

**2010 Annual Report**  
Narragansett Bay  
National Estuarine Research Reserve

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**February 2011**



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**Narragansett Bay National Estuarine Research Reserve Staff 2010**

- Bob Stankelis, Manager
- Scott Millar, Administrator of Sustainable Watersheds
- Kenny Raposa, Research Coordinator
- Kristin VanWagner, Education and Outreach Coordinator
- Jennifer West, Coastal Training Program Coordinator
- Robin Weber, Natural Resources / GIS Specialist
- Daisy Durant, Marine Research Specialist II
- Nan Jurnak, Administrative Assistant/IT support
- Ashley Bertand, Research Assistant
- Colleen McCue, Education Assistant
- Paul Hebert, Parks Caretaker Supervisor
- Kristin Morito, Seasonal CTP Assistant

- Cheryl Tavares, Seasonal Naturalist
- Heather Woodhams, Seasonal Naturalist
- Chris Blount, Seasonal Laborer
- Erin Markham, Summer Intern

**Major Reserve Partners**

In addition to the State of Rhode Island DEM and its various divisions, the Reserve relies on a number of other partners to help implement our programs and achieve our mission. While the list of all of our partners is quite long, those shown below have maintained long-standing relationships with the Reserve and play pivotal roles in our success.

- |                                       |   |
|---------------------------------------|---|
| Audubon Society of Rhode Island       | GrowSmart RI                            |
| Save The Bay                          | US EPA Narragansett Bay Office          |
| Prudence Conservancy                  | Town of Portsmouth                      |
| URI Sea Grant, Coastal Institute, GSO | RI Coastal Resources Management Council |
| Prudence Island Community             |   |

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## Who We Are

The Narragansett Bay Research Reserve (Reserve) is a partnership program established between the National Oceanic and Atmospheric Administration (NOAA) and the state of Rhode Island's Department of Environmental Management (RIDEM) to promote informed management and sound stewardship of our coastal resources. This partnership achieves this by helping the state permanently preserve estuarine and coastal habitats so they may serve as platforms for long-term research and education. And while the Reserve itself currently encompasses 4,453 acres of terrestrial and submerged land on Prudence, Patience, Hope and Dyer islands, we actively work throughout the Bay watershed to provide science, expertise, education and training to a wide range of stakeholders both locally and nationally.

In addition, we're also a member of a national network of 28 National Estuarine Research Reserves (NERRs) representing distinct coastal ecosystems located along each of America's coasts and Great Lakes. As a part of this network we're able to draw on a wide range of tools and resources to help address priority coastal issues.

## What We Do

The Reserve program integrates estuarine research and monitoring, natural resources protection and management with education, outreach and training. We strive to demonstrate in our own programs how these various activities and disciplines are connected by providing effective and timely products, programs and services that meet local needs.

- We actively conduct long-term research and monitoring within the Reserve and throughout the Bay watershed.
- We support external research that relies on the long-term protection of Reserve habitats.
- We actively manage Reserve lands and invasive species to preserve native communities and provide refuges for rare or threatened species.
- We provide hands-on estuarine education and training opportunities for students and teachers.
- We provide volunteer and outreach opportunities and provide guidance to those interested in becoming better coastal stewards.
- We offer training opportunities and science-based information to natural resource managers and coastal decision makers.

### Reserve and National System Goals:

Strengthen the protection and management of representative estuarine ecosystems to advance estuarine conservation, research and education.

Increase the use of reserve science and sites to address priority coastal management issues.

Enhance peoples' ability and willingness to make informed decisions and take responsible actions that affect coastal communities and ecosystems.

## This Report:

In this report we highlight the diverse range of products and services the Reserve and its partners provided in 2010 to help better preserve and protect our coastal resources. Brief descriptions as well as longer narratives illustrate the ways in which the Reserve developed creative partnerships and innovative programs to preserve or better manage our natural resources; provide scientific understanding and information to coastal managers; to educate and inspire students, teachers and the public.



## Research and Monitoring

**Objectives:** Improve opportunities to conduct and support research within the Reserve; provide coastal resource managers, the science community and education providers with the appropriate scientific and technical information to foster informed decision-making; contribute to status and trends assessments of environmental quality by monitoring changes in physical and biological parameters at the Reserve and within the Bay; and to encourage and assist in a multi-agency approach to research and monitoring and science-based ecosystem management.

