



Narragansett Bay Research Reserve



2007 Winter Newsletter

The Narragansett Bay Research Reserve is funded by NOAA and RIDEM and works in close partnership with the Audubon Society of Rhode Island.

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Volume 7.

Impacts of an Invasive Crab

by Nicole Rohr, University of Rhode Island

The Asian shore crab (*Hemigrapsus sanguineus*) invaded the coast of New Jersey in the late 1980's. Since then, this roughly 1.5 inch wide crab from Japan has rapidly spread along the Atlantic coast of North America from South Carolina to Maine, including Narragansett Bay. Invasive species can quickly out-compete native species in a new area if there is plenty of food and space available and few predators.

In Narragansett Bay, the Asian shore crab is known to eat a variety of invertebrates including blue mussels and marine snails as well as plants such as eelgrass and algae. They live under cobble rocks in shallow water and can be found in very high numbers, sometimes over 100 per square meter. Their prey species and habitat are thought to be the same as the green crab (*Carcinus maenas*).

The green crab is a non-native species that has been present in New England for about 200 years. The green crab is originally from Europe and can be up to 3.5 inches wide. Green crabs are eaten by many fish including striped bass and tautog and promote healthy algae and eelgrass by eating herbivores. Despite its larger size, the green crab is less aggressive than the Asian shore crab and is often out-competed for food and space by native crab species.



At Left: Measuring an invasive Asian shore crab

In the last several decades, green crab numbers have declined as Asian shore crabs have moved into Narragansett Bay. Little is known about what or how much Asian shore crabs eat, or which predators consume the crabs. Scientists are

concerned about how the shift from green crabs to Asian shore crabs will affect important fish species and marine plants. The first step in understanding the Asian shore crab is to study its distribution and abundance i.e. where they live and in what numbers.



Above: Felicia Olmeta, Nicole Rohr & Dr. Kenny Raposa collect data

Reserve staff designed monitoring surveys and Nicole Rohr, a graduate student at the University of Rhode Island, has been conducting the surveys in conjunction with URI student Kristen Morito and Research Reserve scientists to determine which crab species are in the shallow coastal waters around Prudence Island and the relative abundance of each species. Once a month Nicole and her crew check crab trays full of cobble buried at the low tide line at North End, Nag Creek, Stone Wharf, and T-Wharf. They remove the trays from the water, identify and count all of the crabs present, then rebury the trays.

Nicole is also conducting research on the feeding rate of Asian shore crabs on snails, whether fish eat Asian shore crabs, and how these results will compare with the feeding rate and predation pressures of the green crab. If there are differences between the green crab and Asian shore crab, then there could be changes in food web interactions. When the survey data is combined with Nicole's other research, a better understanding will develop of how the Asian shore crab could impact its new home range. This information can be used to help protect the native species of Narragansett Bay for generations to come.

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Welcome Back Seals!

by Rachel Dapp

It's official! The harbor seals have come back to Prudence Island. Harbor seals (*Phoca vitulina*), also called common seals, are long-time visitors to Narragansett Bay. The seals travel down from the Gulf of Maine and arrive here in late September and travel back up the coast in early May. They are found as far south as New Jersey in the winter months and are year-round residents of Greenland, eastern Canada, and northern New England.



*Photo Credit: Dr. Artie Kopelman,
Coastal Research and Education Society of Long Island*

Harbor seals haul out of the water at low tide

Harbor seals are known as “true seals,” meaning that unlike sea lions, they have no external ear flaps, can't move their rear flippers forward to walk on all fours, and they swim with their rear flippers. They grow to be about five to six feet long and up to 280 pounds. The seals have gray-brown fur with varying patterns of dots and other markings. Each seal has its own unique markings which makes them easier to identify. Male harbor seals are generally larger than females, but it is hard to tell the difference between the genders. Seals generally live to be about 25-30 years old in the wild, but live longer in captivity.

