



N A T I O N A L  
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**2008**

**Education Program  
Newsletter**

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## ACE Basin NERR, South Carolina

2008 Education Program Report

Louie Heyward, Education Coordinator - [heywardl@dnr.sc.gov](mailto:heywardl@dnr.sc.gov)

The ACE Basin Reserve has had a tremendous year! Activities included the hosting of over 5,000 students and adult groups in the ACE Basin. These hostings encompassed classroom visitations, field trips, educational cruises aboard the Educational Vessel *Discovery*, and on site activities at the Michael D. McKenzie Field Station and the Edisto Interpretive Center. Additionally, three successful workshops were held this past summer. These workshops were geared entirely towards elementary and middle school teachers. Two of the workshops were one - day sessions focused on teaching about barrier islands, while the third workshop (which was held in cooperation with the North Inlet-Winyah Bay Reserve) lasted 4 days and encompassed a variety of estuarine topics. Other Activities in the ACE Basin included the completion of exhibit renovations at the Edisto Interpretive Center.

Two publications were recently completed and circulated by the ACE Education team. The first publication includes an Education information brochure – which details education opportunities in the ACE Basin. The second publication is a 32 page ACE Activity book – which is filled with fun facts, information, games, puzzles, and arts and crafts associated with the ACE Basin.

The highlight of our year has been the opening of Botany Bay Plantation. This almost 5,000 acre plantation was once the home of the largest cotton plantation in the colonies. Once harboring over 300 slaves who worked the plantation, Botany Bay boast 2.8 miles of pristine beaches, as well as a lake, several ponds, river access, and upland forests. Additionally, several of the original structures remain intact. We see this as an excellent venue to teach on the history, culture, geography, flora, and fauna of the ACE Basin. Finally, under the auspices a volunteer coordinator was recently hired, and our volunteer team (affectionately known as the “Botany Bay Buddies”) are 50 – strong and very energetic and excited.



Botany Bay Plantation ICE  
HOUSE (Original Structure)



Botany Bay Plantation:  
Beach front and aerial view



Teaching a class aboard the  
*EV Discovery*

## **Apalachicola NERR, Florida**

2008 Education Program Report

Erik Lovestrand, Education Coordinator - [erik.lovstrand@dep.state.fl.us](mailto:erik.lovstrand@dep.state.fl.us)

### **Annual Report for the year July 1, 2007 through June 30, 2008**

During this past year over 11,500 people visited the Reserve facilities or participated in educational programming provided by Reserve staff. Additionally, the Reserve's newsletter reached a mailing list of nearly 800 people.

#### **Ongoing programs**

**Group Programs:** During this year education staff conducted programs with 106 scheduled groups. A total of 2,565 students of various ages were able to learn about the unique resources of the Reserve.

**Guest Lectures:** Over this last year there were a total of four lectures hosted for the local community. Topics included shark awareness and astronomy

**Classroom Curricula:** The Reserve has produced two curricula that may be checked out for use in the classroom. Project Estuary is the Reserve's middle/high school curriculum and Estuarine Pathways was developed for elementary grades.

**School Activities:** Aside from the traditional school programs, there are some school-related projects that Reserve staff is involved with. These included science fairs and the annual Summer Science Institute sponsored by Florida A & M University. The Reserve is moving into its fifth year for the LIFE (Learning in Florida's Environment) Program in Franklin County. Last year, approximately 75 kids collected data and learned about wetlands, soils, barrier islands, beaches, pine flatwoods, estuaries and assorted other cool topics. This year, Reserve staff was honored to present a Coastal America award plaque to the Franklin County School Board for the District's partnership in the LIFE program.

**Master Naturalist Programs:** Education staff participated in teaching several segments in courses offered by the Florida Master Naturalist Program. The Reserve has served as a host for the program which consists of a 40 hour program that teaches about a variety of topics related to Florida ecosystems.

#### **Special Events**

**Cleanups:** Several litter removal projects were conducted this year on Reserve lands or waters. One annual project, coordinated by the Reserve's Research staff removed over 300 derelict crab traps from Apalachicola Bay this year. This project involved many Reserve staff and volunteers. A cleanup was also conducted on Little St. George Island with a group of middle school students.

**Festivals and Events:** During this year Reserve staff participated in a variety of events where exhibits were set up and educational materials were provided to the public. These included the Oyster Spat Festival, Antique Boat Show, the Florida Seafood Festival, the Panhandle Birding and Wildflower Festival, Earth Day at the Capitol, the Wakulla Wildlife Festival, Open House at the FSU Coastal Marine Lab and Estuaries Day at the Reserve. The Estuaries Day event at the Reserve's nature center attracted nearly 400 people alone.

