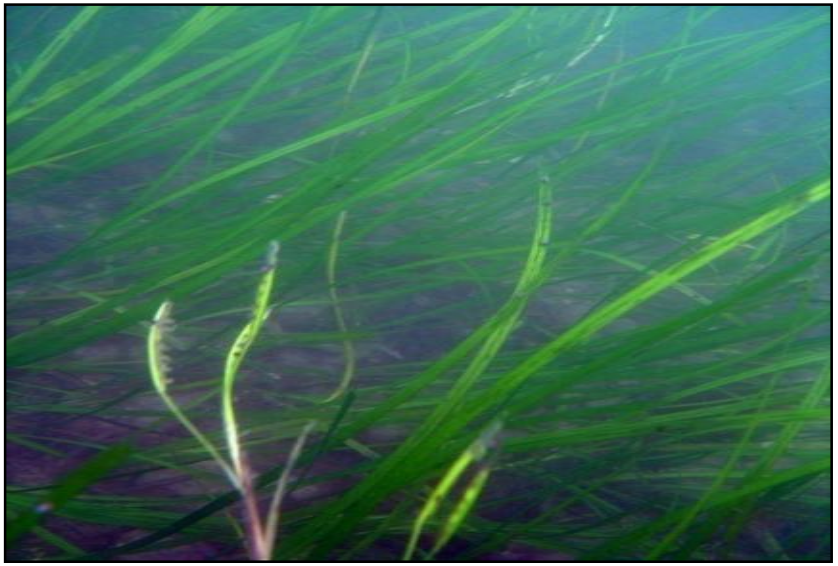
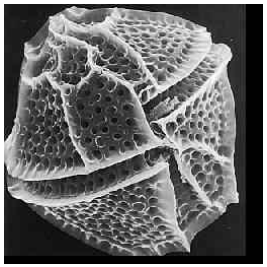
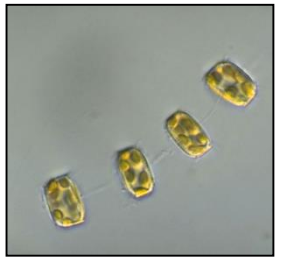
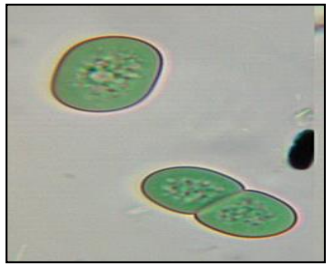
2.5 Storm impacts on coastal ecosystem and fisheries

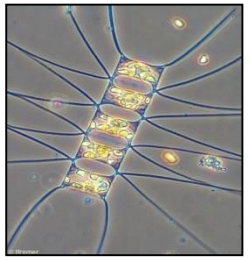
Participants : Christopher J. Gobler, Jackie Collier, Anne McElroy, Robert Cerrato, Brad Peterson, Jake Thickman











Approach

- Assess the effect of Sandy and other storms on coastal water quality
- Contrast the seagrass condition monitoring data collected at three permanent transects along a depth gradient in proximity of the breach from 2007-2012 to that of 2013.
- Use digital micrographs to document and quantify the effects of the breach created by Hurricane Sandy at Old Inlet on the plankton community of Great South Bay.
- Assess how changes in crab populations due to storms may impact fisheries and food webs in NY estuaries.

What do blue crabs eat?

Project team:
Jackie Collier, Bob Cerrato, Anne McElroy

- Prey without distinctive hard parts cannot be identified by visual gut content analysis
- DNA extracted from gut contents can potentially be used to identify all prey
  - Amplify cytochrome oxidase I genes with 'universal' oligonucleotide primers and polymerase chain reaction (PCR)
  - Sequence PCR products on high-throughput 'third generation' platform