### **Featured Project: Detecting the effects of climate change on salt marshes**

Salt marshes are ecologically and economically valuable habitats because they support important fish, crustacean, and waterfowl species. They also protect coastal areas against storm surges and floods and enhance water quality by intercepting land-based nutrient inputs. Unfortunately, approximately 53% of Rhode Island's original salt marshes present during colonial times have been destroyed. Most that remain have been severely degraded and now face threats from multiple stressors related to climate change and sea level rise. While salt marsh restoration has been underway for over a decade, new strategies are needed that take into account how salt marshes are responding and adapting to climate change.



To address this need the Reserve began a long-term salt marsh monitoring program in 2008 to better understand how marshes are responding to these additional stresses. Working in collaboration with Save The Bay and four other Research Reserves from around the country, protocols were developed to accurately monitor important indicators of ecosystem health such as the composition of vegetation, salinity, groundwater levels, soils, fish and crustaceans at both restored and undisturbed marshes. Five restoration marshes at various stages of recovery were monitored; these include: Gooseneck Cove (Newport), Jacob's Point (Warren), Potter Pond (Prudence Island), Silver Creek (Bristol), and Walker Farm (Barrington). Because of the Reserve's protected status, its nearly pristine marshes have been minimally impacted by pollution and development. By selecting Coggeshall and Nag marshes on Prudence Island as reference sites, we can study how they respond to climate change without other compounding factors that affect restoration sites. In addition, the long history of other research at these sites provides additional data to help interpret our results.



Photo: Save The Bay

Although the full ecological effects of climate change on salt marshes will take years to assess, initial findings from this project suggest that changes are already underway. For example, in 2010 we documented for the first time areas of salt marsh vegetation die-off in each pristine marsh that appear to be directly due to extended periods of drought and abnormally high summer temperatures. Previous experiments at the Reserve by Brown University scientists predicted that these die-offs would happen under certain climatic conditions. Fortunately, no marsh die-off was observed in any of the restored marshes. However, these initial results illustrate the

need to better understand salt marsh dynamics through long-term monitoring in order to support the development of successful restoration and management practices.

### **Water Quality Monitoring:**

**Fixed Site Water Quality Monitoring:** Reserve staff continued to collect high-frequency water quality, nutrient and weather data from within the Reserve as part of our System Wide Monitoring Program (SWMP). Data from our sites continue to be an integral part of the [Bay Window water quality monitoring network](#) in Narragansett Bay, as well as the national Integrated Ocean Observing System (IOOS). Data collected from our T-wharf site are available in near real-time on the web at [www.nbnerr.org](http://www.nbnerr.org). Data from our Potters Cove site represents the single longest record of continuous water quality data in the Bay.



**Spatially Intensive Water Quality Mapping:** The Reserve's new mobile flow-through water quality mapping system called [DATAFLOW](#) was used throughout the summer of 2010 to collect spatially-referenced surface water quality data in the Sakonnet River to help identify the best location to deploy a new buoy in the Bay Window fixed-site monitoring network. Because DATAFLOW operates from a small vessel, we can collect data in the often understudied shallow coves and embayments where other vessels cannot go.

## Biological Monitoring:

**Marine Benthic Communities** - In 2010 the Reserve began a new long-term monitoring program to assess the status of marine benthic (or bottom) communities in Reserve waters. Benthic communities are an essential component of healthy and resilient estuarine and coastal ecosystems. The sedentary nature of many benthic species allows them to be sensitive indicators of environmental change, whether from changes in nutrient loading or factors related to climate change. No other long-term benthic monitoring program exists at this time in Narragansett Bay.



**Macroalgal assessments** – In 2010, the Reserve completed the first two years of a pilot project to develop a rapid yet accurate method to monitor the distribution, composition, and cover of macroalgae around Prudence Island. Because macroalgae are very responsive to changes in nutrient pollution, measuring their abundance and distribution can help assess the effectiveness of various Bay management actions such as nutrient reduction from sewage treatment plants. Once finalized, we hope this rapid assessment method can be used by schools or other environmental groups to measure macroalgae around the Bay in a standardized way. A field guide to the macroalgae of Prudence Island was also developed to aid in algal identifications and to ensure year to year consistency.



