ACE Basin Adventure
Teachers Get Hands-on Experience

The NI-WB NERR teamed up with the ACE Basin NERR, South Carolina Department of Natural Resources (SCD-NR), SEWEE Association, and South Carolina Sea Grant Consortium to host the ‘ACE Basin Adventure’ Teacher Workshop in Colleton County on June 11th – 14th, 2008. This year’s workshop was funded by a two-year grant from the Gaylord and Dorothy Donnelley Foundation, and was offered to teachers in the upper coastal counties of South Carolina (last summer’s workshop included fifteen teachers from the lower coastal counties).

The ACE Basin is one of the largest undeveloped estuaries on the East Coast, encompassing 350,000 acres. It is named for the Ashepoo, Edisto, and Combahee rivers which meander past cypress swamps, historic plantation homes, old rice fields, and abundant tidal marshes to meet South Carolina’s biologically rich St. Helena Sound. The Basin hosts a wealth of wildlife resources, including such endangered and threatened species as bald eagles, wood storks, ospreys, loggerhead sea turtles, and shortnose sturgeon.

Fourteen teachers from Georgetown, Horry, Berkeley, and Florence counties participated in the free workshop. Participants spent four days in the ACE Basin at the SCDNR Michael McKenzie Field Station located at Bennett’s Point and engaged in land-based classroom activities and adventurous field-based programs throughout the week. The purpose of the workshop was to give teachers hands-on experience with the habitats and species that can be found in and around the ACE Basin. The teachers will take these lessons back to their classrooms and incorporate local coastal areas as field study locations for their students.

Activities for workshop participants included kayaking down the Ashepoo River, birding, discovering the night sounds of a forest, a marine trawl aboard the catamaran E/V Discovery, water quality sampling, and exploration of nearby barrier islands. Teachers receive 20 renewal credit hours upon completion of the course and must also develop a standards-based lesson plan incorporating what they learned about the ACE Basin. The workshop provided teachers with the opportunity to learn more about estuarine ecology, hammock islands, watersheds, and water quality, among many other topics relevant to the ACE Basin and South Carolina’s coastal environments.

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This May the NI-WB NERR education staff offered a “Wildflower Walk” public program for the first time. Before the walk, our Education Coordinator and Education Specialist went on a gathering expedition and brought their finds back to the classroom. We were surprised at the variety of flowers we had not noticed before while making the drive to and from the lab on Clambank Road. Some of the plants we easily recognized, but others were less conspicuous and took a little research and closer examination for us to determine their identity. The more obvious heralds of spring were the solitary blooms of the Easter Lily and the purple masses of Blue Flag Iris. Less conspicuous were the tiny, fragrant blooms of the sparkleberry bush. Closer to the ground, we found the pale yellow rose-like flowers of the prickly pear cactus, popular with the bees.

We have attempted to keep track of the blooms as they occur over the summer, and plan to offer another wildflower program in the early fall. Until then, at right is a chart with a few examples of species we have seen so far this summer, and those we will be looking forward to seeing during the rest of the blooming season.

