



# Estuaries Illustrated

Volume I Issue 4

Winter 2009

## Spring Training at North Inlet

### SWMP Technician Training



*Research technicians toured the chemistry laboratory at the Baruch Marine Field Lab and received instruction on nutrient analysis and chlorophyll methodologies and equipment.*

In February 2009, the Centralized Data Management Office (CDMO) hosted the 9<sup>th</sup> annual NOAA NERR Technician Training Workshop in support of the System-Wide Monitoring Program (SWMP). The four day workshop was attended by 35 research technicians from 26 Reserves. Guest speakers came from the NOAA

Estuarine Reserves Division to provide background on the NERRS and SWMP programs to new participants and from the North Inlet-Winyah Bay NERR to provide instruction for the nutrient monitoring program.

The CDMO was established in support of the NOAA NERR System-Wide Monitoring Program involving 27 sites around the US and Puerto Rico. The CDMO, which is housed at the North Inlet-Winyah Bay NERR, is responsible for the assimilation and management of data, data management protocols and data documentation as related to estuarine water quality and meteorological monitoring. In January 2001, the CDMO established an annual training workshop for NERRS research technicians. The goal of this annual workshop is to provide hands-on assistance to NERRS research technicians in support of SWMP. Peer-led training encompasses: equipment setup, operation and maintenance, data collection and management, quality assurance/quality control activities and promotes interaction and communication among Reserve technicians.

More information about the CDMO can be found at: <http://cdmo.baruch.sc.edu>.

### Marsh Bird Monitoring Training

In March 2009, training was held at the NI-WB NERR to kick off the spring season of marsh bird monitoring. Attendees received instruction on using a standardized survey method and practiced identifying marsh birds by call.



*Workshop participants visited the Santee Coastal Reserve to practice listening for and spotting secretive marsh birds.*

Species covered included clapper rail, sora, least bittern, common moorhen, purple gallinule, and pied-billed grebe. Because these species spend much of their time among the thick marsh grasses, they are more easily inventoried by listening for their calls than by sight.

Clapper rail populations at North Inlet are being monitored using a call response method developed by the U.S. Geological Survey, Arizona Cooperative Fish and Wildlife Research Unit. Volunteer observers record the timing, direction, estimated distance, and call type of clapper rails at 32 pre-determined stations twice a month from March through June. The results of this analysis will further our understanding of the habitat requirements of this species and be used to examine the potential effects of land use change and sea level rise on the population status of clapper rails.

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# Discovery Center Progress

## The Big Tank

The “Big Wow” tank arrived from California in February. Constructed of acrylic, the 8 ft diameter tank will be part of the salt marsh exhibit at the new Hobcaw Barony Discovery Center. The contractors were able to finish closing in the building after the tank was moved in.



*The tank arrives and is carried to an opening left in the building for this purpose.*



*But will the 8 ft diameter tank fit through the opening?*



*The fork lift maneuvers with only inches to spare.*



*Members of the NI-WB NERR Advisory Committee pose with the big tank in place.*

## The Interpretive Center

Construction of the interpretive shelter/outdoor classroom began last month. It will be roughly 1,800 square feet in size - 1,200 square feet as screened classroom space and 600 square feet of storage space. It will also have a patio area with sunken fire pit and permeable pavers. A small dock is also planned to provide access to Kimbel pond for school children to explore freshwater life.



## Permeable Pavers Installed



Permeable pavers were installed in the bus drop-off area and walkways next to the Discovery Center. These pavers provide a sturdy surface for car and foot traffic and can reduce or eliminate stormwater runoff. Under the pavers, an open-graded bedding layer and aggregate base allow stormwater to filter through, trapping pollutants on the way. The water then infiltrates into the ground where it is purified and eventually recharges ground water sources.



