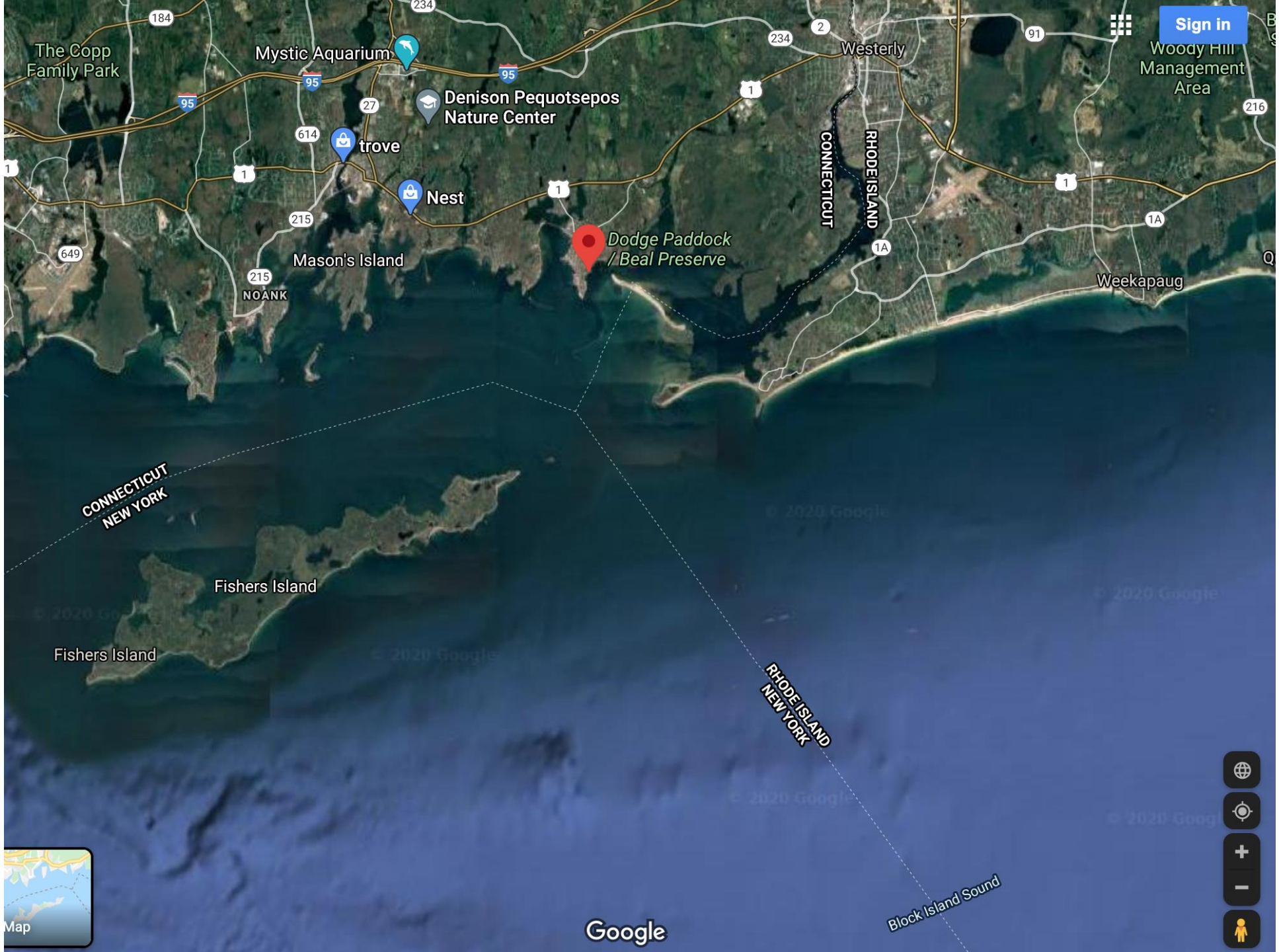
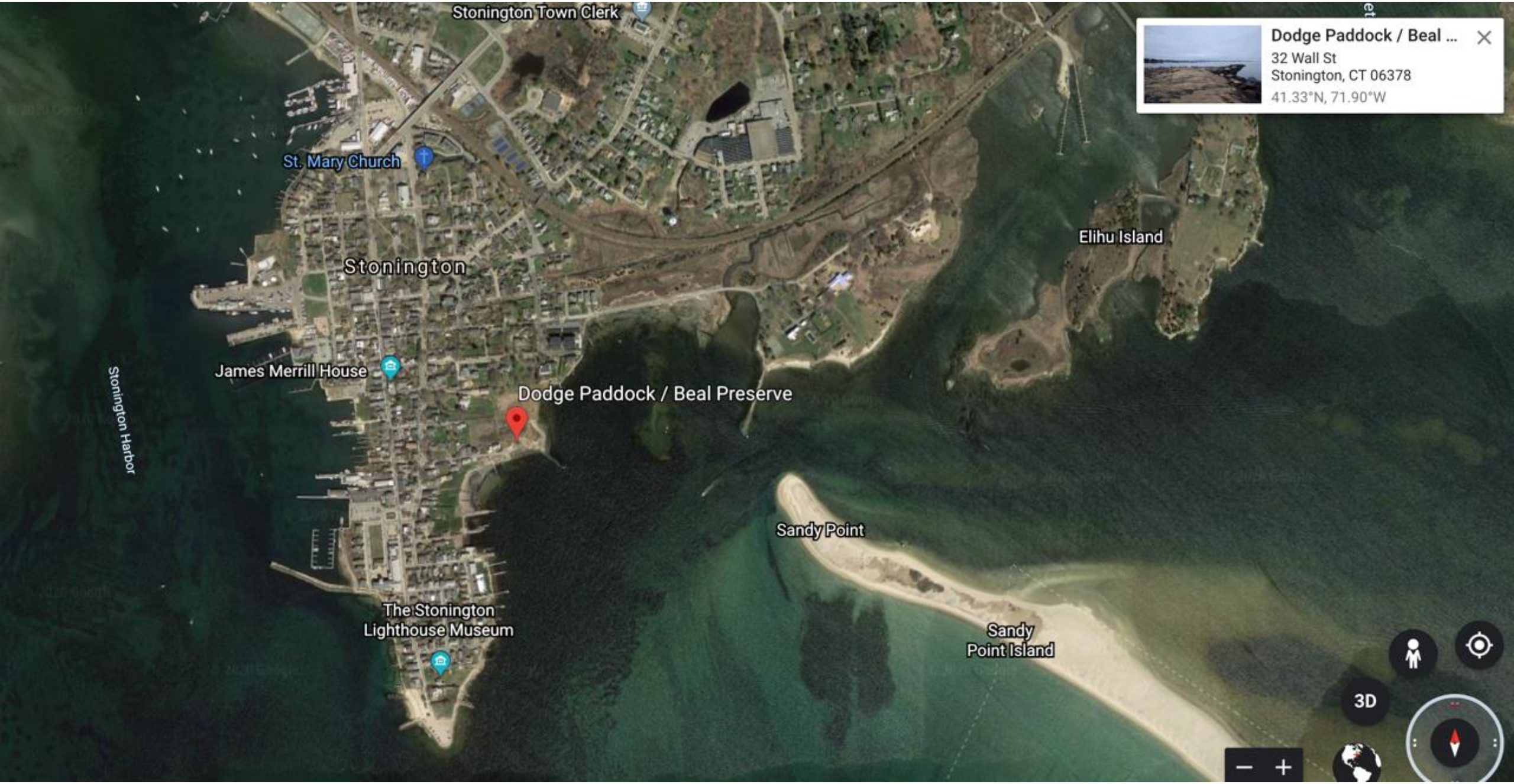
# Moving with the Marsh: Dodge Paddock Beal Preserve