<table>
<thead>
<tr>
<th>Month</th>
<th>Scientific Name</th>
<th>Common Name</th>
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<tbody>
<tr>
<td>May</td>
<td>Iris virginica</td>
<td>Southern Blue Flag (at left)</td>
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<td></td>
<td>Opuntia humifusa</td>
<td>Prickly-Pear</td>
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<td></td>
<td>Zephyranthes atamasco</td>
<td>Easter Lily</td>
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<td></td>
<td>Sisyrinchium atlanticum</td>
<td>Blue-eyed Grass</td>
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<td></td>
<td>Vaccinium arboreum</td>
<td>Sparkleberry</td>
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<tr>
<td>June</td>
<td>Borrichia frutescens</td>
<td>Sea Ox-eye (at left)</td>
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<td></td>
<td>Saururus cernuus</td>
<td>Lizard’s Tail</td>
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<td></td>
<td>Cirsium horridulum</td>
<td>Yellow Thistle</td>
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<tr>
<td></td>
<td>Canna flaccida</td>
<td>Golden Canna</td>
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<tr>
<td></td>
<td>Pyrrhopappus carolinianus</td>
<td>False-dandelion</td>
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<tr>
<td>July</td>
<td>Ipomoea sagittata</td>
<td>Salt Marsh Morning Glory (at left)</td>
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<tr>
<td></td>
<td>Campsis radicans</td>
<td>Trumpet vine</td>
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<td></td>
<td>Verbascum thapsus</td>
<td>Woolly Mullein</td>
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<td></td>
<td>Kosteletzkya virginica</td>
<td>Seashore mallow</td>
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<td></td>
<td>Ruellia caroliniensis</td>
<td>Hairy Ruellia</td>
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<tr>
<td>August</td>
<td>Rhexia sp.</td>
<td>Meadow Beauty (at left)</td>
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<tr>
<td></td>
<td>Solidago sempervirens</td>
<td>Seaside Goldenrod</td>
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<tr>
<td></td>
<td>Baccharis halimifolia</td>
<td>Groundsel Bush</td>
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<td></td>
<td>Ipomoea stolonifera</td>
<td>Beach Morning Glory</td>
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<tr>
<td></td>
<td>Erythrina herbacea</td>
<td>Coral Bean</td>
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<tr>
<td>September</td>
<td>Uniola paniculata</td>
<td>Sea Oats (at left)</td>
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<tr>
<td></td>
<td>Limonium carolinianum</td>
<td>Sea Lavender</td>
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<tr>
<td></td>
<td>Bidens laevis</td>
<td>Bur-marigold</td>
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<tr>
<td></td>
<td>Yucca gloriosa</td>
<td>Mound-lily yuccca</td>
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<tr>
<td></td>
<td>Panicum amarum</td>
<td>Seaside panicum</td>
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Ponds, People, and Precipitation
NI-WB CTP teams with Surfside Beach Stormwater Advisory Committee

Ponds, people, and precipitation are the source of much discussion among South Carolina’s coastal residents, decision makers, and resource managers. With over 8,000 stormwater ponds in SC’s coastal zone, managing them to handle rainfall, provide residential amenities, and protect water quality is a daunting task.

Stormwater ponds are designed to retain stormwater for a period of time to allow sediments and solids to settle to the bottom of the pond before the water is discharged into a receiving water body such as a stream or a river. This protects downstream aquatic communities from the harmful impacts of sediment-laden waters. However, stormwater runoff collects a lot more than sediment, including bacteria from animal waste, heavy metals and oils from vehicles, and pesticides and fertilizers from our landscape management practices. What happens to these contaminants in stormwater ponds is still up for discussion.

Some research indicates that stormwater ponds do a poor job at removing these contaminants. Given that a large percent of the ponds are located in residential communities, and treated as amenities that generate real-estate premiums for waterfront property, contaminant issues raise concerns among stormwater managers who want to protect water quality and residents who are concerned about flooding, health impacts, and maintaining the water features in their backyards that they’ve paid to enjoy.

Coastal South Carolina, because of its high water table and flat topography, is subject to flooding during even small rain events. Without the retention capacity of the ponds that are currently in place and without other appropriate stormwater management measures in existence to compensate for that retention, we’re stuck with them. The upside is that there are many ways to improve our stormwater ponds so that they continue to serve their original retention purposes, while doing a better job at treating contaminants and protecting people and water quality.

To help achieve some of these goals, the Coastal Training Program is teaming up with the Town of Surfside Beach Stormwater Advisory Committee. Since residents often own property all the way down to the water’s edge along these ponds, local officials have little regulatory authority over their actions. Therefore, the CTP and the Advisory Committee are seeking other ways to influence waterfront behaviors. Educational workshops are being planned to target individual communities with this “waterfront” property on how to better manage their landward activities in order to protect water resources. These workshops are anticipated for fall 2008, with the intention to conduct similar workshops in other communities along the Grand Strand through the next year.