**Publications:** Three issues of the Oystercatcher newsletter were printed during this year.

**Visitor Center Development:** During this year planning continued towards development of the Reserve's new center in Eastpoint. Work is underway developing text that will interpret exhibits. Groundbreaking on the site is scheduled to take place by the time you receive this issue.

**Exhibits:** An exhibit diorama featuring issues related to warming of the earth was maintained in the nature center. The Reserve also maintains an aquarium exhibit which features fish, turtles and invertebrates of the region.

**Senatorial Tour of Fort Gadsden:** Education staff supplied boat access for a tour of the Fort Gadsden Historic site by Senator Tony Hill. Senator Hill is seeking to raise awareness of several black heritage sites throughout Florida, including Fort Mose and Fort Gadsden.

**Shoreline Stabilization Project:** Reserve Education and Stewardship staff worked with Mrs. Freidman's 6<sup>th</sup> Grade class from the Apalachicola Bay Charter School to stabilize an eroding shoreline along the Bay. Students planted various salt-tolerant plants to help hold the sand on-site.

**Little St. George Barn:** Education and Stewardship staff also worked together to facilitate the cleanup of the old Marshall barn on Little St. George Island. A group of foster-care teens from Wakulla County supplied the energy and the old cypress barn has never felt so loved. Two large trailers full of debris that had accumulated over the years was removed and disposed of.

## **Chesapeake Bay NERR – Maryland**

2008 Education Program Report

Bart Merrick, Education Coordinator- [bmerrick@dnr.state.md.us](mailto:bmerrick@dnr.state.md.us)

### **Program Highlights**

#### **• Education Programs**

In addition to numerous field based programs at the Maryland Reserve components, CBNERR-MD has continued to work with its State partners to bring Somerset County students Wetlands and Wildlife field day. This program introduces local students to unique and abundant natural resources in their own backyards and how our actions impact those resources.

#### **• Teacher Professional Development**

This year CBNERR-MD in partnership with CBNERR-VA and DNERR supported a multi-day professional development course for Maryland, Delaware, DC and Virginia teachers on the new Estuaries 101 curriculum. This PD program also brought together NOAA's Chesapeake Bay Office and the National Geographic Society to compliment their efforts in the development of curricula that utilizes web-based data exploration tools.

#### **• Maryland Green Schools Program**

CBNERR-MD helped to support the Maryland Green Schools Awards Program. The Maryland Green School Awards Program is a holistic, integrated approach to authentic learning that incorporates local environmental issue investigation and professional development with environmental best management practices and community stewardship.

#### **• Special Events**

This year CBNERR-MD had the opportunity to work with partner organizations and host NOAA Sea Grant Fellows and the NOAA Education Partnership Program on a tour of the reserve and an introduction to the NERRS Program.

### **Outcomes Summary**

The Chesapeake Bay region has many opportunities for teachers, students and the public to learn about the Chesapeake Bay and it's issues through both experiences in the field and professional development workshops. CBNERR-MD is well positioned to support these experiences through targeted issue-based investigations and programming and fill in the gaps, especially in regards to data-driven estuarine investigations. Additionally, CBNERR-MD has worked hard to develop partnerships with other organizations involved in Environmental Education to more effectively utilize limited resources and provide linkages between programs.

## **Chesapeake Bay NERR – Virginia**

2008 Education Program Report

Sarah McGuire, Education Coordinator – [McGuire@vims.edu](mailto:McGuire@vims.edu)

### **Program Highlights**

- **Teacher Training**

This year CBNERR-VA conducted a multi-day professional development course for Virginia and Maryland teachers that provided them with background on NERRS, an introduction to Estuaries 101 and the Chesapeake Bay module, and information on collecting and using real-time data in the classroom. The workshop was held in conjunction with the CBNERR-MD and CBNERR-DE reserve, NOAA, and National Geographic Society. Other teacher trainings included collection days for classroom aquaria.

- **Extended Programs**

In addition to numerous field programs, CBNERR-VA also conducted several extended programs for students. These included a 5-day residential course for high school students on the Chesapeake Bay, a 5-day NOAA and NERRS camp for elementary and middle school students on technology used to observe the Bay, and a 4-day Estuaries Explorer camp for elementary students to investigate marine science and estuaries.

- **Middle School Marine Science Project**

The project “Chesapeake Studies: Linking Field Trips with the Classroom” is currently underway for its fourth year. The objective is to provide every 7th grade student in Gloucester and Mathews County with a meaningful Chesapeake Bay field experience that is deeply integrated into the classroom. Oyster restoration, summer flounder growth studies, and blue crab habitat studies were the major pathways. This project has already reached 1900 students over the first three years and is expected to reach an additional 650 this school year.

