

The Tidal Flat

Spring Edition 2008

Welcome Back to “The Tidal Flat”

by Lori Davis, Education Specialist

Welcome to our new and improved newsletter! It has been awhile since “The Tidal Flat” has been in production but it is now back up and running. As in the past, this publication features stories, upcoming events and happenings within the North Carolina Coastal Reserve and the North Carolina National Estuarine Research Reserve. “The Tidal Flat” will be published three times a year, once in the spring, once in the fall and once in the winter. Our goal is to bring together current and relevant information from the research, stewardship and education sectors.

In this edition you'll read about the Reserve's 2007 program highlights, the Coastal Training Program's spring workshops, how to become a reserve volunteer and the exciting new research activities within the Reserve. Our summer field trip schedule is included in this edition as is information on our new summer camps for children. If you wish to receive future editions of “The Tidal Flat” (or wish to unsubscribe), please contact Lori Davis, newsletter editor, at 252-838-0883 or lori.c.davis@ncmail.net. When contacting Lori, make sure to indicate whether you would prefer an electronic or paper copy of the newsletter.

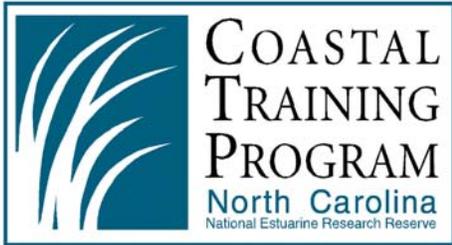


Junior Naturalist Program at the Rachel Carson Reserve

This summer the Reserve will host a Junior Naturalist program for students in grades 4 - 8. Beginning June 18th, the program will run Wednesdays through August 6th, from 9-12 p.m. All classes will be held at the Reserve facility on Pivers Island in Beaufort.

Students will conduct field investigations of estuaries. Activities will include marsh seining, water quality sampling, animal population studies, beach and marsh profiles and phytoplankton identification.

Participants may register for all eight sessions for \$100.00 or they may register for individual classes (\$15.00 each). Priority will be given to those students registering for all eight sessions. All session registration is now open. Registration for individual classes begins on June 1. To register contact Lori Davis at (252) 838-0883 or lori.c.davis@ncmail.net.



The Coastal Training Program Focuses on Community Development

by Whitney Jenkins, Coastal Training Program Coordinator

The Coastal Training Program is assisting with two upcoming trainings that focus on sustainable community development. The first, titled Coastal Community Planning and Development, will be presented by NOAA's Coastal Services Center on April 15 & 16 in the NOAA/Reserve Auditorium on Pivers Island in Beaufort. This course targets coastal resource managers who need a basic knowledge of planning processes, as well as alternatives to conventional patterns of growth and development. This two-day course will help participants: understand current development patterns and trends; understand the drivers (e.g. codes and regulations) that influence growth and development patterns; understand the social, environmental, and economic impacts and benefits of various development patterns; and assess the current state of growth and development in their communities. The fee for the workshop is \$20 and includes lunch on both days. Registrations must be received by April 8. Contact Whitney Jenkins for more information: whitney.jenkins@ncmail.net or 252-838-0882.

The second training is titled Coastal Growth Strategies, and will be held on May 1 at River Dunes in Pamlico County. This training was developed by several local organizations, including N.C. Sea Grant, Albemarle Pamlico National Estuary Program, UNC School of Government, NCSU's Natural Resource Leadership Institute, NCSU's Watershed Education for Communities and Officials, N.C. Coastal Federation, UNC Coastal Studies Institute, and N.C.'s Eastern Region. This program is targeted at local elected officials and will include: an overview of coastal land use and relationships with water resources, aquatic habitats, and links with local economies; and how applying principles of public participation can enhance civic engagement in potentially controversial issues. The training will also highlight three communities with environmentally sensitive growth strategies. A reception, hosted by N.C.'s Eastern Region, will take place the evening before the event. For more information, visit N.C. Sea Grant's website: www.ncseagrant.org/growthstrategies.