AVALONIA

Sea Grant
CONNECTICUT


Sign in
The Copp Family Park
Mystic Aquarium
Denison Pequotsepos Nature Center
trove
Nest
Dodge Paddock / Beal Preserve
Mason's Island
NOANK
Westerly
Woody Hill Management Area
Weekapaug
CONNECTICUT
RHODE ISLAND
CONNECTICUT
NEW YORK
Fishers Island
Fishers Island
RHODE ISLAND
NEW YORK
Block Island Sound
Google
Map


Stonington Town Clerk
St. Mary Church
Stonington
James Merrill House
Stonington Harbor
Dodge Paddock / Beal Preserve
Elihu Island
Sandy Point
The Stonington Lighthouse Museum
Sandy Point Island
Dodge Paddock / Beal ...
32 Wall St
Stonington, CT 06378
41.33°N, 71.90°W
3D


History (See Avalonia's website):
Paddock
Pottery works
Sawmill
Historic stone wall

Habitats:
Tidal wetlands
Berm/"Dune"
Tidal creek
Rocky intertidal
Coastal meadow

Uses:
Resilience
Education
Enjoyment
- Walkers
- Schools groups
- Neighbors

# 1999

Area is relatively dry
Few shrubs in upland
Sea wall is intact


1800’s


# 1938 Hurricane

# Flooding and standing water made it impossible to mow and mosquitoes thrived in standing water.

As  the Paddock got wetter, and mowing was impossible, it became a monoculture of Phragmites.

A plan was developed with DEEP to eradicate the Phragmites and ultimately restore the habitat.

Immediately after Sandy: Standing water well inland, no drainage and deposition of gravel and rock from south frontage,  well over midline stone wall.


# After Sandy

The storm destroyed the seawall at the parking lot adjacent to and along the preserve, allowing flood waters to enter from another point.

# The corner of the historic sea wall was broken

# The drainage pipe and clam shell closure got completely blocked with gravel and sand.

- And  once we looked inside it was filled with more of the same and the PVC drainage pipe was fractured .

- There was no further way to drain feet of standing water inside the paddock.

# Standing water bred mosquitoes

# It was pretty devastated.


KUBOTA
KX121-3

# 2013 Phragmites are gone, drainage is working,  but it didn't last long!

# Issues and Activities

- **Need for $$$ (same issue we all have)**
- **Historical aspects of the site – pottery works, stonewall**

- Limits what can be done at Preserve

- Storms and coastal erosion
- Phragmites in wetlands
- No drainage
- Mosquitoes

- Superstorm Sandy (2012) – caused sand and gravel to form a berm on the south side of the Preserve
- Issues with mosquitoes and lack of drainage; Phragmites dominated
- CT DEEP cut a channel on the south side to the Sound and managed Phragmites
- ALC and Mystic Aquarium received Futures Fund grant to manage for a salt marsh with the new channel bringing in salt water
- Took a few years, marsh grasses took off and filled in marsh

- Flooding (coastal and inland)
- Maintaining inlet

- Continuing issues with the channel – filling in, erosion on south side
- CT DEEP tried a plastic liner, coir logs, redigging channel
- CTSG and Avalonia planted the berm to help with erosion and stabilization
- Continued issues with erosion due to wave energy/storms

# 2016

Post Irene and Sandy
Large wetland
Many shrubs in upland
Sea wall is no longer intact
Trail through meadow has been moved due to SLR

Little to no marsh

# Summer 2023

Tidal salt marsh
Many shrubs in upland
Trail through meadow has been moved (3x) due to SLR
Marsh well developed in front of berm

# LISFF Grant Work plan


Area 1 (Freshwater wetland) & Area 2 (Tidal wetland) – Replant with native species that can adapt to impacts of climate change including sea level rise and stronger precipitation events. Ensure that area serves as a buffer to improve water quality as a result of runoff.

Area 3: Coastal grassland system - invasive species control and replanting of appropriate grasses and shrubs.

