NBEP Quarterly Report
June 2011

NARRAGANSETT BAY ESTUARY PROGRAM

Communications & Outreach

NARRAGANSETT BAY WATERSHED COUNTS
ECONOMY • ENVIRONMENT • EQUITY

NBEP, the Coastal Institute and partners presented the first suite of shared ecosystem indicators on April 27 at the State House. The presentation was the culmination of the first year work on shared indicators and was held in conjunction with the Environment Council of R.I.'s Earth Day Lobby Day. Representatives from CRMC, HEALTH, DEM, DOT and the R.I. Natural History Survey participated in the presentation on climate change, beach closures, freshwater resources, impervious cover and invasive species. A web site, www.watershedcounts.org was developed to accompany the first year results. The event was covered in the on-line golocalprov newspaper and Meg Kerr and Q Kellogg were interviewed on WPRO radio. To learn more about the effort go to www.watershedcounts.org.

Narragansett Bay Estuary Program
NARRAGANSETT BAY JOURNAL



The *Narragansett Bay Journal*, Summer issue, #19 was released on June 1st and focused on recreational activities in the Narragansett Bay Region. This issue includes articles about hiking, boating, fishing, and beach safety. The next issue is in prep and is set to come out September 1st. It will focus on sustainablility and low impact development. To view the latest issue go to www.nbep.org/bayjournal-currentissue.html

NBEP has developed a blog to help inform the public about research, restoration and important scientific news happening in the Narragansett Bay Region. NBEP has hired a URI Coastal Fellow, Elizabeth Gooding, to assist Lesley in development of the blog.
To read and follow the blog go to simply-science-nbep.blogspot.com. If you would like to participate in the blog contact Lesley Lambert at lesley@nbep.org, or call (401) 874-6482.

- Dr. Deacutis was an invited speaker at the recent Casco Bay Modeling Workshop, May 18.2011, in Portland Maine. He spoke on "Models, Muddles & Management", discussing the track Rhode Island has taken and the work that is coming out of the NOAA CHRP research at URI which shows local winds and embayment orientation are critical to local flushing issues.
- Dr. Deacutis was an invited speaker at the USEPA Numerical Nutrient Criteria Workgroup June 2, 2011in Boston, Mass. He spoke on "Monitoring Macroalgae in Narragansett Bay", discussing why such monitoring is useful in relation to nutrient levels, and how the NBEP is addressing the methodology development for this indicator.
- Lesley Lambert spoke about the health of Narragansett Bay, past, present and future implications, to the Wickford Yacht Club on February 17th, and the Quidnessett Baptist Church on January 11th.
- Lesley Lambert also presented to Rhode Island Envirothon students, and judged oral presentations for the Rhode Island Envirothon competition held on May 21st.

Program Recognition:

In June 2011, the Southern New England Chapter of the American Fisheries Society selected the NBEP to receive their 2011 Outstanding Organization Award. The SNE Chapter is recognizing the NBEP for its efforts to protect and preserve Narragansett Bay and its watersheds. The award letter states that "the NBEP has been a leader in estuarine management" and notes that the Chapter especially "recognizes NBEP's outstanding efforts to educate the public on the science and management of Narragansett Bay and its watershed."

Narragansett Bay Region Plan:

NBEP has continued to work with key agency and organization stakeholders to refine the current draft version of the plan. Individual work sessions to gain input have been held with RIDEM Office of Water Resources and Division of Marine Fisheries, the Manomet Environmental Center, the Mass. Southeastern Regional Planning and Economic Development District and sessions are slated to connect with both R.I. and Mass. coastal zone agencies. Once these one-on-one sessions are completed, the draft plan will be revised into a final draft for final review and public rollout later in Summer and Fall 2011.