## Working with Partners:

**Value of urban habitats for birds** – The culmination of four years of collaborative research between the Reserve and the EPA's Atlantic Ecology Division was reached in 2010. These two agencies have been examining the value of urban and developed habitats for wading bird and breeding bird communities. This research has already resulted in three publications in peer-reviewed scientific journals (two of which are listed below). Two more manuscripts are in preparation. The first develops energy budgets and examines wading bird activity and behavior in urban and pristine salt marshes in Narragansett Bay. The second quantifies the value of protecting land within conservation subdivisions for breeding birds. All of these studies are contributing to the emerging field of urban ecology.

## Reserve Technical Series Reports: (available for download)

Durant, D. and K.B. Raposa. 2010. *Water quality, nutrients, and meteorology at the Narragansett Bay National Estuarine Research Reserve: 2008 Annual Report*. NBNERR Technical Reports Series 2010:2.

Raposa, K.B. and M. Bradley. 2010. *A method for rapidly assessing the distribution and cover of submersed aquatic vegetation in Rhode Island estuaries*. NBNERR Technical Reports Series 2010:1.

## Supporting Academic Research:

Because Reserve properties are protected from development, they serve as platforms and living laboratories for long-term research. An important goal of the Reserve system is to support external research. In 2010 the Reserve supported the following research projects conducted at the Reserve.

Abiotic and biotic forcing of differential nutrient limitation in salt marshes, P.V. Sundareshwar; South Dakota School of Mines and Technology.

Demographics and ecological role of the Asian shore crab (*Hemigrapsus sanguineus*) in Narragansett Bay, Nicole Rohr; URI.

Factors affecting pH cycling and implications for acidification in estuaries, Steve D'hont; URI-GSO.

Effects of climate change on salt marsh plants, top-down control of salt marsh production, and factors inducing salt marsh die-off, Mark Bertness; Brown University.

Salt marsh productivity and consumer control in a changing climate, Sarah Corman; Brown University.

### **NERR Graduate Research Fellows:**

Processes affecting silica cycling in salt marshes, Joanna Carey; Boston University.

Potential impacts of advanced wastewater treatment on secondary production in Narragansett Bay, Courtney Schmidt; URI-GSO.

## Education and Outreach

**Objectives:** Increase public awareness, understanding and appreciation of Narragansett Bay; optimize educational use of the Reserve with a focus on its ecological and cultural significance; and increase the use of high quality NBNERR and NERRS estuary, water quality data and climate change education products by formal and informal educators in the Narragansett Bay watershed.

### ***Featured Project: Teachers on the Estuary - Grassroots Efforts to Protect Watersheds and Estuaries***

In 2009 and 2010 the Narragansett Bay Research Reserve offered in-depth four day-long professional development workshops for science teachers thanks to funding from NOAA's Bay-Watershed Education Training grant program. These Teachers on the Estuary (TOTE) workshops immerse 15 participants each year in estuarine science, data collection techniques and current ecological research in Narragansett Bay. Teachers then write and implement lesson plans that bring Narragansett Bay science to their classrooms.



Another important outcome of these workshops are student-driven stewardship projects that each educator develops during the school year. Armed with new information and resources, teachers work with students, their school, and the community to start an initiative that will protect their local watershed and/or estuary. For example, Suzanne Elliott has been working with the Green Team at Wheeler Middle School in Providence to organize a "Walk-Bike-Carpool-Bus to School Breakfast" which challenges kids (and parents by extension) to improve their commuting habits. Specifically, every student has been provided a card and receives a sticker for each instance of eco-friendly transportation to or from school. If a cardholder receives three stickers within a twelve school-day period, he or she gains admittance to a celebratory breakfast. Many students travel a lengthy distance from their home to school, so the potential benefit to an array of environmental problems is significant. Most importantly, this challenge connects to kids in an age-appropriate way with the opportunity to establish ecologically sound routines for families.

## Education and Outreach

**K-20 Education** – Educators at the Reserve worked with students from kindergarten to undergraduate levels in a range of education programs to promote knowledge about the Bay. In total, 278 contact hours were recorded in 2010 for education programs located on and off Prudence Island. Also, under the auspices of our national umbrella organization, the National Estuarine Research Reserve System, the Reserve's Education Coordinator participated in the development of a national middle school curriculum focused on estuary science and coastal climate change impacts. The curriculum should be ready for piloting in Rhode Island in the spring of 2011.