**LOCALLY PROPAGATED & GROWN**

**NEW ENGLAND PROVENANCE TREES, SHRUBS, & HERBACEO**

| JOB NAME | REQUESTED BY | SHIP VIA |
|---|---|---|
| | JENNIFER | CUST PICK-UP |

| QTY | DESCRIPTION |
|---|---|
| | LONG ISLAND SOUND GRANT/MYSTIC AQUARIUM |
| 8 | BACCHARIS HALIMIFOLIA, GROUNDSEL TREE, 2-3', #1 POT |
| 8 | IVA FRUTESCENS, HIGH-TIDE BUSH , 2-3 FT, #1 |
| 5 | PRUNUS MARITIMA, BEACH PLUM 18-24", #1 |
| 150 | SPARTINA ALTERNIFLORA, TALL SALT MARSH CORDGRASS, 2" PLUG |
| 3 | MYRICA PENSYLVANICA, BAYBERRY, 18-24", #1 |
| 50 | HIBISCUS MOSCHUETOS, SWAMP ROSE MALLOW 2" PLUG |
| 5 | PHOTINIA PYRIFOLIA, RED CHOKEBERRY, 2-3FT, #1 POT |
| 5 | PHOTINIA MELANOCARPA, BLACK CHOKEBERRY, 18-24", #1 POT |
| 5 | CLETHRA ALNIFOLIA, SWEET PEPPERBUSH, 6-12", #1 POT |
| 5 | ILEX GLABRA, INKBERRY, 18-24", #1 |
| 5 | SPIREA TOMENTOSA, STEEPLEBUSH, 2-3FT, #1 |
| 5 | VACCINIUM CORYMBOSUM, HIGHBUSH BLUEBERRY, 18-24", #1 |
| 5 | VIBURNUM DENTATUM, NORTHERN ARROWWOOD, 18-24", #1 |
| 5 | SAMBUCUS CANADENSIS, COMMON ELDERBERRY, 18-24", #1 |
| 1 | SALIX NIGRA, BLACK WILLOW, 2-3', #2POT |
| 5 | ROSA VIRGINIANA, VIRGINIA ROSE, 18-24", #1 |
| 50 | CALAMAGROSTIS CANADENSIS, BLUE JOINT GRASS, 2" PLUG (IN THE PROCESS OF GROWING) |
| 50 | GLYCERIA CANADENSIS, MANNA GRASS, 2" PLUG (STILL GROWING) |
| 50 | GLYCERIA STRIATA, FOWL MANNA GRASS, 2" PLUG |

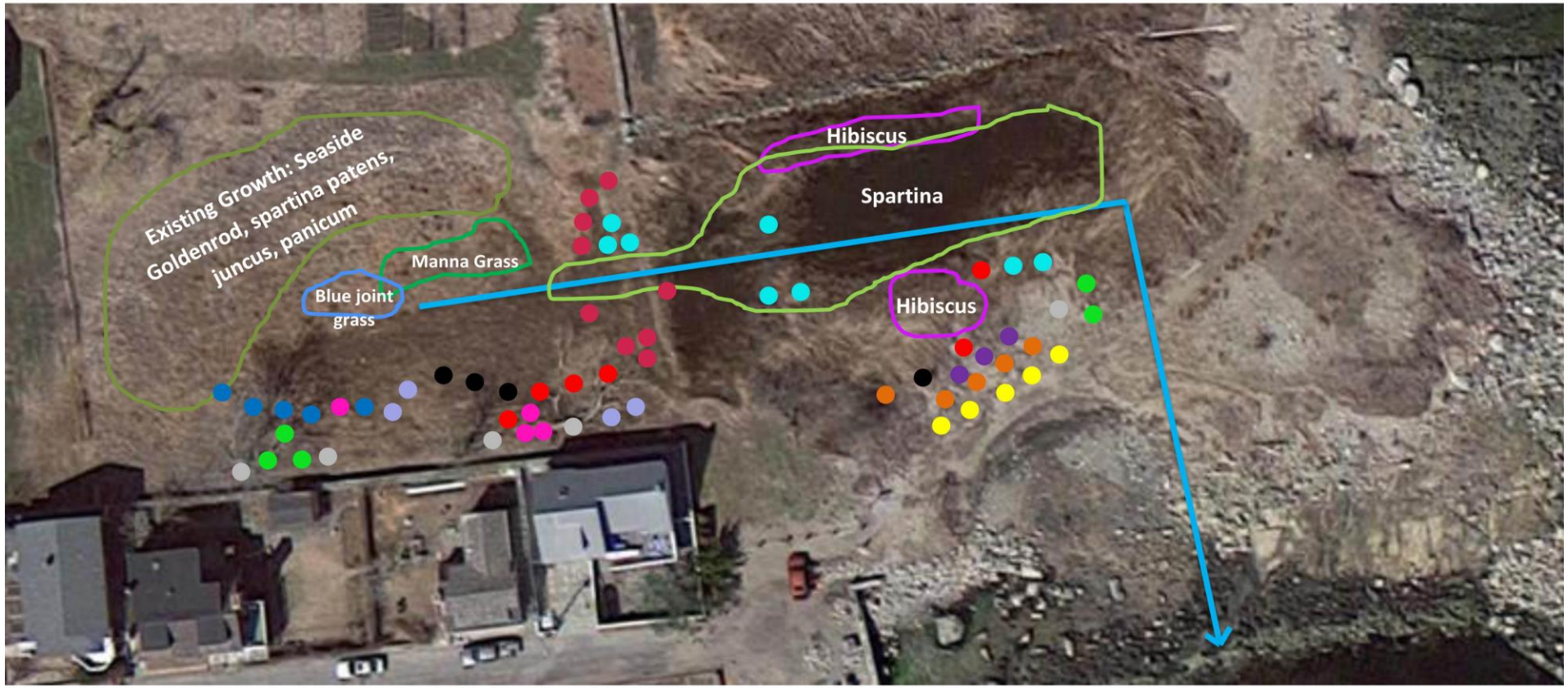
ALL PLANTS SUBJECT TO AVAILABILITY AT TIME OF ORDER ENTRY. IF YOU WOULD LIKE TO CHANGE THIS QUOTE INTO AN ORDER PLEASE SEND US YOUR PURCHASE ORDER, OR SIGN AND DATE BELOW INDICATING YOUR ACCEPTANCE OF THIS QUOTE, AND RETURN THIS QUOTATION TO US BY FAX OR EMAIL. ALL QUOTES ARE VALID FOR 30 DAYS. THANK YOU.