DID YOU KNOW?

...what we typically call a sand dollar isn't a true sand dollar? It is really a keyhole urchin. True sand dollars do not have any holes. What you find on the beach is the skeleton of the keyhole urchin. When the keyhole urchin dies, the soft tissues inside the animal decompose, the spines fall off, and the skeleton is bleached white.

Keyhole urchins live on sandy bottoms in shallow water below the tide line. They burrow into the sand for protection. A live keyhole urchin has skin, muscle tissue, and short, fine spines that are used for burrowing. On the top side of the animal, rows of tube feet extend through holes forming the five "petals." In the center of the underside of a live keyhole urchin is a mouth, with five teeth (shaped something like the beak of a bird) used for scraping algae off rocks. There are male and female urchins, but the sexes cannot be recognized by external features.



Keyhole urchin

Summer Field Trips to the Rachel Carson Reserve

The Rachel Carson Reserve in Beaufort will be offering public field trips this summer every Tuesday and Thursday during the months of June, July, August and the first part of September. During low tides, the trips will be a two-hour nature hike on the Reserve focusing on the different habitats and the plants and animals that you will find in each. During high tides, a boat ride will take you to our boardwalk on Carrot Island. Below is a list of the dates. All programs are open and free to the public but reservations are required as boat space is limited. Call 252-838-0883 to make reservations or for more information.

June

- 3 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 5 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 10 - Nature Hike on Reserve (8:30-10:30 a.m.)
- 12 - Nature Hike on Reserve (9-11 a.m.)
- 17 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 19 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 21 - Kayak Tour of Reserve (9a.m.-12 p.m.)
- 26 - Nature Hike on Reserve (8-10 a.m.)

August

- 5 - Nature Hike on Reserve (8-10 a.m.)
- 7 - Nature Hike on Reserve (8-10 a.m.)
- 12 - Nature Hike on Reserve (9:30-11:30 a.m.)
- 14 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 19 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 21 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 21 - Kayak Tour of Reserve (9 a.m.-12 p.m.)
- 26 - Nature Hike on Reserve (9-11 a.m.)
- 28 - Boat Trip to Boardwalk (8:30-10 a.m.)

July

- 1 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 3 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 8 - Nature Hike on Reserve (8-10 a.m.)
- 10 - Nature Hike on Reserve (8-10 a.m.)
- 15 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 17 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 22 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 24 - Nature Hike on Reserve (8-10 a.m.)
- 29 - Nature Hike on Reserve (9:30-11:30 a.m.)
- 31 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 31 - Kayak Tour of Reserve (9 a.m.-12 p.m.)

September

- 2 - Boat Trip to Boardwalk (8:30-10 a.m.)
- 9 - Nature Hike on Reserve (9-11 a.m.)
- 16 - Boat Trip to Boardwalk (8:30-10 a.m.)



2007 Highlights: North Carolina Coastal Reserve and National Estuarine Research Reserve

by Rebecca Ellin, Reserve Manager

RESEARCH

The **thirteenth year** of the **NCNERR's System-Wide Monitoring Program (SWMP)** was successfully implemented at the **Masonboro** and **Zeke's Islands** components. SWMP is part of a national program to provide baseline data for water quality, chlorophyll a, nutrients, and weather for 27 estuaries across the country. Data are available real-time for the Research Creek site at Masonboro Island as part of the National Estuarine Research Reserve System's contribution to the Integrated Ocean Observing System (<http://cdmo.baruch.sc.edu/>).

Water quality monitoring was reinstated at the **Rachel Carson NCNERR** component after a five-year hiatus. This work is conducted in partnership with the National Park Service.

Submerged aquatic vegetation (SAV) was mapped at the **Rachel Carson** component to support the Coastal Habitat Protection Plan. The **Masonboro NCNERR** component was surveyed for SAV but none was found.