**Summer Camps** - In partnership with URI's W. Alton Jones Camp, our seasonal education staff conducted four weeks of "Bay Mania" camp, a two-night immersive experience on Prudence Island for ages 8-11. New in 2010 the Reserve supported two weeks of camp that featured a new NOAA grant funded program for teens called the "Coastal Explorers: Teen Expedition" in partnership with the New England Ocean Science Education Collaborative. Day camps were also held with the Carnegie Abbey Club, the Prudence Conservancy, and Save the Bay allowing students to experience first hand the variety of coastal habitats found within the Reserve. This year 195 people participated in educational camp programs hosted by the Reserve. This was an increase of 52 attendees from 2009 and over 100 more contact hours than in 2009.



## Communication:

**Multi-media outreach** - Reserve educators were guest speakers on two different radio shows in 2010 promoting the Reserve and highlighting upcoming events. The EC continued to update the Reserve's on-line community calendar and NBNERR website, and created one newsletter for digital and printed distribution throughout the Narragansett Bay watershed. Electronic e-Alerts were also sent out several times to just under 2,300 individuals on our email list, an increase of 300 individuals on the list from 2009.

**Narragansett Bay Tide Calendar** – In 2010 we distributed 5000 copies (1000 more than 2009) of our annual calendar via the public library system throughout the state. The 2011 tide calendar features images from local photographers to highlight Reserve initiatives around the Bay. In 2010, the Reserve held its third annual photo contest for the cover shot of our tide calendar.



## Community Education Programs:

**Sustainable Fishing Contest:** The 2010 fishing contest was one of the Reserve's most popular public events. More than 120 people participated and learned about sustainable fishing practices.

**30<sup>th</sup> Anniversary Narragansett Bay Block Party** - With over 218 people in attendance the July 17<sup>th</sup> event featured an ecological scavenger hunt, hands-on activities for kids, and displays and speakers from local environmental groups. More than 400 additional people visited the Lab & Learning Center on Prudence Island between June and September; an increase of close to 100 visitors from 2009.



**Day-long Reserve Tours** - In partnership with the Audubon Society of Rhode Island, the Reserve conducted a series of topical day-long tours of the Reserve throughout the year. Topics included seal tours, the "Prudence Island Fungus Forays", bike tours and others that brought families and individuals out to Prudence to learn about the Bay and its coastal ecosystems.

## Coastal Training Program

**Objectives:** Provide the best available science-based information, tools and techniques to those individuals making important resource decisions within coastal watersheds and estuaries; increase networking and collaboration across coastal management disciplines; and increase understanding of the environmental, social and economic consequences of human activity within the coastal landscape.

### *Featured Project: Planning for Community Climate Change Adaptation*

Because municipal staff and officials, along with other stakeholder groups, are becoming increasingly concerned about the impacts of climate change, the CTP conducted a full-day workshop to raise awareness of the various resources available to help community leaders to plan for and adapt to climate change. Among their concerns include a rise in flooding and erosion from increased storminess that could put community infrastructure and unique places at risk, loss of beach access and wetlands from sea level rise, threats to our local economic sectors, and others. Participants heard expert speakers from various federal agencies, universities and others about climate change impacts to Rhode Island, fundamental concepts in planning for climate change, Rhode Island's climate change programs & implications for local planning efforts, and federal, regional, state and local tools and resources.



Workshop participants heard case studies on specific adaptation actions and public and policy-maker engagement efforts from planners in five local communities. Participants also engaged in exercises to help them to begin to identify their community's vulnerabilities. Of the participants who filled out evaluations at the end of the workshop, 97% said that their understanding of the topics and issues presented increased as a result of attending the workshop and that they plan to apply the knowledge in their work. 100% of the attendees who filled out the evaluations said that their ability to access resources (e.g. people, information, tools, and/or technologies) relevant to their work in planning for climate change increased as a result of attending the workshop.

## Other Workshops:

**Improving Climate Literacy in the North Atlantic** - The CTP, along with RI Sea Grant and NOAA's Regional Climate Services Office, presented a workshop on "Climate Literacy and NOAA in Rhode Island". Participants from NOAA offices in Rhode Island and Massachusetts attended the workshop and learned about the state of climate science and how to express uncertainty, climate models and regional down-scaling, communicating climate science, and what tools and resources are available. It provided an opportunity for NOAA staff and partners to network with colleagues engaged in similar activities strengthen their abilities to share climate-related science and services with regional stakeholders.