Presentation on the NBEP and the National Estuary Program to U.S. Senate Appropriations Committee Staff:

On June 2, NBEP director R. Ribb made a presentation at EPA's Narragansett Lab on the National Estuary Program and on the work of the NBEP to staff members of the U.S. Senate Appropriations Committee, EPA Region 1 Administrator Curt Spalding and other federal and state officials. The Senate Appropriations Committee staff (working under R.I. Senator Jack Reed) had requested this information on the NBEP and its interaction with other programs on the management of the Bay and its watershed. Feedback from those staff members indicated that they had learned a great deal about not only the NBEP but also about the community of organizations collectively working on the estuary.

Restoration

Pawtuxet River Restoration:

NBEP continues to provide technical leadership and project coordination to the Lower Pawtuxet River Restoration Project, supporting Pawtuxet River Authority, the dam owner and project grantee. We are on track to remove Pawtuxet Falls Dam this summer. In March, DEM issued its wetlands and associated permits, while in May, CRMC voted to approve the project—a precondition for the 404 permit, expected from the Corps in early June. NBEP oversaw the two-year process of developing the 600-page permit application which led to the agency approvals. Development of the application required extensive topographic and bathymetric surveys as well as hydraulic modeling. In May we negotiated and finalized a grant agreement with DEM, governing $300,000 in state funding; a $300,000 contract with NRCS for federal funds was already in place. Working with the Rhode Island Foundation, we developed an innovative funding mechanism which will be used for the project—a $90,000 interest-free bridge loan to assist the PRA in meeting cash needs during the construction process. Also in May, we developed and released a Request for Proposals for the dam removal, and hosted two pre-bid meetings. Bids will be opened on June 10; we expect to award a contract in mid-June. In late June, NBEP will lead a community meeting to update the public on the planned work. We expect construction to begin in July and be completed by the end of October.

Roger Williams Park Ponds Restoration:

NBEP continues to support the City of Providence in an innovative project to restore water quality to Providence's most important urban ponds complex. In March we developed and released a Request for Proposals to hire an engineering firm to provide technical support to the project. With the City, we led a process to engage the project steering committee in evaluation of the bids, leading to selection of Horsely Witten Group. In May we met with the City and HWG to finalize HWG's scope of work, which will begin with development of a restoration master plan for the Park ponds, then move into engineering and permitting for selected BMP's. On 23 June the City and NBEP will host a kick-off meeting with the steering committee to begin the master planning process for the restoration.

River Restoration Working Group:

NBEP continues to work with Save The Bay to chair a new working group on river restoration under the auspices of the R.I. Habitat Restoration Team. We kicked off the on February 4th and on April 13th examined operational impediments to river restoration. In 23 June we'll begin developing recommendations which will form the core of a white paper intended to accelerate the pace and scale of river restoration throughout the Narragansett Bay Region. The working group now has membership representing more than 30 federal, state, private and non-profit organizations.

Watershed Activities

Coalition for Water Security:

On May 16, 2011, the RI Water Resource Board adopted the "Rules and Procedures Governing the Water Use and Efficiency Act for Major Public Water Suppliers." The Coalition for Water Security closely monitored the development of the regulations and applauds the Water Resources Board for taking this first step.

Blueways Water Trails:

NBEP and other members of the Blueways Alliance developed the Summer 2011 edition of Trail Mix newsletter which is devoted to paddling the Narragansett Bay water trail. The newsletter features the Summer 2011 "River Story" Paddle trips — trips with local experts to share information on the natural and human history of the region.

Ecosystem Science

Dissolved Oxygen Surveys:

NBEP is preparing for our first summer D.O. survey in mid June 2011. NBEP has been preparing and calibrating monitoring equipment for the new season. All data and survey DO maps for the 2010 field season are available on the Insomniacs website (http://www.geo.brown.edu/georesearch/insomniacs).