Practices that lead to better pond maintenance and water quality include:

- Plant vegetative buffers along the water’s edge to help intercept land-based contaminants such as pesticides and fertilizers
- Properly contain litter and yard debris to avoid clogging stormwater pond outlets, which reduces maintenance costs and flooding risks, as well as preserves the aesthetic value of the ponds for residents
- Restrict feeding of waterfowl, particularly geese, to help reduce bacterial contamination associated with their waste
- Design future ponds to incorporate littoral shelves to promote the growth of wetland plants, which creates natural habitat and aids in nutrient and pollutant removal
Secretive Marsh Birds
Clapper Rail Research in North Inlet

Clapper rails, *Rallus longirostris*, are medium sized, grey or reddish-brown birds that live in salt marshes and mangrove swamps from Massachusetts to South America. They have long, slightly down-curved bills, short tails, and dull stripes on their flanks, but most often clapper rails are recognized by their loud clacking call rather than by sight. Clapper rails, as well as many other species of birds that inhabit the marsh, are rarely seen and can often only be detected by listening for their territorial calls during the breeding season, earning them the general name of “secretive marsh birds.”

Clapper rails are divided into eastern and western subspecies. The western subspecies is considered to be endangered, and although the eastern rails appear to be abundant, relatively little is known about their distribution and life history. In fact, the populations of many species of birds that depend on marshes appear to be declining, but basic information on the population status and the habitat requirements of these species is lacking. This information is necessary to evaluate the impacts of management actions or activities on marsh bird populations. To address the need for a nationwide, standardized monitoring program, the U.S. Geological Survey, Arizona Cooperative Fish and Wildlife Research Unit, has published a standardized survey methodology, conducts training courses, and maintains an online data base intended for use by National Wildlife Refuges and other protected areas across North America.

The NI-WB NERR began monitoring the marshes of North Inlet for clapper rails this spring to help determine the population status of this species in South Carolina. Clapper rails were surveyed by boat at 32 pre-determined points using a standardized call broadcast method that begins with a five minute passive listening period, followed by 30 seconds of broadcast clapper rail calls, and a final 30 second listening period. Observers recorded the timing, direction, estimated distance, and call type of clapper rails at each station between sunrise and 9:00 AM in May and June.

Data from this study will help determine the population size of Clapper rails in the marshes of North Inlet and will also be used to examine the effects of distance from the marsh/upland edge and the presence of developed upland areas on the number of rails detected. The results of this analysis will further our understanding of the habitat requirements of this species and be used to examine potential effects of land use change and sea level rise on the population status of Clapper rails.

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Curiosity Required
Winyah Master Naturalist Course Trains Volunteer Stewards

Participants in the Winyah Master Naturalist (WMN) Course being offered this fall will spend their Mondays outside on the coast of South Carolina, where they will practice identification skills, learn ecological concepts, discuss natural history, examine human impacts on the environment, and develop the skills necessary to be active volunteer stewards in the community. The NI-WB NERR is partnering with Huntington Beach State Park as one of 5 program sites that are offering courses that are part of the South Carolina Master Naturalist Program, administered by Clemson University. This 12-week course is designed to develop a corps of volunteers working within their communities to provide education, outreach and service dedicated to the beneficial management of natural resources and natural areas.

Last fall, 10 students graduated from the first WMN course, and last spring 10 students from program sites across the state participated in a weekend advanced training session that focused on estuaries. Participants completing the course and 30 hours of approved volunteer work will receive a Master Naturalist certification and will be eligible to join a local chapter and participate in advanced volunteer training courses.

The Fall 2008 course will include field trips to the North Inlet–Winyah Bay National Estuarine Research Reserve, Hobcaw Barony, Huntington Beach State Park, Brookgreen Gardens, the Waccamaw Wildlife Refuge, Francis Marion National Forest, and other local areas of interest. No prior training or special equipment is required to participate in the course other than a good pair of shoes that can get wet and muddy, and a curious mind. A small backpack, binoculars, and camera, and a water bottle, bag lunch and snacks are recommended. The majority of class time is spent outside, and field trips typically involve some off-trail hiking, but the level of activity can usually be modified for participants who have difficulty walking long distances.