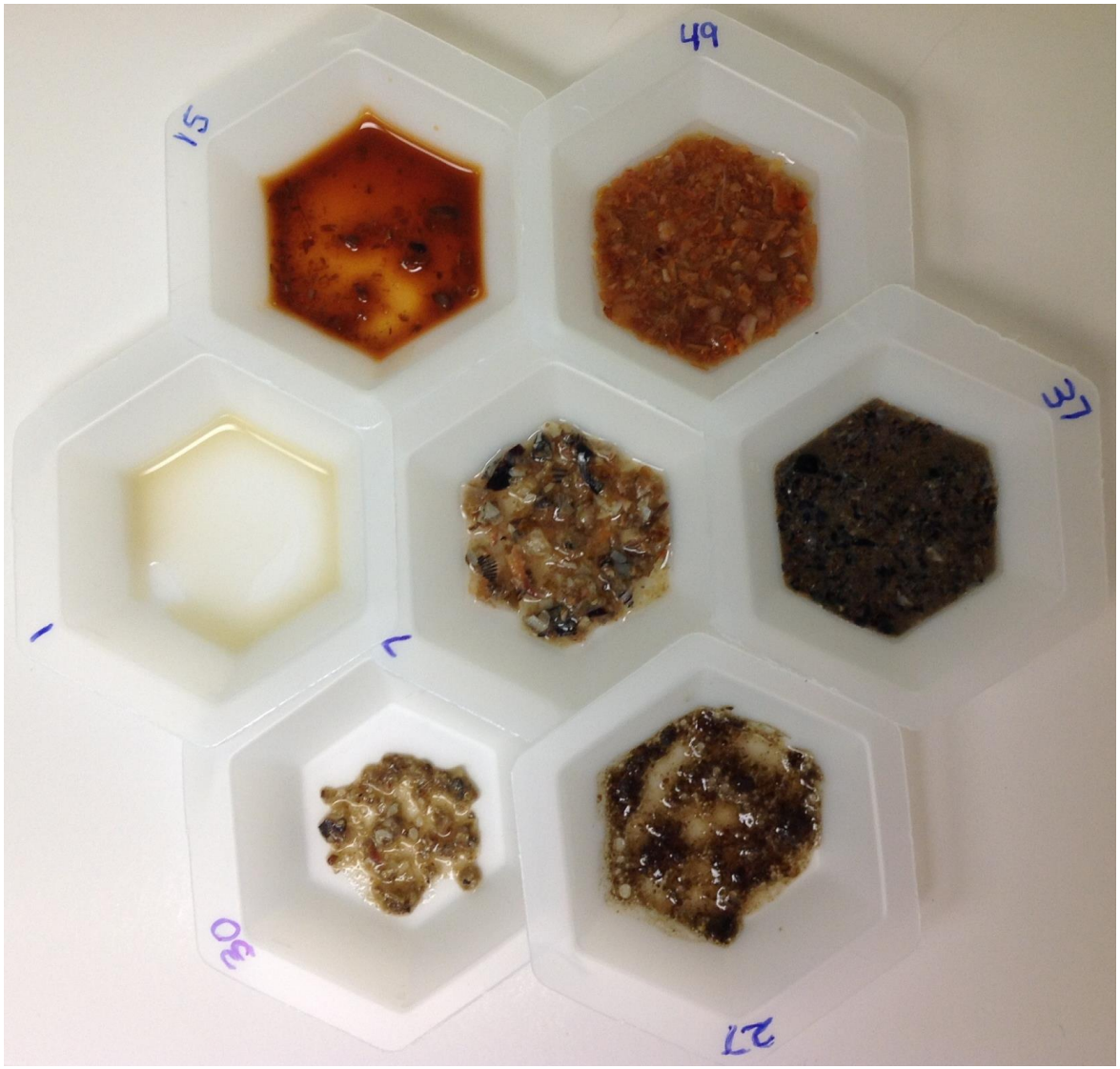
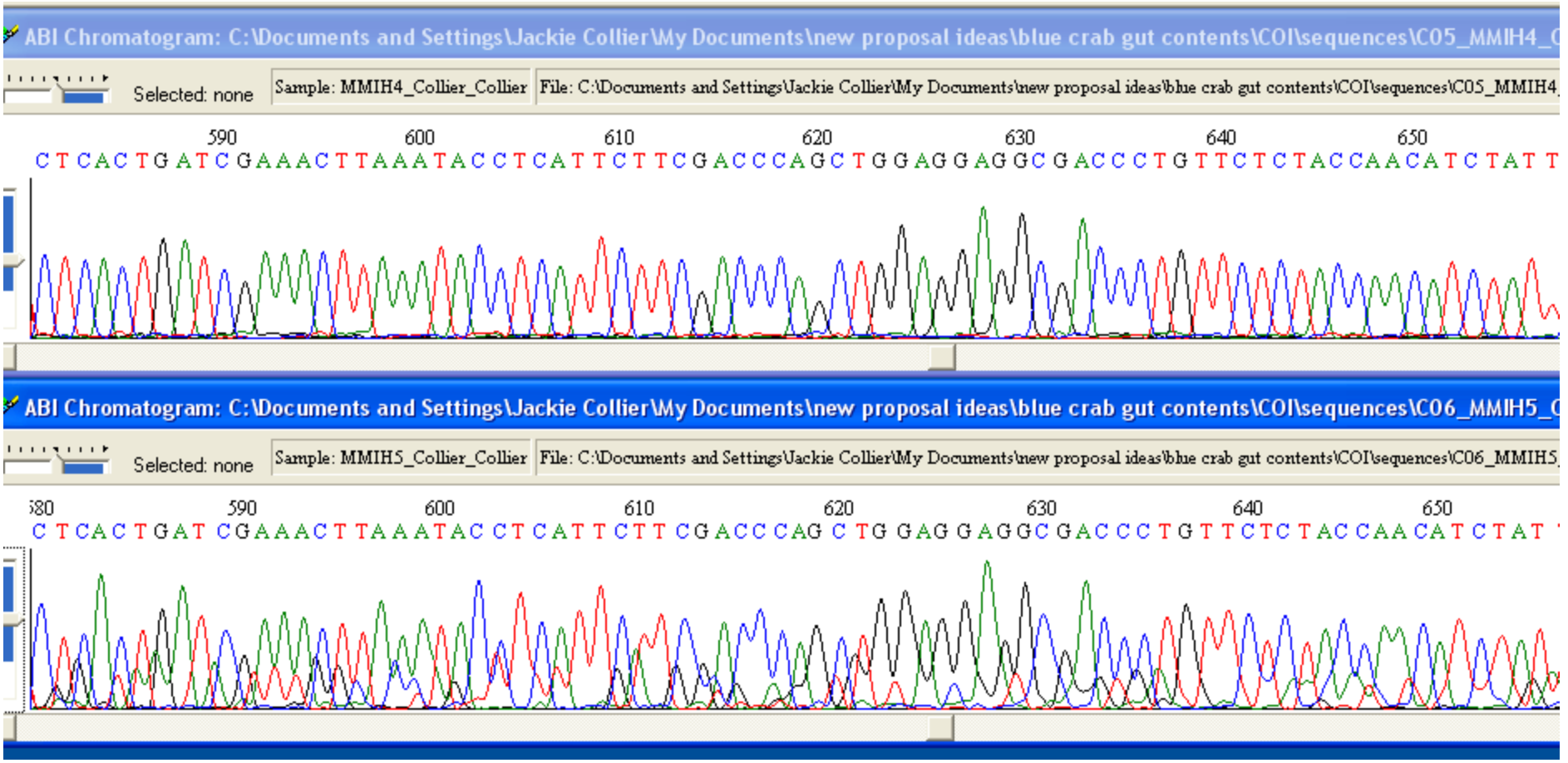