Upland and emergent habitat mapping was completed at the **four NCNERR** components. This dataset will be used to support and promote research and education activities on the components as well as monitor sensitive areas and invasive species, assess habitat change over time, and inform land conservation strategies.

STEWARDSHIP

Sea turtle monitoring was continued at the **Masonboro Island NCNERR** component this summer. This work was conducted by UNCW; 22 nests and 11 false crawls were observed.

A **tide gate** was installed at the **Buckridge Coastal Reserve** with funding from the Albemarle-Pamlico National Estuary Program to restore hydrologic function and prevent salt water intrusion.

A **Visitor Use Study** was conducted at the **Currituck Banks, Rachel Carson, and Masonboro Island NCNERR** components, and **Bird Island Coastal Reserve** in conjunction with researchers from UNCW. The results will yield a better understanding of how the components are used and the visitors' level of understanding about the Reserve, informing signage and education programs and forming a baseline for tracking the effectiveness of policies.

A **"green" boardwalk** was completed at the **Rachel Carson NCNERR** component to provide directed access to its unique habitats. Composite decking and railing were used in place of traditional treated lumber. The boardwalk is a joint project with the Town of Beaufort and was funded through a grant from the Division of Coastal Management's Public Beach and Waterfront Access to the Town and a private donation.

Trail improvements were completed at **Kitty Hawk Woods Coastal Reserve**; interpretive signs and benches were installed and a new trail was created to complete a loop trail system. A **new trail** was completed at the **Bald Head Woods Coastal Reserve** with assistance from UNCW.

EDUCATION

Education staff held **twelve teacher professional development workshops and training opportunities** in 2007. **Two hundred and five teachers** from across the State learned about coastal processes, estuarine habitats, and the educational resources available to support classroom-based estuarine education. Workshop partners included N.C. Wildlife Resources Commission, Bald Head Island Conservancy, Southeast Center for Ocean Sciences and Education Excellence, Mid-Atlantic Marine Educators Association, Carteret County Schools, and the Environmental Education Institute.

One thousand eighty-two students visited the **Rachel Carson NCNERR** component on school sponsored field trips. **EstuaryLive** had approximately **1450 participants** from **27 different schools**. **Community outreach programs** were held for **381 individuals** from a variety of organizations.

The volunteer-led summer walking and boat field trips at the **Rachel Carson NCNERR** component drew **236 members of the general public**. A summer student intern at the **Currituck Banks NCNERR** component led nature hikes for **204 members of the general public**.

Nine Coastal Training Program workshops were held in 2007 and reached **317 coastal decision-makers** on topics as diverse as North Carolina's coastal development rules, stormwater management, on-site wastewater treatment and disposal, the North Carolina Clean Marina program, and estuarine shoreline mapping.

Join In The Fun!

The Rachel Carson Reserve in Beaufort will be offering two opportunities for young students interested in estuarine studies this summer. For more information about these programs or to register, please call 252-838-0883. Space is limited so register early.

* **Preschool Storytime and Arts and Crafts** - June 16, July 14 and August 11. All sessions are from 9-10 a.m. and free of charge. Topics will include hermit crabs, jellyfish and snails.

* **Adventures in the Estuary (1st - 3rd grade)** - July 15, 17, 22 and 24. All sessions are from 9 a.m. -12 p.m. and costs \$40 for all four classes. Topics will include estuarine habitats, invertebrates, vertebrates, and plankton.



Volunteer With The Reserve

by Lori Davis, Education Specialist

The North Carolina Coastal Reserve Program and the North Carolina National Estuarine Research Reserve have more than a hundred volunteers who donate their time, energy and talent to fulfill the program's mission "to promote informed management and stewardship of North Carolina's estuarine and coastal habitats through research, education, and example."

The N.C. Coastal Reserve is seeking a diverse group of volunteers to fulfill a variety of important duties from office assistants who help prepare for events and mailings to reserve monitors who assist stewardship staff with protecting the land to research assistants who accompany research staff on monthly data collection trips. Each volunteer brings his or her own unique skills to the task, and making the Coastal Reserve programs stronger and more effective.