Harbor seals can be found hauled-out of the water at low tide on sand, rock, or ice in their very distinct banana shape - head and tail curved up in a graceful arch. These animals are generally solitary when in the water, but haul out in large groups. The seals may leave the water for a number of reasons, including protection from predators, rest from battling currents and waves, and to warm up in the sun. On Prudence Island, you can find seals hauled-out during a low tide on days with little wind on the rocks at

the T-wharf and occasionally at the north end on rocks off of Providence Point. Some of the female harbor seals that come to Rhode Island waters are pregnant. They will give birth to their pups when they go back to the Gulf of Maine from mid-May to July. They are pregnant for about 11 months and nurse their pups for only 6 short weeks. Keep a look out for large bellies on the seals.

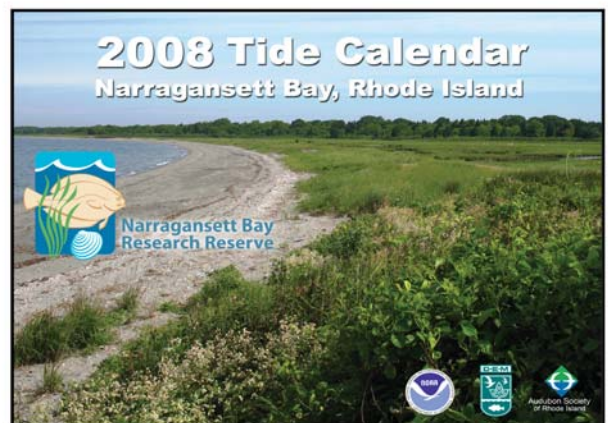
Harbor seals and all other marine mammals are protected under the Marine Mammal Protection Act (1972) which states that no one can “harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” So, if you see seals, just sit back and enjoy!

Researchers at the Reserve will be studying the visiting harbor seals' behaviors while they are hauled-out on rocks at the T-wharf. We are looking to see if the same seals come back day after day, and what determines their placement on the rocks. We will also conduct bay-wide surveys to monitor the number of seals using the bay as their winter home.

The Research Reserve will lead seal watches and tours of Prudence Island in 2008 on:

2/20, 3/5, 3/16, 3/19, 4/2 and 4/5.

To reserve your spot (max 10 participants) call the **Audubon Society of Rhode Island: 401-949-5454 or www.asri.org**



2008 Tide Calendars!

At the printing time of this newsletter, the Reserve should have new tide calendars ready to go. This year, thanks to support from Roger Williams University and The Sounds Conservancy Grant Program we will be printing 3,000 copies and the calendars will be available free of charge.

To get your calendar or to help distribute visit:

www.nbnerr.org/tides.htm

Or call Kristin: **401-683-1478**

Coastal Training Program Update

by Jennifer West

The CTP and RIDEM Office of Sustainable Watersheds continue to provide workshops and other outreach opportunities on Conservation Development to a variety of audiences. The CTP and RIDEM also held a hands-on workshop on a new Conservation Design DVD developed by Paul Jordan, RIDEM Supervising Geographic Information Systems (GIS) Specialist. The DVD provides the basic mapping elements that are recommended to appropriately evaluate a site to be developed under the Conservation Development process as outlined in the RI Conservation Development Manual. The analysis, suitable for any early project review and easily prepared by applicants as well as town staff, quickly generates ready-to-print site maps without requiring GIS software. More workshops will be offered in the near future, featuring the addition of the new RI Land Use and Land Cover data to the DVD, which will include impervious cover.

The Prudence Island Groundwater Workshop in June was a success in bringing together concerned Island residents and an expert panel to discuss the issues of groundwater quantity and quality on Prudence Island, including recommendations for protection and current and upcoming groundwater research. The CTP is now planning future workshops based on participant evaluation responses that indicated interest in receiving further information on what can be done on a personal level to conserve and protect the groundwater resource. More to come...

The CTP and RIDEM held a workshop for the town of Exeter, RI's Planning Department on the results of a recent URI study on the prioritization of non-regulatory protection of vernal pools in the Queen's River Watershed. Presenters provided information on the status of vernal pools in the watershed, the majority of which lie in the town of Exeter, and shared strategies for protecting the pools and their vital upland buffers through land-use planning techniques and other means. Future workshops for the other Queen's River watershed towns will be delivered to planning departments and audiences such as conservation commissioners, town council members, land trusts and watershed organizations.