Photo credit Jackie Collier

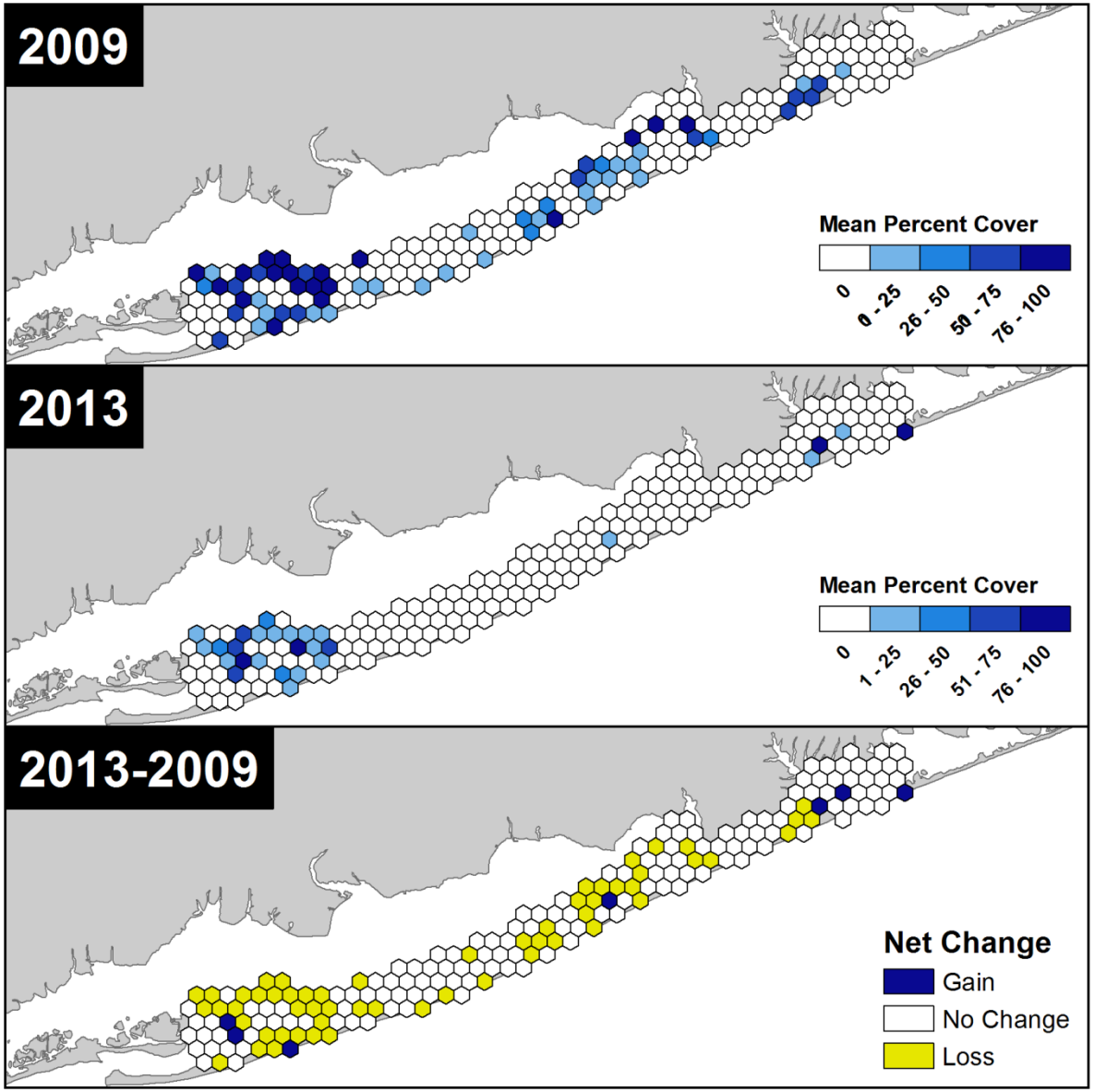
Top panel: Clean blue crab COI sequence (amplified from blue crab muscle tissue DNA)