Summary of 2010 Results:

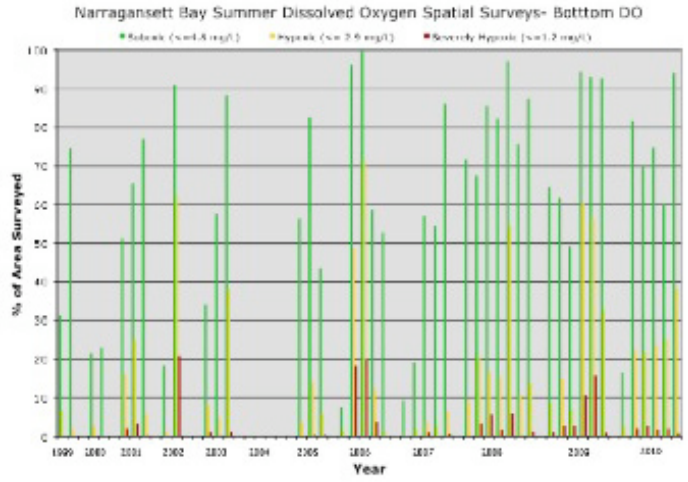
Despite severe floods during the spring, summer of 2010 experienced less severe hypoxic and suboxic hypoxic waters than 2009 (see Figure 1). The maximum extent of low DO occurred in early September. Over 90% of the surveyed area was suboxic (<4.8 mg/L), about 40% was hypoxic (< 2.9 mg/L), but less than 1% was severely hypoxic (< 1.2 mg/L). Low DO occurred in the Providence River section, the Upper Bay, and Greenwich Bay, extending to the upper West Passage. All survey maps of bottom, surface, and minimum DO along with selected transects data are posted on the Insomniacs website.

Also included for each survey are the Bullocks Reach buoy time series associated with the time of the spatial survey, including dissolved oxygen, tidal amplitude, wind speeds, salinity, river flow, water and air temperature. All station data, including depth, salinity, temperature, density, DO (mg/L), DO (% saturation), Chlorophyll (mg/L), and turbidity (NTU) are interpolated to 1m intervals and displayed as depth profiles, and can be downloaded from the website.

The federal NOAA Bay Window and Coastal Hypoxia Research Program (CHRP) grants supported the upgrade of SeaBird monitoring instruments that have enabled the spatial surveys to be conducted with just three boats. During the past six years, we have conducted 32 surveys that occupied about 65 stations each survey, resulting in over 2000 station profiles of DO and associated water column properties. We are working with Brown University (W. Prell and D. Murray) to analyze the entire data set to identify the persistent footprint of hypoxia in Narragansett Bay and understand its variability.

Future Funding for DO Surveys:

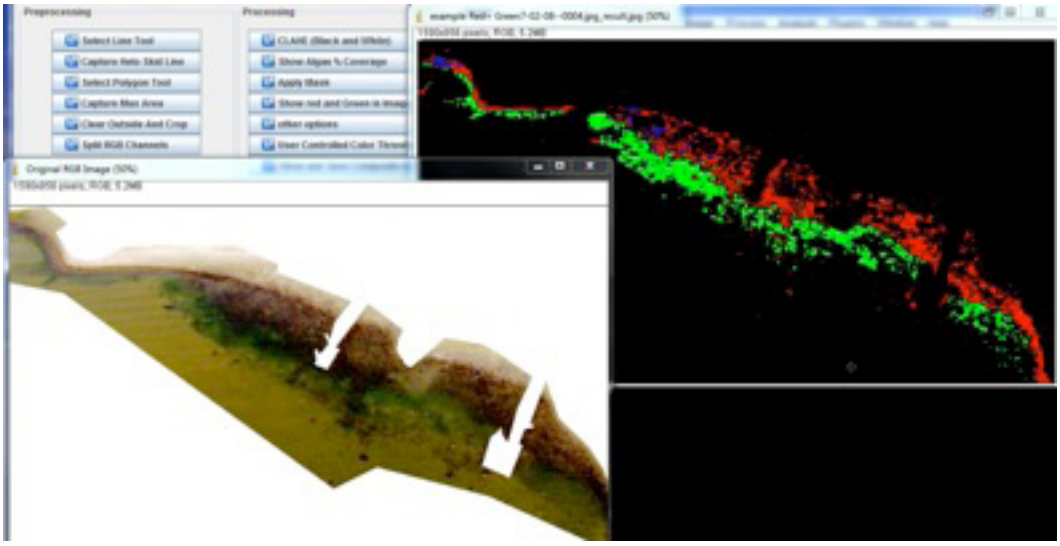
The NOAA CHRP new proposal was awarded a reduced funding grant. Brown University will be receiving a small amount of funds to continue their work ($11,481), whilethe RIBRWCT, will provide a seasonal intern to C. Deacutis as match for this 4 year grant (pending availability of federal funds).