The CTP was recently awarded a mini-grant from the Rhode Island Foundation to help fund the development of guidance manuals

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and trainings, to be delivered in early 2008, on conservation easements and open space management in RI. The manuals and trainings will help to ensure that target audiences thoroughly understand the appropriate RI legal foundation and proper procedures for preparing, recording and enforcing conservation easements, as well as the options for the ownership and management of conservation parcels and the elements of an effective stewardship program.

From the Manager: A Year In Review

By Bob Stankelis

2007 has been a very successful and busy year at the Reserve.

As a whole, Reserve staff members completed a range of projects and embarked on new initiatives and partnerships to help us meet our mission. Reserve staffers work locally on beach cleanups, invasive plant removal, summer camps, cultural and natural history tours for the public, and research projects like the BayScape and crab monitoring projects featured in this newsletter. Staff also work throughout the Narragansett Bay Watershed participating in events like BioBlitz and Coastweeks, presenting our research to local community groups and at CCRI, and representing the Reserve at national conferences like the recent Estuarine Research Federation conference held in Providence this November. We also contribute our expertise, skills, and resources to partner organizations who strive for better protection of our bays and coasts.

In coming weeks the Reserve will post the 2007 accomplishments report to the www.nbnerr.org website. This report will summarize the major tasks, products and programs the Reserve has completed this year, and will illustrate the importance of strong partnerships and communication. I hope you will be impressed with the breadth and scope of our work, as well as the skills and expertise needed to accomplish these projects. Please feel free to contact staff at the Reserve if you have questions regarding projects listed in this report.



Above: Students from the Prudence Island school learn about growing prize-winning pumpkins. **Photo by:** Eddie Giarusso

Cultivating Island Stewards

by Kristin Van Wagner

From Prudence Island's pumpkin patches to its salt marshes and pine barrens, the Research Reserve is working with the Prudence Island School to provide regular field trips and environmental service learning projects for the students.

Thanks goes out to the islanders who shared their pumpkin growing expertise with these young visitors.

We hope to continue this hands-on learning program throughout the year.

Teachers Learn About Narragansett Bay for the 2007 National Estuaries Day

On a foggy day in late September, eleven teachers from around Rhode Island went 'tidepooling' to learn about Rhode Island's estuary: Narragansett Bay.

In celebration of National Estuaries Day (always the last Saturday in September), educators and scientists from URI's Office of Marine Programs and the Narragansett Bay Research Reserve lead a discussion on the Narragansett Bay watershed and a tidepool investigation at Jamestown's Beavertail State Park. The teachers had a chance to experience first-hand the abundant biodiversity of Narragansett Bay and learn how animals adapt to extremes in the inter-tidal environment. The teachers also received materials to bring estuary education into their classrooms while meeting state science standards.



If you are interested in opportunities like this, join our email list to receive educational and recreational activity announcements at www.nbnerr.org