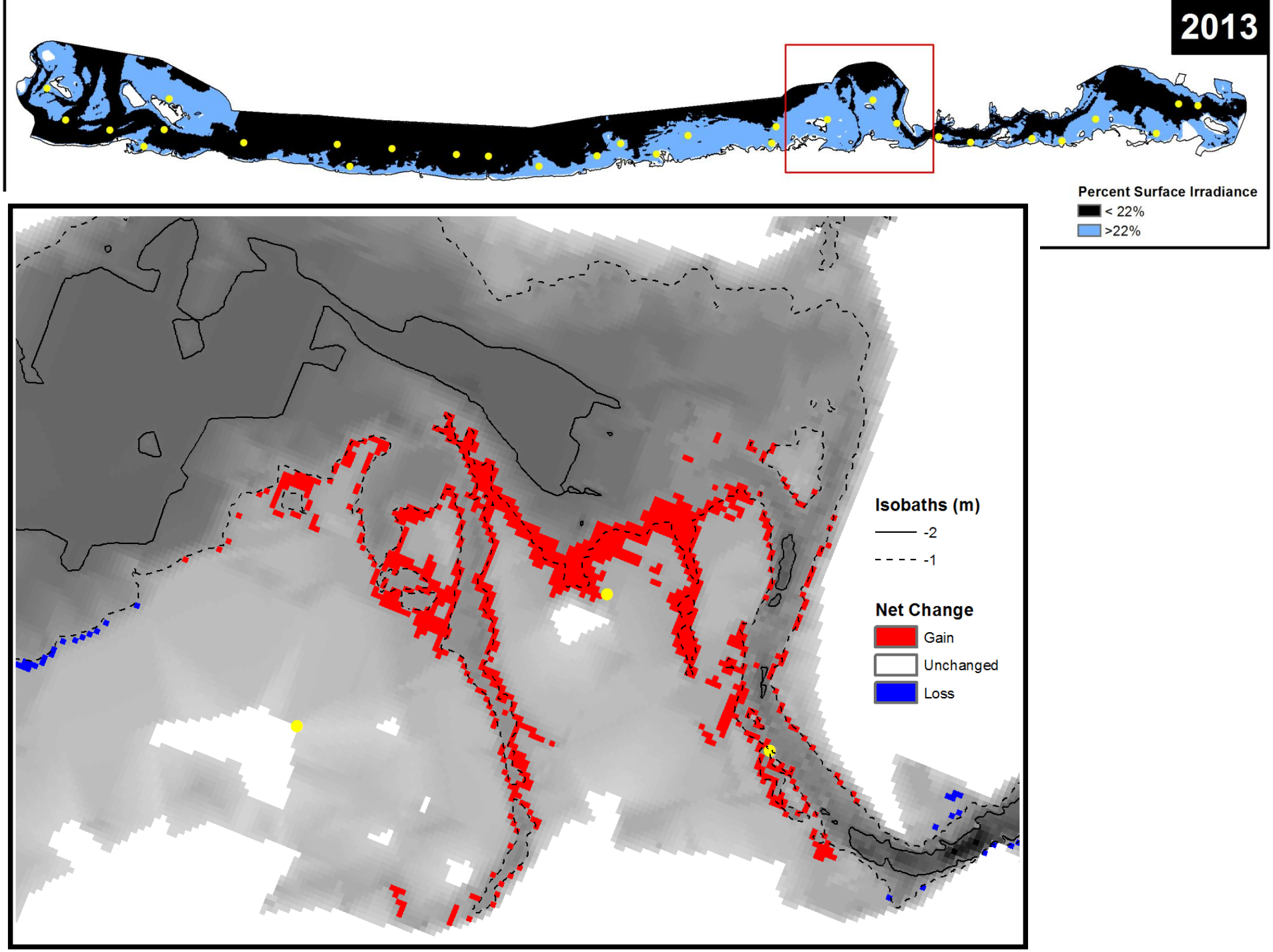
Bottom panel: mixed COI sequence amplified from blue crab gut content DNA