We are currently looking for volunteers to fulfill the following duties:

Field Assistant

Laboratory Assistant

Office Assistant

Education Assistant

Feral Horse Volunteer

Site Clean-up Volunteer

Field Volunteer

Stewardship Monitor



For more information about our volunteer opportunities and/or an application, please contact one of the following:

Hope Sutton, Southern Sites Manager at 910-962-2998 or suttonh@uncw.edu or

Paula Gillikin, Rachel Carson Site Manager at 252-838-0886 or paula.gillikin@ncmail.net

NCNERR Receives Grant to Study Shoreline Stabilization

by John Fear, Research Coordinator

The North Carolina National Estuarine Research Reserve (NCNERR) in cooperation with the NOAA Center for Coastal Fisheries and Habitat Research in Beaufort, N.C. has been awarded a grant from the Cooperative Institute for Coastal and Estuarine Environmental Technology to study shoreline stabilization. The short-term (Phase I) objectives of this multidisciplinary project are to 1) conduct research to quantify ecosystem service tradeoffs as a consequence of habitat alteration, 2) design and install demonstration projects utilizing alternative shoreline stabilization approaches for research and education purposes, 3) develop an approach for evaluating ecological and socioeconomic costs and benefits of shoreline erosion and protection alternatives and 4) develop effective communication methods for exchanging information between scientists, regulatory agencies, the business community, politicians and other relevant stakeholders in regard to short-term and long-term cost-benefits of shoreline stabilization plans.

Phase I of the project is designed to last two years. At the end of Phase I, we will have the foundation to move towards a comprehensive analysis of the ecological and socioeconomic costs and benefits of various shoreline stabilization and erosion mitigation approaches in Phases II and III. Phases II and III are subject to subsequent funding and will provide an additional four years of support for this project.

The project is a multi-institution collaboration involving Federal, State and University scientists and coastal managers. This collaborative project will address northern, central and southern areas of the North Carolina coast. For more information regarding this exciting new project, please contact the principle investigators, Drs. Carolyn Currin (NOAA) and John Fear (NCNERR).

Riprap is one form of shoreline stabilization



New Graduate Research Fellowship Initiated at Masonboro Island

by John Fear, Research Coordinator

The NCNERR had an open GRF this year. The Graduate Research Fellowship program provides funding for graduate students to conduct research within the boundaries of the National Estuarine Research Reserves and this year's selection process was extremely competitive. Ginger Winder, a Ph.D. student at the University of North Carolina at Wilmington submitted the winning proposal titled, "Mercury (Hg) levels in feathers and blood of two species of coastal sparrows (*Ammodramus nelsoni* and *A. caudacutus*) from over-wintering and breeding sites (salt marshes along the North Carolina coast and habitat in northern U.S. and Canada, respectively)." The objective of Ginger's work is to assess mercury levels in feather and blood samples from two species of coastal sparrows (*Ammodramus nelsoni* and *A. caudacutus*) that overwinter in North Carolina salt marshes. These data will then be linked with stable isotope analysis (^{13}C , ^{15}N) data of the diets for these same species. The end result of the work will be to identify how much and in what habitat these birds are exposed to mercury. This is the first investigation regarding mercury cycling within NCNERR habitats. For more information contact Ginger Winder, winderg@uncw.edu.



Ammodramus nelsoni
Photo courtesy of Fort Macon State Park



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The North Carolina Coastal Reserve protects representative coastal habitats for research, stewardship, and education purposes and is comprised of ten sites. Four of these sites comprise the North Carolina National Estuarine Research Reserve (NCNERR). The NCNERR is part of the National Estuarine Research Reserve System and is funded through a state-federal partnership program between the NC Division of Coastal Management and the National Oceanic and Atmospheric Administration. Financial support for this publication was provided by a grant under the Coastal Zone Management Act administered by the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration.



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