SU
SAL
TO

THANK YOU FOR CONSIDERING NEW ENGLAND WETLAND PLANTS, INC TO BE YOUR SUPPLIER
CONTROL PRODUCTS AND LOCAL PROVENANCE NATIVE PLANTS.

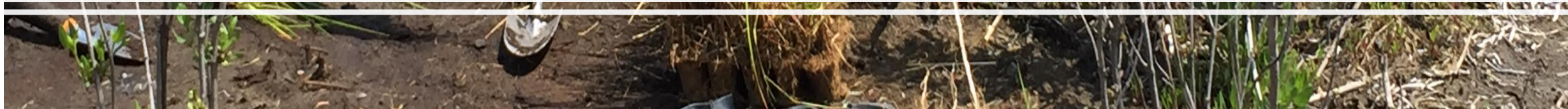
# Dodge Paddock & Beal Preserve Planting Map

***Planted 6/11/2015***




- Red Chokeberry
- Black Chokeberry
- Virginia Rose
- Beach Plum
- Bayberry
- High-tide bush
- Inkberry Holly
- Black Elderberry
- Groundselbush
- Highbush Blueberry
- Sweet Pepperbush
- Southern Arrowwood

We planted thousands of spartina plugs



# Erosion Issues along shoreline and inlet

# A vinyl culvert liner seemed like a perfect fix...until a powerful storm surge undermined it and rendered it unfit to serve!

The coir logs helped for a while, but rocks placed along side and in front were no match for strong waves and currents.

At certain times of year, and highest tides, eel grass can mound up deeply all the way to the inside of the restored marsh.


As lovely as it was, decades ago, we can never go back and reverse the effects of storms, sea level rise and increased salinity in ground water.

# Issues and Activities (LISP Futures Fund Grant 2018)

- What to do with formal garden donated to ALC in 2017?

ALC looked at options and with CTSG developed a marsh migration buffer demonstration garden

- Invasive plants in uplands and shrub growth

Meadow maintenance (mowing and invasive plant control)

- Continued issues with coastal erosion

Also with Futures Fund grant, had GEI look at options to control erosion and maintain channel;

Worked with UConn student to develop a resilience plan for the Preserve

# Long Island Sound Study Futures Fund projects

- Create a marsh migration buffer in the formal garden area with a monitoring plan
- Manage shrubs in the coastal meadow; mow meadow
- Manage invasive plants in the coastal meadow
- Develop a Resilience Plan to go with the Site Management Plan
- Develop a coastal engineering analysis for a potential living shoreline to maintain the tidal inlet
- Public outreach and involvement

# Marsh Migration Buffer and Uplands

Beth Sullivan worked with local garden clubs and nurseries to remove raspberries, bulbs and perennials during spring 2018.

Soil was turned over and raked.

Covered with black plastic for summer 2018 to kill remaining plants and seed bank.

Fall 2018

May 2019

- There were 140 volunteers participating in various work days and events at Dodge Paddock over the 18 month grant period.
- In 2018, volunteers provided 877 hours of time
- In 2019 they provided 110.5 hours.