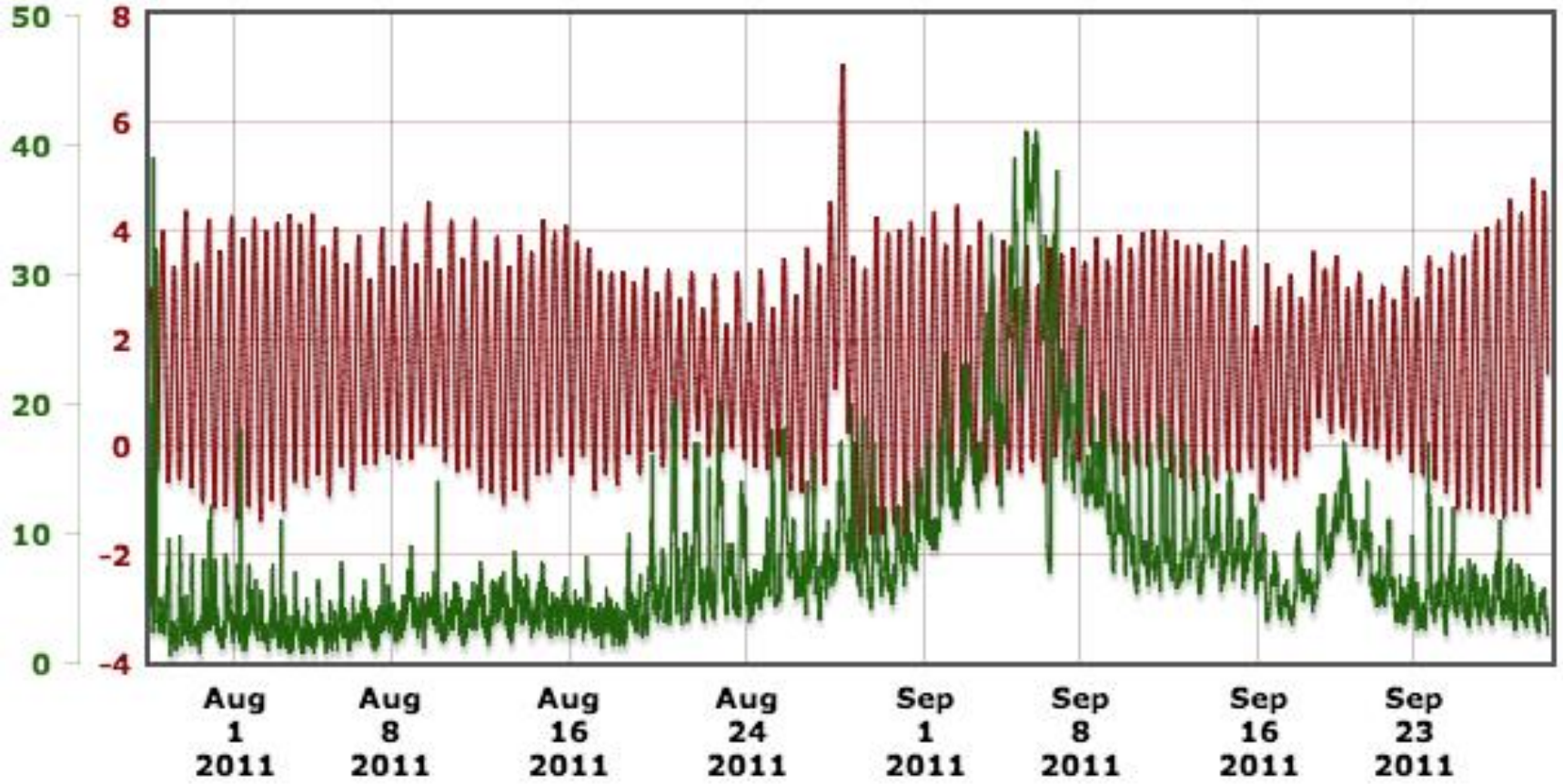
Blue crab image from http://www.nmfs.noaa.gov/gallery/images/photos/5577843910.html