- **Public Education**

CBNERR-VA participated in several public outreach events including Marine Science Day, Estuaries Day, Dragon Run Day, Urbanna Oyster Festival, and the Discovery Lab Series. The Discovery Lab series is a family friendly open house lab with activities for all ages, current research, and a short speaker, all focusing on a marine science topic. Topics for the 07/08 season included: Estuaries, Creepies and Crawlies, Sharks, Invasive Species, Horseshoe Crabs, Rays, Penguins, Sand, Turtles, Plankton, and Dragon Run.

### **Outcomes Summary**

The Chesapeake Bay NERRS education program focuses on teacher training, extended student programs during the summer, a classroom and field project with middle school students, and hands-on public education. While a majority of our focus is on our middle school project, we are expanding to elementary and high school groups by adopting a local elementary school to provide field trips throughout the year and also we created a high school Bay Club which will meet monthly with education staff. We also are putting forth effort to increase NERRS visibility within the community with more public outreach, especially with our Discovery Labs and Estuaries Day event.

## **Delaware NERR – Delaware**

2008 Education Program Report

Jennifer Holmes, Education Coordinator – [Jennifer.Holmes@state.de.us](mailto:Jennifer.Holmes@state.de.us)

### **Formal Education/K-16 Education**

#### **• School outreach and field trips**

Classroom outreach presentations logged approximately 1,019 contact hours for groups ranging from pre-school to graduate school. DNERR component hosted many school field trips ranging from preschool to graduate school. Approximately 2,111 contact hours were logged.

#### **• Canon ENVIROTHON**

DNERR educators serve on the planning committee for the Canon ENVIROTHON in Delaware. This year the Delaware team placed first in the North America competition.

#### **• Make a Splash Water Festival and National Estuaries Day Celebration**

The Make a Splash water festival was conducted on September 24, 2008 for 432 Delaware 7<sup>th</sup> graders. These students participated in hands-on activities about the St. Jones Watershed and Sub-Estuary. This festival was conducted in conjunction with the John Dickinson Plantation.

### **Public and Community Education**

In addition to the following, local partnerships allowed the Reserve to reach over 10,000 community persons through events such as Coast Day, Earth Day events and the Delaware State Fair.

#### **• Community education/public programming**

Public programming attendance increased this year (25 programs, 313 total participants, including our Pre-School Naturalist program). Six of the twenty-five programs were offered at our Blackbird Creek Reserve component. The DNERR continues to play an active role in Delaware's Becoming an Outdoor's Woman program.

#### **• Blackbird Creek Fall Festival**

The DNERR hosted the first annual Blackbird Creek Fall Festival in October 2007. Approximately 300 people attended the event.

#### **• Native Waters: Sharing the Source**

The DNERR hosted the Native Waters: Sharing the Source traveling display from January to April 2008. This display bridges the gap between the scientific importance and cultural importance of water. Over 250 people viewed the display.

### **Professional Teacher Development**

#### **• Green Eggs & Sand: The Horseshoe Crab/Shorebird Education Project**

Training workshops were held in Delaware, Georgia, and New York with a total of 110 participants from 11 states.

#### **• Project WET (water education for teachers)**

Workshops were held for formal educators in October 2007 and pre-service educators in May 2008.

#### **• Estuaries 101 Workshop**

An Estuaries 101 workshop was conducted for 15 formal and non-formal educators on August 10 – 14, 2008 in Gloucester Point, VA (partners include CB – VA NERR and CB – MD NERR, DNERR, NOAA – Chesapeake Bay Office & ERD).

### **Outcome Summary Section**

This year the DNERR has made new partnerships which have diversified the programs offered at the Reserve. These new partnerships include the Dover Caring Coalition with whom we offered an Environmental Justice Camp and the Lenape Indian Tribe of Delaware with whom we brought the Native Waters: Sharing the Source traveling display to Delaware. These new partnerships have been wonderful in reaching and teaching Delaware's residents about estuaries.

## Elkhorn Slough NERR – California

2008 Education Program Report

Kenton Parker, Education Coordinator – [krparker@elkhornslough.org](mailto:krparker@elkhornslough.org)

Encouraged by the work of Richard Louv (*Last Child in the Woods*) we continue to “choreograph opportunities for discovery in nature” as the core of our education program. Included in the outdoor, field experience are opportunities to witness research as well as engage in hands-on field studies that make the classroom lessons relevant and engaging, something a test could never achieve.