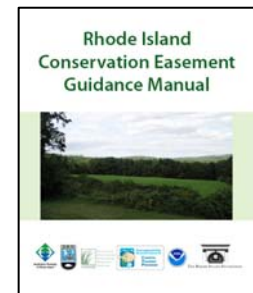


Photo: Horsley and Witten

**Impervious Cover Workshops** - The CTP, in partnership with RIDEM, held three workshops entitled "Preventing Flooding and Impacts to Water Quality...What does Impervious Cover Have to do With It?" Planners, conservation commissioners, designers and others improved their understanding of the connection between impervious cover and increased flooding, aquatic habitat alteration, and impacts to surface and groundwater.

**Public Issues and Conflict Management** - The CTP offered a two-day course for regulators, coastal managers, and others on how to increase their ability to design, conduct, and control meetings in public forums. Attendees learned about how to use collaborative processes in resolving environmental issues, how to use management, negotiation, communication, and conflict resolution skills to plan for and conduct effective meetings, and how to deal effectively with the media in the public issues management process. The course was taught by national trainers from NOAA's Coastal Services Center.

**Conservation Easements Guidance Workshop** - The CTP, in partnership with RIDEM, delivered a workshop to introduce and explain the new Rhode Island Conservation Easement Guidance Manual to attorneys, planners, land trust and conservation commission members, and others. The workshop reviewed information on how conservation easements are drafted, reviewed, put into action, and effectively enforced to ensure that conservation parcels remain protected in perpetuity. The Manual was partially funded through the Rhode Island Foundation and peer reviewed by local experts.



## Outreach Products:

### Aquatic Invasive Species Outreach

With funding from the US Fish and Wildlife service and in partnership with CRMC, the Reserve CTP program developed an informational brochure and website designed to increase awareness of marine and estuarine invasive species issues in RI. Both outreach products bring together current existing resources into a single place. Workshops are planned for 2011 to continue this work.



## Conference Sponsorships:

**Annual Land and Water Conservation Summit:** The Reserve CTP, along with the Narragansett Bay Estuary Program, the RI Land Trust Council, and the RI Association of Conservation Commissions, cosponsored and exhibited at this annual event.

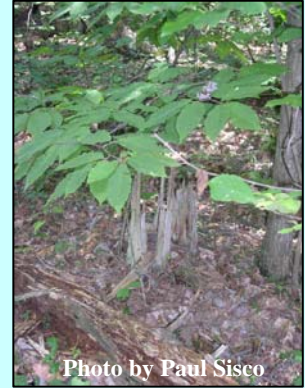
**Power of Place Summit:** The Reserve CTP cosponsored this event along with Grow Smart Rhode Island and several other organizations. This biennial event attracts over 400 opinion leaders, state and local officials, development professionals and many others.

# Stewardship and Natural Resources Protection

**Objectives:** Protect the ecological integrity of the Reserve's land and water resources using an ecosystem-based management approach; to promote natural resource conservation by increasing stakeholder engagement and understanding; and to support watershed-wide stewardship activities and develop partnerships that share resources and leverage funds.

## Featured Project: Native Species Return to Prudence Island

The Reserve's multi-year forest restoration project took a big step in 2010 with the introduction of native trees and shrubs to a four-acre restoration site at the Island's north end. Purchased through a cooperative fund-raising effort with the Prudence Conservancy, volunteers and Reserve staff planted more than sixty trees and shrubs of twenty four separate species to this ecologically degraded site. The diversity of tree species found in Rhode Island forests today is much lower today than before European settlement. Post-colonial land use practices, particularly extensive clearing for agriculture has resulted in forests of similar age and limited variety. One native tree species of particular interest is the American chestnut which was, before its demise in the first half of the 20<sup>th</sup> century, perhaps the single most important food source for a wide variety of wildlife from bears to birds throughout its native range. Sadly, this means that some wildlife species dependent on specific tree species, or forest conditions, are either no longer found, or are only found in greatly reduced numbers compared to historic population levels. The Reserve, with the assistance of The American Chestnut Foundation, established a modest nursery to raise chestnut seedlings from seed to contribute to forest restoration efforts.



Despite this progress which included two years of previous work contributed by volunteers and seasonal workers who selectively removed non-native tree, vine and shrub species, a great deal of work remains. At least in the short-term, managing this site to be relatively free of invasive species is necessary to prevent them from continuing to displace native vegetation and reducing overall diversity. As planted trees and shrubs become established and (hopefully) thrive, the Reserve will periodically capture anticipated shifts in wildlife use over time through multiple monitoring efforts. If the enhanced species diversity of this modest forest site persists despite new environmental stressors such as those anticipated with climate change (e.g. altered timing and intensity of storm events; changes in seasonal average temperatures; and, frequency and duration of drought conditions) we will learn a great deal about the resiliency of these native tree and shrub species and the wildlife species that are dependent on them.