Eelgrass coverage in GSB



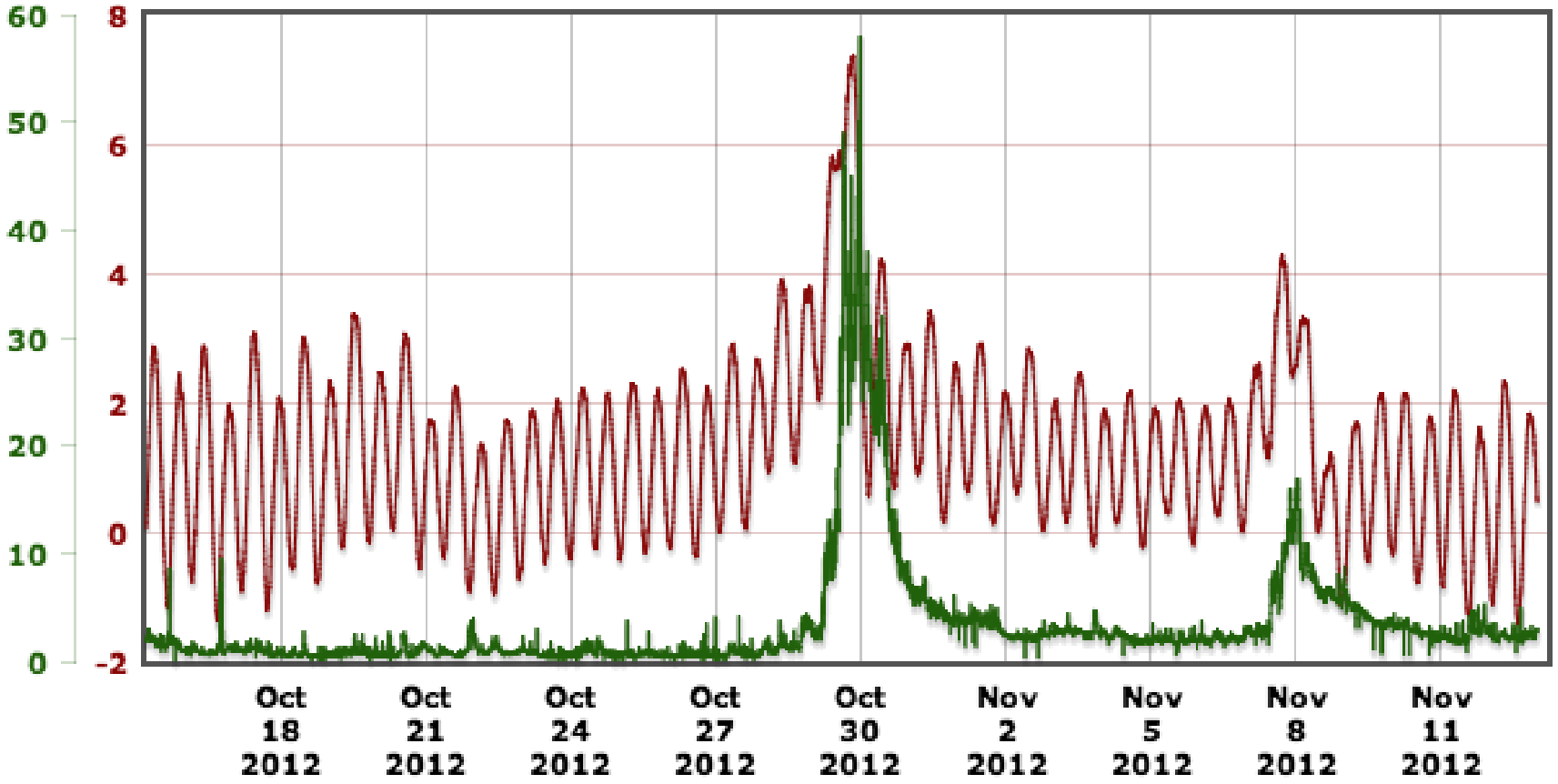

2013
Percent Surface Irradiance
< 22%
>22%
Isobaths (m)
-2
-1
Net Change
Gain
Unchanged
Loss