# Coastal Training Program Talks Technical

The CTP is partnering with the City of Myrtle Beach Stormwater Department to host a series of technical design seminars on a variety of low impact design (LID) stormwater practices. While much emphasis has been placed on regulatory aspects of LID implementation –from strict mandates for LID use to simply allowing it as a development option – an information need still exists for the professionals designing these systems. To bridge the gap between awareness of LID and the level of knowledge that allows for on-the-ground implementation, these seminars feature presentations by professionals experienced with designing, sourcing, and installing LID practices, and provide demonstration installation components to give participants hands-on experience. The seminars are aimed at local professionals such as landscape architects, site designers, engineers, and stormwater managers who play a major role in determining the successful application of these practices in coastal South Carolina.

## It Pays to Pave Pervious

The first seminar in this series, on February 4<sup>th</sup>, featured permeable pavers as an alternate to conventional paving installations. Featuring Russ Heitman from American Paving Design, and Vince Hol-



*Russ Heitman discusses the use of pervious pavers*

lis of Lowcountry Pavers, this seminar highlighted a variety of uses for pavers, and some of the potential cost savings over conventional paving. While there is no uniform practice that works on every development site and permeable pavers are not always cost effective, the field demonstration site illustrated the use of permeable pavers in the coastal zone. The high water table is considered a difficult design condition in SC's coastal regions and often inhibits a willingness to install LID practices that promote infiltration. The demo site also showed how the developer was able to gain additional home sites (and thus, extra income from the sale of those lots) by using pavers to reduce the size of other stormwater features such as a retention pond.

## Letting Nature Do the Dirty Work

A series of popular bioswale workshops were co-hosted by the NI-WB and ACE Basin CTPs in October 2008. These workshops were held in North Charleston at an innovative low impact community known as Oak Terrace Preserve.



*Workshop participants get hands on experience installing a rain garden at the M.B. fire station.*

In response to the overwhelming feedback and a desire to provide similar training closer to home, a March 10<sup>th</sup> seminar focused on bioretention systems that rely on the physical, biological, and chemical properties of soils, plants, and microbes to process contaminants found in stormwater runoff as it passes through the system. Elias Deeb and Mike Horton spoke about the bioswales at Oak Terrace Preserve, and Steve Strickland of The EARTHWORKS Group spoke about the use of constructed wetlands for treating stormwater. A field demonstration got participants outside in the dirt for a rain garden installation at a Myrtle Beach fire station.

## Future Events in the Seminar Series

### Harvest from the Sky

A seminar about rainwater harvesting systems, from the simplest rain barrel to elaborate integrated cistern-irrigation systems, will come just in time to provide ways to ease the demands on water resources that come from heavy outdoor water use during spring and summer months.

### Building a Better Mousetrap

This seminar will explore some of the pre-fabricated, engineered stormwater devices such as Crystal Stream Technologies, Filterra Systems, and other designed products that can be installed in urban environments to remove pollutants commonly found in stormwater runoff.

# Task Force Takes on Beach Vitex

In the 1980s, beach vitex (*Vitex rotundifolia*) was imported from the Pacific Rim by the North Carolina University Arboretum for use as a beach stabilization plant in the southeastern US. In the early 1990s, the woody shrub was planted for erosion control on South Carolina beaches, but by the mid-1990s plant specialists began to notice beach vitex spreading on state beaches where it was crowding out native species like sea oats. Beach vitex appears to have spread from original plantings on or near North and South Carolina beaches by both vegetative growth and by seeds. Unfortunately, this plant does not seem to trap windblown sand as efficiently as native species such as sea oats and bitter panicum.

In 2003, after discovering thick mats of beach vitex descending down the base of sand dunes, volunteers with the South Carolina United Turtle Enthusiasts (SCUTE) expressed concerns about the possible impacts of the plant on loggerhead sea turtle nesting habitat and behavior. To address concerns about the spread and impacts of the plant, a workshop on beach vitex was hosted by the North Inlet-Winyah Bay National Estuarine Research Reserve. This workshop brought together private citizens, personnel from state and Federal agencies, and representatives from non-profit organizations, resulting in the formation of the South Carolina Beach Vitex Task Force. In 2004 the Task Force received a U.S. Fish and Wildlife Foundation grant to begin removal of the plants. After experimenting to determine the best pesticide and application method, Clemson University personnel began removing vitex and replanting dunes with native vegetation. In 2005, North Carolina joined the effort and the name was changed to the Carolinas Beach Vitex Task Force.