## Habitat Management:

Consistent with state habitat plans, the stewardship program utilizes a number of tools to create, maintain, or enhance specific habitats on Reserve properties. One of the most important tools is citizen and volunteer involvement.

**Woodcutting Stewards Program** - 21 volunteers contributed approximately 250 volunteer hours to create cutback zones along the edge which existed between a stand of non-native European larch (*Larix deciduas*) scheduled for removal and the mixed hardwood stand bounding it. Selectively cutting trees within cutback zones allows sunlight to penetrate the canopy resulting in improved field and woodland border habitat and enhanced wildlife use.

**Alternative Spring Break** - The Reserve sponsored its third annual Alternative Spring Break, bringing 16 college students representing several educational institutions to the Reserve to participate in week-long stewardship projects. This year students and Island volunteers contributed 225 hours and made significant progress in removing the invasive species autumn olive (*Elaeagnus umbellata*).



## Natural Resource Monitoring:

Monitoring the status of various natural resources within the Reserve is essential for developing the appropriate management strategies.

**Groundwater and Stream Flow Monitoring** - In its fifth year, Reserve staff and volunteers have been monitoring water resources on a monthly basis and resource managers are now utilizing these data to determine water level stage thresholds.

**Tick Population Density Monitoring** – In its third year, Reserve staff conducted seasonal (April-November) bi-weekly monitoring for ticks to capture potential trends in populations. It is anticipated that recent reductions in the resident white-tailed deer population will result in a reduction in tick numbers over time.

### **Salt Marsh Reference Site Monitoring:**

As part of a continuing pilot project designed to evaluate the success of salt marsh restoration projects, the Reserve partnered with the National Geodetic Service (NGS) to install new highly accurate geodetic benchmarks at Nag and Coggeshall salt marshes. These benchmarks will be necessary to measure surface elevations in salt marshes as they experience changes in sea level rise. Reserve staff also used highly accurate real time kinematic (RTK) GPS to map salt marsh elevation at selected locations.

### **GIS and Technical Support:**

In 2010 the Reserve created maps for the Prudence Island Volunteer Fire Department (PIVFD) in support of a grant application for equipment upgrades. The PIVFD regularly works with the Reserve on habitat management issues.

The Reserve developed a series of maps for the Portsmouth Harbor Commission to be included in the Portsmouth Harbor Management Plan. The Reserve is located within the Town of Portsmouth and regularly partners with the town on various issues.

### **Reserve Technical Series Reports: (available for download)**

Weber, Robin L.J. 2010. *NBNERR Woodcutting Stewards Program Report*. NBNERR Technical Reports Series 2010:3.

## ***Additional Publications and Presentations:***

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### **Publications:**

Altieri, A.H., B.K. van Wesenbeeck, M.D. Bertness, and B.R. Silliman. 2010. *Facilitation cascade drives positive relationship between native biodiversity and invasion success*. Ecology 91:1269-1275.

DeCelles, E. 2010. Great and snowy egret foraging ecology in Rhode Island. MS Thesis, University of Rhode Island, Kingston, RI.

Ho, C.K., S.C. Pennings, and T.H. Carefoot. 2010. *Is diet quality an overlooked mechanism for Bergmann's Rule?* The American Naturalist 175:269-276.

McKinney, R.A., K.B. Raposa, and T.E. Kutcher. 2010. *Use of urban marine habitats by foraging wading birds*. Urban Ecosystems 13, 191–208.

McKinney, R.A., K.B. Raposa, and R.M. Cournoyer. IN PRESS. *Wetlands as habitat in urbanizing landscapes: patterns of bird abundance and occupancy*. Landscape and Urban Planning.

### **Presentations:**

Cole Ekberg, M., W. Ferguson, and K. Raposa. 2010. *Jacob's Point Salt Marsh Restoration*. Restore America's Estuaries National Conference, Galveston Island, TX (poster).

Cole Ekberg, M., W. Ferguson, and K. Raposa. 2010. *Nekton use of restricted and restored New England salt marshes*. Restore America's Estuaries National Conference, Galveston Island, TX (oral).