Hurricane Irene Signals
South Shore
Chlorophyll



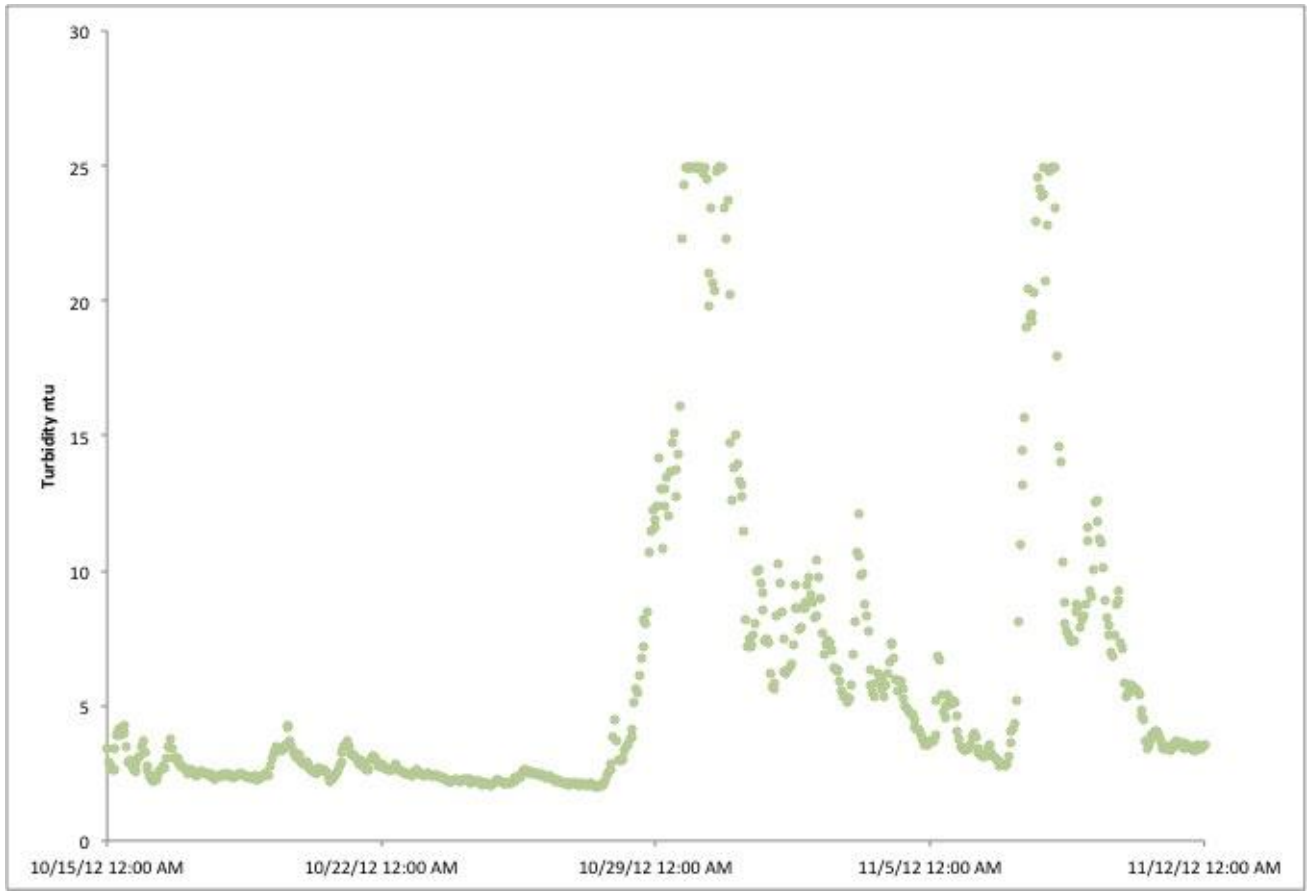
USGS station 01310740 at Reynolds Channel chlorophyll (µg/L) and elevation (NGVD 1929)