Registration for the Fall 2008 Winyah Master Naturalist Course is through the Clemson Website http://www.clemson.edu/masternaturalist/. Registration is limited to 15 people, and will close on August 29. If you live outside of the South Carolina mid-coast area, please check out the other site locations in SC listed on the Clemson website. Many other states also offer Master Naturalist programs, although the length and structure of courses vary.
Volunteers Protect Sea Turtle Nests

This summer, three members of the reserve are volunteering their time and working with members of the Debdordieu Community to protect the nests of the threatened loggerhead sea turtle, *Caretta caretta*, on Debidue Beach, including the southern “Hobcaw” section that is in the reserve. Volunteers walk the beach early in the morning during the nesting and hatching season, record information on false crawls and nests, and protect nests from predators with screening. Nests laid in areas subject to flooding by tides are carefully relocated to higher areas. Volunteers also monitor the hatching success of the nests and conduct nest inventories 72 hours after the major hatch, indicated by dozens of baby turtle tracks in the beach sand. Nest inventories are conducted near dark and usually draw a crowd of interested visitors, providing an excellent opportunity to share information about the natural history and conservation of sea turtles. As of the end of July, there were 15 nests on the Hobcaw portion of the beach and a total of 32 for the entire Debidue Beach.

Southeastern NERR Annual Meeting

The NERRs of North Carolina, South Carolina, Georgia, and eastern Florida will meet at the Guana Tolomato Matanzas NERR in Ponte Vedra Beach, Florida in August. At last year’s meeting at the NI-WB NERR, the southeastern reserves decided to collaborate on a regional project to address the issues of invasive species. This year’s meeting will focus on further developing the invasive species project, and on developing proposals for regional approaches to shared emerging issues. Topics of regional interest include shoreline dynamics, climate change, and habitat loss and restoration.

Staff Attend National Marine Educators Association Conference

The 2008 National Marine Educators Association Meeting was held in Savannah Georgia, July 21-24. This year’s meeting, themed “One World, One Water. United in Marine Education,” featured a diverse group of presenters, including researchers, educators and resource managers, who came together to share ideas, programs, and current trends in marine and aquatic education and research. Beth Thomas, NI-WB NERR Education Coordinator, and Karen Fuss, Coastal Waccamaw Stormwater Education Consortium Coordinator, gave a presentation titled ‘We All Live Downstream’ about storm water issues and hands-on solutions such as rain gardens and rain barrels. Wendy Allen, NI-WB NERR Manager, and Dennis Allen, Director of the Baruch Marine Field Lab, conducted a ‘Diving into Plankton’ workshop in cooperation with the NOAA Phytoplankton Monitoring Network. Participants spent a day examining the diversity of phytoplankton and zooplankton at the University of Georgia’s Marine Education Center and Aquarium on Skidaway Island, and explored ways to integrate plankton studies into their education programs.

Discovery Center Progress

Construction of the new and expanded Hobcaw Barony Discovery Center (HBDC) is scheduled to commence August 1, 2008. Hanco of South Carolina, Inc. has been awarded the construction contract for the project. Plans call for keeping the current HBDC building fully operational until November 1, at which time; the Belle W. Baruch Foundation will move its temporary base for education programs over to one of the University of South Carolina cottages near the front entrance. All major outside construction activities also need to be timed around the nesting season of the endangered red-cockaded woodpecker that runs April 15-July 31. It is anticipated that the building will be ready for occupation 12-13 months from start date. Look for announcements of a grand opening in fall 2009!
Programs

**Fishes of North Inlet**
Participants will learn about fish, crab, and shrimp species common to our creeks and assist with a long-term biological monitoring project. Be prepared for walking through marsh mud, biting insects, and outdoor conditions.

**Bike to the Boardwalk**
Meet Reserve staff in the Hobcaw 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).

**North Inlet Kayak Tours**
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.

**Fall Wildflowers**
Take a walk through maritime, upland forest, and wetland habitats to see fall in bloom 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 repellant. Cameras and binoculars welcomed.

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.
Parting Shot

Teamwork

Staff of the NIWB NERR joined with staff of the Baruch Foundation in April to plant cordgrass and needlerush along the revetment project at Oyster Landing. An innovative material was installed in an effort to protect the landing road from erosion. This material conforms to the natural shape of the bank, and has pockets for planting native vegetation which will eventually grow to cover the material and help to further stabilize the bank.