Dionne, M., C. Peter, S. Lerberg, N. Garfield, C. Cornu, J. Fear, and K. Raposa. 2010. *NERRS-Restoration Center reference site partnership: status and next steps*. Restore America's Estuaries National Conference, Galveston Island, TX (poster).

Durant, D. and K.B. Raposa. 2010. *Using the System-Wide-Monitoring-Program (SWMP) to quantify short-term variability and detect long-term changes in estuaries*. New England Association of Environmental Biologists annual meeting, Newport, RI (poster).

Durant, D. and K.B. Raposa. 2010. *Using the System-Wide-Monitoring-Program (SWMP) to quantify short-term variability and detect long-term changes in estuaries*. New England Estuarine Research Society fall meeting, Provincetown, MA (poster).

McKinney, R.A., K.B. Raposa, and R.M. Cournoyer. 2010. *Breeding bird use of isolated wetlands along a gradient of urbanization in the northeast US*. 95th Ecological Society of America Annual Meeting, Pittsburgh, PA.

Raposa, K.B. 2010. *Nekton research in the NERRS: two examples from Narragansett Bay, RI*. NERR Research Coordinators annual meeting, Woods Hole, MA (oral).

Raposa, K.B. and R.A. McKinney. 2010. *Songbird responses to land preservation within southern New England cluster developments*. The Wildlife Society annual meeting, Snowbird, Utah (oral).

Raposa, K.B., M. Bradley, and J. Osenkowski. 2010. *A method for rapidly assessing the distribution and cover of submersed aquatic vegetation in Rhode Island waters*. Environmental Protection Agency Northeast Region annual eelgrass meeting, Concord, MA (poster).

Rohr, N.E., K.B. Raposa, and C. Thornber. 2010. *Spatial and temporal distribution of Hemigrapsus sanguineus in Narragansett Bay, RI: Implications for invasive species management*. New England Association of Environmental Biologists annual meeting, Newport, RI (poster).

## *Advisory Services and Additional Grants:*

Reserve staff members participate in and contribute skills, knowledge, and experience to a number of other organizations within the State and region by serving on advisory boards, panels and workgroups. Also, as a grant requirement from NOAA, Reserve staff participate at the federal level in a number Reserve System activities. These may include serving on Reserve System national committees, workgroups, review panels, etc. Listed below is a summary of the ways in which Reserve staff contributed both locally and nationally to estuarine protection, research and education.

### Manager:

- Board member, Narragansett Bay Estuary Program (NBEP)
- Member, RI Bays Rivers Watersheds Coordination Team's Environmental Monitoring Collaborative
- Member, RI Aquatic Invasive Species Working Group
- Member, RI Sea Grant Senior Advisory Council

### Research Coordinator:

- Chair, NERRS Nekton Monitoring Committee
- Member, NERRS Habitat Restoration Workgroup
- Member, Important Bird Areas in Rhode Island Committee
- Member, RI Bays Rivers Watersheds Coordination Team's Science Advisory Committee
- Member, Graduate Advisory Committee, PhD candidate Nichole Rohr URI-GSO

### CTP Coordinator:

- Member, Grow Smart Rhode Island Land Use Training Collaborative
- Member, Phase II Stormwater Advisory Committee
- Member, RI Aquatic Invasive Species Working Group
- CTP Coordinator representative on the NERRS Strategic Committee
- Member, NERRS Climate Change Training Workgroup

### Education Coordinator:

- Member, Governing council of the Northeast Ocean Science Education Collaborative (NEOSEC)
- Board member, Rhode Island Environmental Education Alliance (RIEEA)
- Chair, NERRS Climate Change Education Workgroup
- Member, NERRS Climate Initiative Task Force

### Natural Resources/GIS Specialist:

- Member, NERRS SWMP Guidance Committee
- Member, NERRS Community Education Workgroup
- Member, RI, Coastal and Estuarine Habitat Trust Fund Technical Advisory Committee

## **ADDITIONAL GRANT FUNDING SECURED 2010**

<b>Funding Source</b>	<b>Funds Acquired</b>	<b>Project Description/Title</b>
NOAA Bay Watershed Education Training (B-WET) program	\$24,418	New England Teachers on the Estuary: Professional Development Opportunity for Teachers related to Watershed Educational Experiences (year3....to be spent CY2011).
US Fish and Wildlife	\$7,000	Aquatic Invasive Species Training Products Inventory
National Estuarine Research Reserve Association (NERRA)	\$1,000	Planning for Community Climate Change Adaptation Workshop