Hurricane Sandy Signals
Peconic Estuary
Turbidity



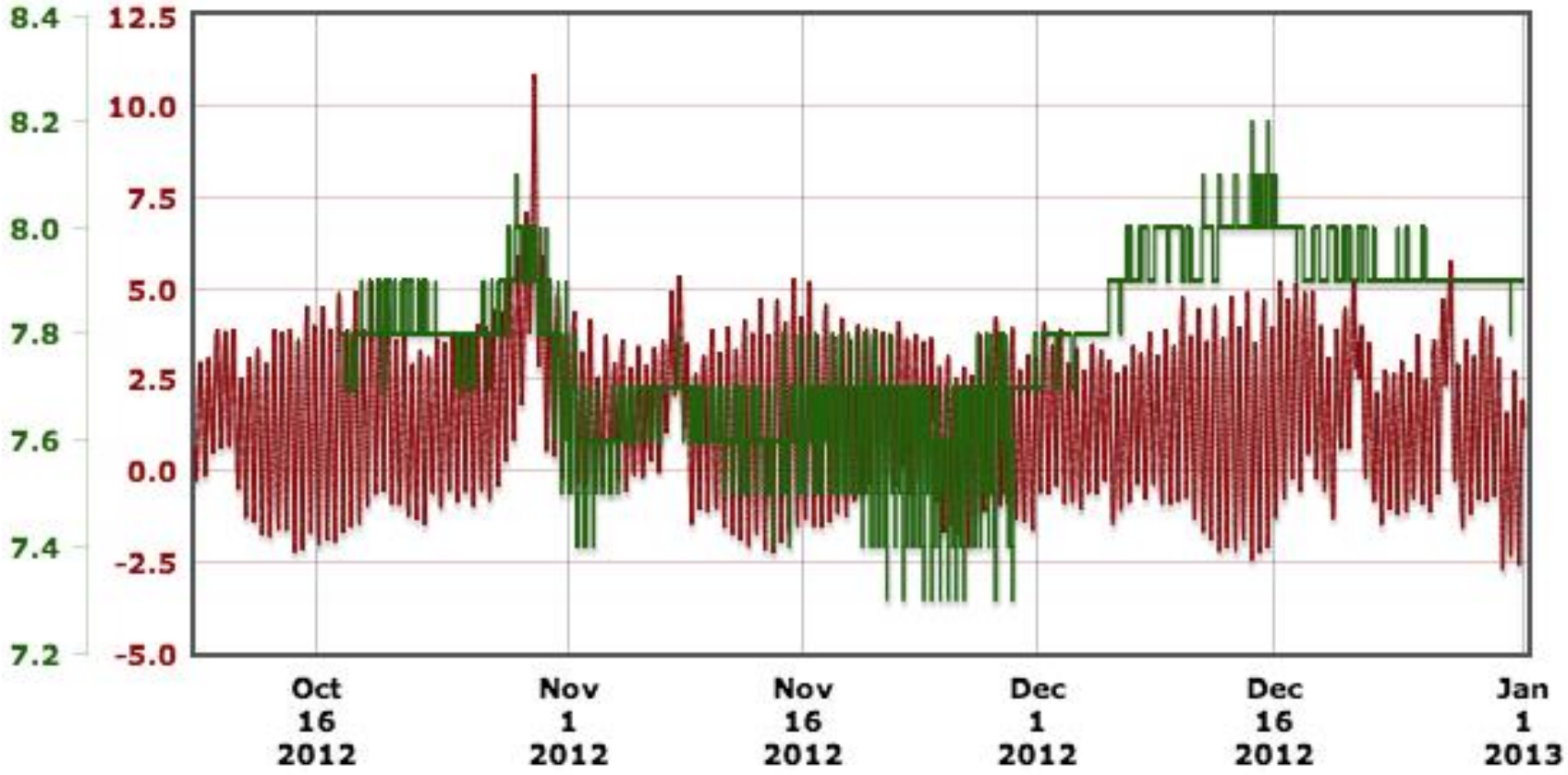
USGS station 01310740 at Orient Harbor turbidity (FNU) and elevation (NGVD 1929)

Hurricane Sandy Signals
South Shore
Turbidity



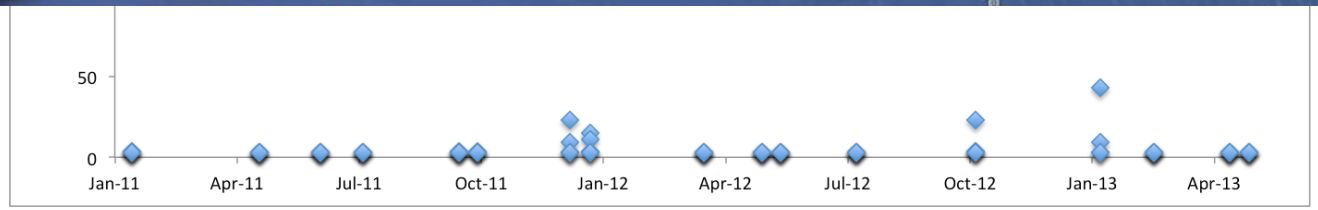
Great South Bay Project buoy GSB1

Hurricane Sandy Signals
South Shore
pH



USGS station 01311143 at Hog Island pH and elevation (NGVD 1929)

Fecal Coliform Signals
Nicoll Bay
Areas Open to Fishing



NYSDEC sampling region 5