In the six years since that first workshop, the Task Force has celebrated many accomplishments. In 2008, the Task Force received its fifth National Fish & Wildlife Foundation (NFWF) Pulling Together Initiative Grant. Ordinances banning beach vitex have been passed in a number of NC and SC beach communities including

## How to Identify Beach Vitex

- ☑ Oval-shaped, semi-waxy, opposite leaves
- ☑ Underside of leaves is a lighter green (\*not to be confused with the silvery underside of Silver-leaf Croton, *Croton punctatus*)
- ☑ Has a woody stem
- ☑ Purple flower in summer
- ☑ Deciduous (dies back in winter)
- ☑ Distinctive eucalyptus-like scent when leaves are crushed



Two plants that can be mistaken for Beach Vitex (left) are silver leaf croton (middle) and the threatened sea beach amaranth (right). Croton and amaranth both have alternate leaves, while vitex has opposite leaves.

Bald Head Island, Ocean Isle Beach, Kure Beach, Carolina Beach, Emerald Isle, Oak Island, Surf City, Wrightsville Beach, Pawleys Island, Georgetown County, Isle of Palms, Kiawah Island, and Folly Beach. Recently, the NC Board of Agriculture listed beach vitex as a Class B State Noxious Weed which bans the sale, transport and possession of beach vitex by nurseries, garden shops and private property owners. Information about beach vitex has appeared in over 85 local and national newspaper reports, magazine articles, and television shows. The Task Force continues to hold annual symposiums where Task Force partners, state agency personnel, local officials, researchers, and concerned citizens share information and form collaborations to reach the goal of the total eradication of beach vitex.

Although beach vitex has been rapidly disappearing from the southeast coast due to the efforts of the Task Force, long term vigilance will be needed to detect seedlings and re-growth. To learn more about beach vitex and the Task Force, visit [www.beachvitex.org](http://www.beachvitex.org).

# Notes

## SC-RC Joint Meeting Held at GTM

Sector meetings provide an opportunity for staff of the reserve system to meet with their counterparts from other reserves. While research, education and stewardship activities are tailored among reserves to address the unique resources and issues of their local coastal communities, system-wide program meetings provide leadership, coordination, technical support and consistency for sector activities at national and regional levels. In January, the NERR Research Coordinators and Stewardship Coordinators met jointly at the Guana Tolomato Matanzas Reserve in Florida. Topics of discussion included habitat mapping and watershed landcover characterization, the reserve system's role as a network of sentinel sites for climate change, and restoration science projects and funding. In March, the Education Coordinators and Coastal Training Program Coordinators will be meeting together at the Mission-Aransas NERR in Texas where they will explore the topic of long distance education and other areas of interest to both programs.



*The Stewardship Coordinators took some time out to watch for whales off shore during a field exercise.*

## Coastal GeoTools Conference

“Building the Digital Coast” was the theme of the Coastal GeoTools 2009 conference, a biannual meeting which focuses on geospatial data, tools, technology, and information for coastal resource management professionals. NI-WB NERR Stewardship Coordinator Jennifer Spicer co-presented a talk titled, “Managing South Carolina Coastal Habitats in Light of Climate Change Impacts” that highlighted a collaborative project with the neighboring Waccamaw National Wildlife Refuge and the NOAA Coastal Services Center. The goals of the project are to identify coastal habitats potentially influenced by sea level rise and to evaluate the resulting changes on quality and connectivity of the habitats across the landscape. The partners are utilizing the Sea Level Affecting Marshes Model, NOAA’s Habitat Priority Planner tool, high resolution elevation data, land cover and habitat data, and other relevant datasets for the study area. By using spatial data and tools, the NI-WB NERR, local managers and stakeholders can explore conservation and other habitat management actions to begin planning for and adapting to predicted sea level rise, rising temperatures, and other climate change stressors.