Spring 2019 – planted trees, shrubs and perennials
native, mostly salt tolerant plants
Plantings:
New England Wetland Plants Inc: New England Coastal Salt Tolerant Grass Mix:
*Elymus canadensis, Festuca rubra, Panicum amarum, Panicum virgatum,*
*Andropogon gerardii, Sorghastrum nutans, Juncus tenuis*

Prides Corner Farm Inc
Potted plants:
*Amelanchier laevis, Cornus racemosa, Asclepias incarnata, Lobelia cardinalis, Comptonia peregrina, Vernonia novaboracensis*

Earth Tones Native Plants
Potted Plants:
*Amelanchier canadensis, Andropogon gerardii, Aronia arbutifolia, Ilex verticillata, Morella caroliniensis, Nyssa sylvatica, Panicum virgatum, Physocarpus opulifolius, Prunus maritima, Sorghastrum nutans Vaccinium angustifolium, Vaccinium corymbosum*

Seeds of Success (Native Plant Trust)/USDA NRCS Cape May Plant Materials Center:
Seeds: *Panicum virgatum, Schizachyrium scopari, Solidago altissima, Spartina pectinata, Viburnum dentatum, Iva frutescens, Schoenoplectus pungens, Eragrostis spectabilis, Carex comosa*

*Hibiscus moscheutos* (marsh mallow) and *Baccharis halimifolia* (groundseltree) seeded in naturally by September.

NRCS Soil Survey September 14, 2018


**USDA NRCS test pit# 3**
Waypoint: 565
Depth of organic material: 0 cm
Estimated Seasonal High-Water Table: 10 cm
Final depth of pit: 90 cm
Taxon name: Matunuck taxadjunct
Taxonomic class: Coarse-loamy, mixed, mesic, Typic Endoaquents
Vegetation: *Panicum virgutum, Hibiscus moschuetos, Solidago sempervirens*

| Depth (cm) | Horizon | USDA Texture | Matrix Color | Rock Fragments/ Consistence | Redox; Moisture; Structure | pH | $EC_{probe}$ (dS/cm) |
|---|---|---|---|---|---|---|---|
| 0-10 | ^Au | sandy loam | 10YR 2/1 | very friable | moist; weak medium subangular blocky structure | 6.8 | .68 |
| 10-84 | ^CAu | sandy loam | 10YR 3/3 | 10% gravels; friable | 5% 10YR5/8 concentrations; 5% 10YR 5/2 depletions; moist; massive structure | 6.7 | 1.1 |
| 84+ | C | sandy loam | 10YR 4/3 | friable | 10% 10YR5/8 concentrations; 5% 10YR 5/2 depletions; moist, massive structure | 7.0 | .52 |

Also University of Connecticut Soils Testing Lab processed 23 soil samples.

May 2019

August 2019

In first years after planting,
herbaceous perennials thrived


DATUM

| | | |
|---|---|---|
| 100 YR FLOOD | ( SEE PLAN ) | ——— 100YR ——— |
| MHW | +0.83 | — — — — — — |
| NAVD88 | 0.0 | |
| MSL | -0.38 | —— —— —— |
| MLW | -1.67 | . . . . . |

***NOTES:***

1. (6) GROUND TARGETS WERE USED TO CORRELATE AERIAL SURVEY CONTOURS AND GRADES WITH NAVD-88 BENCHMARK DATUM.
2. SURVEY WAS CONDUCTED AT APPROXIMATELY MID TIDE WATER LEVEL.

0 60 120

SCALE: 1" = 60'

***SOURCE:***

1. PLAN CREATED FROM AERIAL SURVEY CONDUCTED BY SUAV ( SMALL UNMANNED AIR VEHICLE ) DJI PHANTOM 4 PRO.

Dodge Paddock / Beal Preserve
Stonington, CT

University of Connecticut
438 Whitney Rd Extension, Unit 133, Storrs, CT 06269

GEI Consultants

SITE PLAN

Project 1802597 | March 2019 | Fig. 1

# Issues with flooding

- Even with improved drainage from tidal flow, heavy rains and saturated ground, combined with storm tides, lead to long standing and troublesome flooding for neighbors

# Invasive species continue to be a major problem.. They seem to thrive in the changing salinity of the soil……Bindweed

# More invasive plants

June 2014  Drainage established, Phragmites gone. What next to preserve the flow?