Mapping the BayScape

By Felicia Olmeta

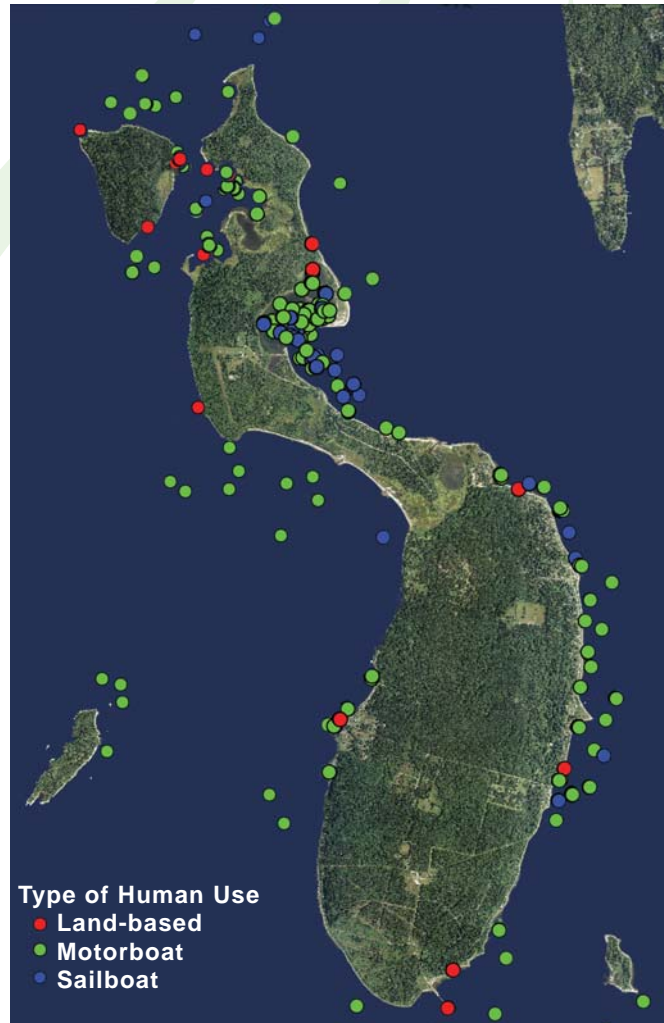
Summer in Narragansett Bay is the season for clamming, sailing, swimming, picnicking, fishing, and water activities of all kinds. Prudence Island's boating hot spots, including Potter's Cove and the T-Wharf at the island's south end, are especially busy in July and August. In the past no one has studied just how busy the island is, when the busiest times are, or how people are using the shoreline. Improved understanding of the distribution and diversity of human activities in and around Narragansett Bay is critical for developing effective coastal and marine management policies.

This past summer, Narragansett Bay Research Reserve scientists and URI professors Tracey Dalton and Robert Thompson worked together to conduct shipboard and land-based surveys of water and shoreline activities in and around the Reserve's properties on Prudence, Patience, Hope and Dyer Islands. The surveys were conducted on ten randomly selected days (weekends and weekdays) throughout the summer. On these days all human activities occurring around the Reserve were recorded.

To collect information about human uses of the Bay from the water, researchers traveled by boat along a pre-established transect line around the Reserve. One team member would make observations from the boat using binoculars equipped with a laser distance meter and electronic compass. These binoculars measure the distance and bearing of an observed object like a sailboat anchored in Potter's Cove. The range finder on the binoculars transmits the distance and compass bearing to an integrated handheld computer and mobile global positioning system (GPS) device.

Each recorded point in the GPS represents a person, boat, or other entity and contains specific information about the activity or vessel. The human use information might include activities like walking the shoreline, fishing, or wading in the water. Boat information might describe the vessel as any number of types including lobster boat, sail boat, cruise ship, skiff, or kayak.

Reserve staff also conducted weekly surveys of human activities in the Bay from Prudence Island. These observations were taken at



Above: This composite aerial photograph of the Research Reserve shows human activities on one July morning this past summer. Each point represents a human activity observed along the shoreline of the Reserve or on the Bay.

three locations: Potter's Cove, T-Wharf and Coggeshall Cove. Details about each activity observed (time, activity, type of vessel, etc.) and the activity's location were marked on a map. These observed data points were then converted into the map-based GPS database.

Results from BayScape studies will show where and how people are using the Reserve. In turn, this data will help Reserve staff to understand how people impact our water quality, shellfish abundance, and coastal habitats like eelgrass beds and bird rookeries. This new knowledge will also contribute to planning discussions and address management needs of the Research Reserve.

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A Fond Farewell to Christine Comeau and Tom Kutcher



Although Christine Comeau and Tom Kutcher have left the Research Reserve, they are still living in Rhode Island and continue working to protect Narragansett Bay.

We wish them well in their new positions and new pursuits!



*You are Invited to a
'Holiday Open House'
at the Narragansett Bay
Research Reserve*

Please join us in celebrating the holiday season at the Lab & Learning Center on Prudence Island's south end. Drop in anytime from 11-3 pm Wednesday December 12, 2007.

We will enjoy calzones, holiday treats and enjoy a new art exhibit from photographers Greg Romans and Judith Gardner.

We look forward to seeing you!



Narragansett Bay Research Reserve

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Check us out on-line:
www.nbnerr.org

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