Summary of percent of each Narragansett Bay survey that was suboxic (<4.8 mg/L), hypoxic (<2.9 mg/L), or severely hypoxic (<1.2 mg/L) during the Insomniac and CHRP summer surveys over the past decade. Year of the survey is given along the bottom axis of the graph. The extent of severely hypoxic and hypoxic waters had been increasing over the past three years but was significantly less in 2010.

Macroalgae Surveys

NBEP will again partner with R.I. Airport Corp for this seasons macroalgae surveys. The first aerial survey is scheduled for the week of June 13, 2011. There will be at least 4 flights on a monthly basis this summer. NBEP intern, Rebecca Sacks, just completed her internship, and a new intern (Brown U. student Melissa Palmisciano) came on the 2nd week of June. Rebecca completed all 2010 survey photos using visual estimates of density, and repeated her work using the new methodology developed by Andy Bird, a URI ocean engineering graduate student. Andy has developed a Java plug-in for the software analysis program we use, Image J, that allows us to more accurately estimate percent cover in each photo (see below fig for an example). Original visual cover estimates will be compared with the new technique to examine the difference in accuracy. The new intern will be using the new technique for all future analyses.

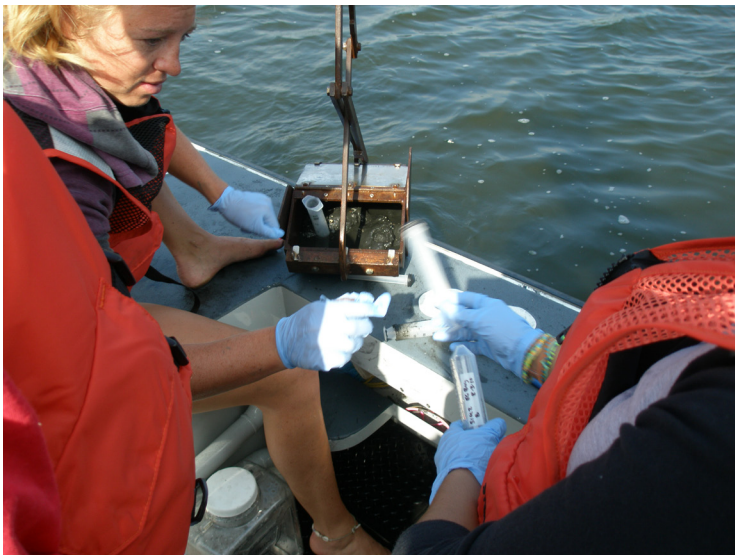


Example output from Image J macroalgae plug-in. Red algae are colored red and blue, while green algae are green color. An excel file providing % cover of red and green and total % cover is also generated with the image.

Sediment Microbial Community Changes During Hypoxic Conditions:

The initial results from last summer's sediment samples have come in. Bethany Jenkins (URI Microbiologist) and her graduate student, Shelley Brown, found expression of the nitrogen fixing gene (nifH) from microorganisms related to sulfur and sulfate reducers in the surface sediments in Greenwich Bay samples occuring only after the onset of hypoxia. The sediment surveys are part of an effort to test if, under certain hypoxic conditions, benthic bacteria are possibly creating an additional source of nitrogen.

NBEP will collect a second set of pre, during, and post-hypoxia sediment and water samples this summer to analyze these results. NBEP has teamed up with Drs. Candace Oviatt and Bethany Jenkins to submit a RI SeaGrant proposal which would fund further work in this area, including measurements of nutrients in the water column and the sediments.



Left: Lesley Lambert takes water samples. Right: URI Graduate student Shelley Brown takes DNA/RNA sediment samples.