines for multiple sites within eastern Peconic Estuary based on experimental-scale and pilot-scale deployments.



Native Plant and Rain Gardens

Planting a native plant or rain garden or installing rain barrels can mitigate stormwater runoff into our bays. Reducing your fertilizer use can also reduce the amount of nitrogen entering our bays and groundwater. Thereby helping to reduce nutrient pollution, improve water quality, and restore our natural resources.

Tools for Creating a Peconic Friendly Yard:

- PEP Interactive Yard Tool
- Native Plant Species Database
- Native Plant Garden, Rain Garden, and Rain Barrel Installation Instructions
- Fertilizer Recommendations

https://www.peconicestuary.org/what-youcan-do/create-a-peconic-friendly-yard/





Peconic Estuary Pump Out Stations

The entire Peconic Estuary was designated as a federally recognized Vessel Waste No Discharge Zone (NDZ) in 2002 in order to help protect our shellfish beds and keep our waters safe and clean for swimming and recreation. In a NDZ, treated and untreated discharges from marine toilets are prohibited.



https://www.peconicestuary.org/news-and-events/maps-gis/maps-land-use/





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