## Beach Vitex Task Force Holds 6<sup>th</sup> Annual Symposium



The 2009 Carolinas Beach Vitex Task Force symposium was held in March at the North Carolina Aquarium at Fort Fisher. Melanie Doyle, the North Carolina Task Force Coordinator, and Betsy Brabson, the South Carolina Coordinator, began the symposium with updates on the work and accomplishments of the Task Force over the past year. Information on beach vitex found in Virginia was also presented at this year’s meeting, demonstrating the ability of this invasive plant to continue its northward spread. The listing of beach vitex as class B North Carolina state noxious weed was discussed as well as progress toward a similar listing in South Carolina. In the afternoon, participants took a short trip to the north end of Carolina Beach to visit a large colony of beach vitex that is invading public Freeman Park. While there, participants saw dunes recently stabilized with sea oats. Area growers of native dune vegetation were on hand to discuss replanting of dunes once beach vitex has been eradicated.

# Programs

April 11 **Bike to the Boardwalk**

April 25  
May 9  
May 23  
Meet Reserve staff in the Hobcaw Barony Discovery Center parking lot and bike 2.5 miles (each way) to the Reserve's salt marsh boardwalk on beautiful North Inlet, then enjoy a leisurely salt marsh exploration. Upland forest habitats, wildlife, salt marsh ecology and a variety of other topics will be discussed during the trip. Bring your own bike (all terrain tires recommended), snack, water, cameras, and binoculars (if desired).



May 4 **Paddle North Inlet**

May 18  
Join Reserve staff and Surf the Earth outfitters for a naturalist-guided tour through the creeks of North Inlet. The program includes instruction in basic kayaking, a natural history overview, and educational highlights of the North Inlet ecosystem. Fee includes kayak, paddle, personal flotation device and water; bring a snack, camera/binoculars and wear sturdy shoes. Cost: \$50/person, limited to 6 participants.



May 14 **Spring Wildflowers**

Take a walk through maritime, upland forest, and wetland habitats to see spring blooms at Hobcaw Barony. Reserve staff and naturalists will help identify common spring wildflowers. Meet at the Discovery Center parking area to travel by van to selected sites. Wear comfortable walking shoes, and bring insect repellent.



For times & locations of programs and more information on upcoming programs, visit <http://www.northinlet.sc.edu/education/calendar.htm>. All programs are free unless noted, but space is limited and registration is required.

**To register, please call (843) 546-6219 Ext. 0.**

# Events

April 18 **George Goes Green**

Georgetown's first environmental education day, 'George Goes Green', will be held on Saturday, April 18th at East Bay Park in Georgetown from 10:00-4:00. The purpose of this event is to bring residents together with local business and non-profits to share knowledge, ideas and products for living in a more sustainable world. Presentations throughout the day will cover a variety of topics including Georgetown County recycling studies and programs, the value of Rain Gardens and how to plant them, bio-fuels and the use of switchgrass as an alternative energy source, smart homes- new construction and retrofitting, and a special segment on water quality issues.

# Parting Shot

## Frozen Tide

OK, so it's not the snow packed shore of New Hampshire (see the cover of the Winter 2009 issue of *Great Bay Matters*). But in coastal South Carolina, driving in to work through light flurries and past frozen tidal creeks is note-worthy. According to the South Carolina State Climatology Office, the average annual snowfall for Georgetown is 0.3 inches and the average annual snow depth is 0 inches (i.e., it doesn't stick). The greatest amount of snowfall on record is the 6 inches that brought the area to a standstill on December 23, 1989.



### Estuaries Illustrated

North Inlet-Winyah Bay National Estuarine Research Reserve Newsletter

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**ARTS & SCIENCES**

Created in 1972, the National Estuarine Research Reserve System (NERRS) is dedicated to conservation, research, education, and stewardship activities in America's estuaries—coastal areas where the rivers meet the sea. The North Inlet-Winyah Bay Reserve was established in 1992 and is one of 27 reserve sites around the coastal United States. Each reserve receives funding from the National Oceanic and Atmospheric Administration (NOAA) and matched resources from the host state agency. The North Inlet-Winyah Bay Reserve is hosted by the University of South Carolina, Belle W. Baruch Institute for Marine and Coastal Sciences in the College of Arts and Sciences. We are headquartered at the internationally recognized Baruch Marine Field Laboratory in Georgetown, South Carolina.

