# Long-Term Monitoring of Salt Marsh Vegetation and Nekton with the Northeast Coastal and Barrier Network


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## Monitoring Objectives

- Fundamental purpose is to provide a baseline for a comparison with desired and future conditions of coastal ecosystems
  - **Environmental Stressors**
    - Altered Hydrology
    - Pollution / Urbanization
    - Overharvesting
    - Geomorphic Processes
    - Global Climate Change
  - **Responses**
    - Changes in Competitive Interactions
    - Changes in Predator-Prey Interactions
    - Changes in Nekton Production
    - Changes in Vegetation Community

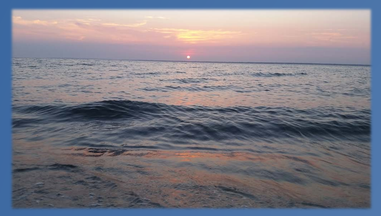

Fig 4: Fire Island National Seashore. Ditch net set and left to allow for nekton to go into net.

## Vegetation Monitoring

### Plot locations

- Approximately 50 plots are randomly located along 10 transects at each site
- Vegetation plots are permanent and are re-sampled every two years

### Braun - Blanquet Method

- Used to sample 1 $m^2$ plots
- Based on 6 cover classes:
  1. <1%
  2. 1-5%
  3. 6-25%
  4. 26-50%
  5. 51-75%
  6. 76-100%
- If *Phragmites australis* or *Spartina alterniflora* are found in vegetation plots, their heights are recorded

Fig 7 : 1 $m^2$ vegetation plot- species present include *Spartina alterniflora* and *Salicornia maritima* .

Fig 8: Data sheet using the Braun-Blanquet Method.

## Nekton Monitoring - Ditch Nets

### Description

- Used for sampling narrow ditches and small tidal creeks
- Composed of 3 mm nylon mesh netting suspended like a hammock between four supporting stakes
- Two mesh doors, one on each side of the body of net, slide up when trigger lines are pulled

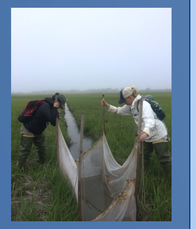

Fig.1: Staking down the ditch nets.

### Methods

- Set up ditch nets
- Measure all the sides of the net in order to calculate the volume of water being sampled
- Leave set for 30 minutes
- Pull trigger lines
- Count and identify all species
- Collect other environmental data: temperature, salinity, state of tide, ditch height, water depth, surrounding vegetation

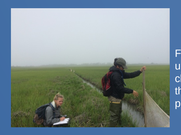

Fig 2: During set up, trigger lines are checked to ensure they are working properly.

## Nekton Monitoring - Throw Traps

### Description

- Used in marsh pools and large creeks
- 1 $m^2$ box with 3 mm galvanized wire screen slides
- Nekton species caught by 3 mm mesh dip net

Fig 3: Top right - illustrates the hip throw, middle left - shows the release of the throw trap, bottom right – a successful throw!

### Methods

- Set up throw trap
- Use GPS to get to throwing location of throw trap
- Wait for at least 2 minutes
- Throw trap and use dip net to flush all fish to a side and pull up dip net
- Count and identify all species
- Sample with dip net until 3 consecutive misses
- Collect other environmental data

## Nekton and Vegetation Monitoring Sites

- **NCBN Parks are sampled every two years, on a rotating schedule. The following sites were monitored in 2015:**
  - Fire Island National Seashore
    - Five marshes on the barrier island
    - Three marshes at the William Floyd Estate
  - Sagamore Hill National Historic Site
    - One marsh

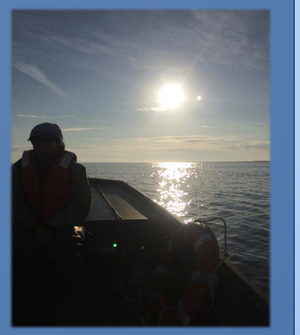

Fig 5: The picture to the bottom left shows Reina Galvan preparing to throw the trap.

Fig 6: The picture to the bottom right shows Erica Brown, Jessica Cressman, and Michelle Blydenburgh looking for nekton captured in the throw trap.

## Dominant Nekton Species Found

- **Mummichog** *(Fundulus heteroclitus)*

- **Atlantic silverside** *(Menidia menidia)*

- **Daggerblade grass shrimp** *(Palaemonetes Pugio)*

## Dominant Vegetation Found

- **Common reed (non-native)** *(Phragmites australis)*

- **Saltgrass** *(Distichils spicata)*

- **Smooth cordgrass** *(Spartina alterniflora)*

- **Saltmeadow cordgrass** *(Spartina patens)*

- **Slender glasswort** *(Salicornia maritima)*

## Other Cool Studies Taking Place at Fire Island National Seashore

- Bat population / presence surveys
  - White nose syndrome
- Horseshoe crab spawning surveys
  - Important food source for shorebirds
- Eastern box turtle surveys
  - Species of special concern

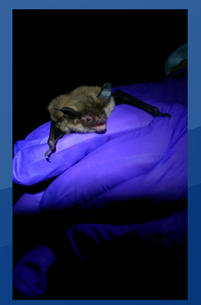

Fig 9: Northern long eared bat (*Myotis septentrionalis*) caught at the William Floyd Estate.

Fig 10: The above image shows a horseshoe crab that has been tagged to track its movement.

Fig 11: Hatchling eastern box turtle found at the William Floyd Estate.