# Paths need to be maintained

# Yearly mowing to keep woody invasives and shrubs under control

# Keeping the channel open when eelgrass piles in during high tides and storms.

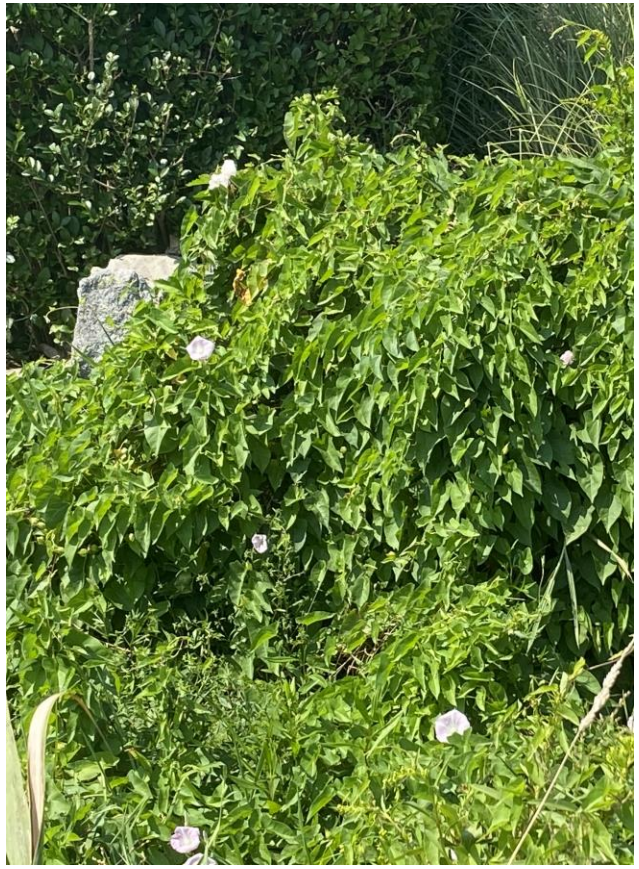
# Keeping the channel open while visitors build bridges and dams

# Need to protect the marsh while allowing visitors to be safe and dry.  But only at times.

# Need to maintain the integrity of the developing protective salt marsh shoreline

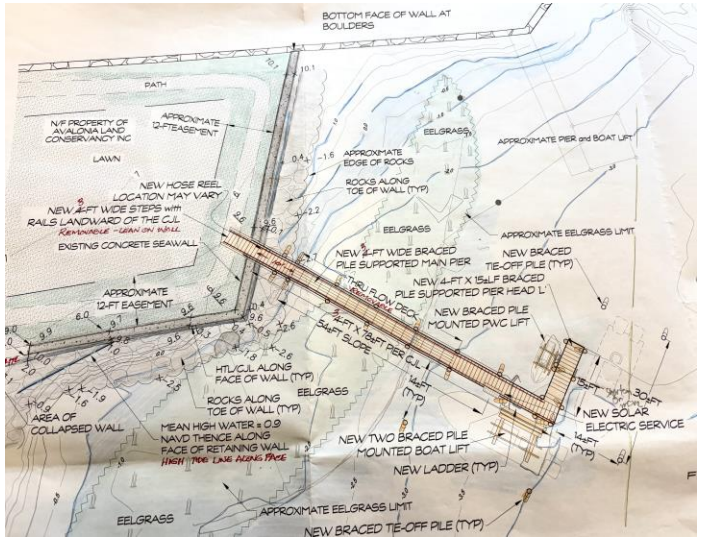
# Ongoing Stewardship

- Trail/public access maintenance
- Yearly mowing to keep woody invasives under control
- Invasive plant management
- Signage
- Annual monitoring
- Maintaining open communication, relations with neighbors



# Current Challenges

- Stormwater  management and tidal exchange
- Coastal erosion and protection of developing salt marsh
- Seawall degradation
- ROW neighbor pier application negotiations



# Moving Forward

- Find long-term solutions to maintaining water balance (e.g., DEEP mosquito control group, Town/Boro Public Works, resurrecting Friends of Dodge/Beal-neighbor support)
- Continue to pursue grants for coastal resilience and stormwater management
- Update Management Plan


Storms will continue to hit the Connecticut coast…Oct 13, 2025

Thank you!