Teachers must complete the ESNERR environmental education workshop before they can bring their students to the Reserve and utilize the hiking trails, interpretive exhibits in our visitor center, teaching lab and a variety of activity kits. This year we served a total of **370 teachers** through workshops and direct consultations with those planning field tours at our site.

Our field program gives students a chance to observe species in their habitats, witness research projects in the field, and engage in their own monitoring exercises and observations, moving through a sequence of experiences that range from the macro to the micro to the molecular. The first step is to simply go for a hike through grasslands (snakes, lizards, rabbits, voles), oak woodlands (acorn woodpeckers, red shoulder hawks, squirrels, woodrats, chickadees and warblers), and then along the edge of the salt marsh, tidal channels and mud flats (pickleweed, herons, egrets, cormorants, shorecrabs, schools of topsmelt, sharks and rays) noting how this feels different than watching TV, playing a video game, walking through a shopping mall, or skateboarding along a busy street in the city. For a moment the ipod is replaced with a pair of binoculars to use for spotting raptors in their nests or doing shorebird surveys. Instead of texting, hands are used to pull in crab traps and carefully sort through the contents identifying, measuring, counting to help monitor marine invasive species. The backpack has a plankton net used to gather a sample that is taken back to the teaching lab and studied under microscopes where eyes encounter a visual scene of living organisms much more complex than any video game. And simple/elegant tools alongside high tech instruments are used to measure those things that can't be seen even with a microscope, the physical and chemical parameters (temperature, salinity, DO, pH, nutrients) that are critical to all of life in the estuary. We served **230 school groups** through our school tour program reaching over **5,050 students**, teachers and parent chaperones who benefited from this outdoor experience.

We continue to work with the Monterey Bay National Marine Sanctuary's MERITO program, (Multicultural Education on Resource Issues Threatening the Oceans), that is being supported by the MBNMS Foundation and a Bay Watershed Education and Training grant, (B-WET), to provide educational outreach into the Latino community.

We worked with **32 different instructors from local colleges and universities** giving special tours and presentations to **660 students** as part of courses on coastal ecology, wetland habitats, environmental education, interpretive exhibit design, and resource management as it pertains to coastal resources.

We continue to work on ways to make the Reserve available to teachers and students beyond the field trip using the internet for virtual/interactive field trips, setting up remotely controlled wildlife video cams (in collaboration with California State University Monterey Bay and funded by the Lindbergh Foundation), and designing interactive computer modules on water quality monitoring for the visitor center and the web, (a collaboration with Kerstin Wasson, research coordinator at ESNERR, Ken Johnson, researcher at the Monterey Bay Aquarium Research Institute, and funded by a subaward to a NSF grant: Land/Ocean Biogeochemical Observatories, [www.mbari.org/lobo/](http://www.mbari.org/lobo/) .)

## Outcome Summary

For those students/classes/schools who can make it to the Reserve for a field trip (increasingly these are schools from higher income areas where parents can pitch in to help pay for buses or are available to drive) our program is well received. But how do we reach the rest of the community? And, are we offering enough of the right stuff?

In order to face down the challenges to the environment posed by global climate change we need a public that is both connected to nature and not just comfortable with basic scientific concepts but also with history, sociology, politics and economics..... a public willing to take on the task of rebuilding our communities so that they are both economically and ecologically sustainable.

We are in the process of reorganizing and refocusing our education and public outreach programs so that they are broader in scope and address current realities in the local schools and communities that have been hit hard by a gradual erosion of our public education system, the more recent California budget crisis, and the most recent world financial crisis. Towards this goal we are reviewing a curriculum series produced by the Lawrence Hall of Science at the University of California, Berkeley entitled: Global Systems Science (<http://lhs.berkeley.edu/gss/>). We are seeking funds to help pay for busses and additional staff and/or interns to give teachers more support in the classroom and on the field trips. And we take heart in the lessons learned by a city in Brazil that is globally recognized for its innovations in environmentally and socially sensitive urban design, (<http://www.pbs.org/frontlineworld/fellows/brazil1203/>).

## Grand Bay NERR – Mississippi

2008 Education Program Report

Jennifer Buchanan, Education Coordinator - [jen.buchanan@dmr.ms.gov](mailto:jen.buchanan@dmr.ms.gov)

### Program Highlights

- Nov. '07—Rick Ranew, K12 Specialist, led a group of students, First Lady Laura Bush and Governor Haley Barbour in a hands-on activity highlighting the hazards of marine debris in honor of J.L. Scott's Marine Education Center's (MEC) designation as a *Coastal Ecosystem Learning Center*.
- *My Coast*, a series of community presentations in partnership with (MEC) featured presentations on Global Warming and Nature Tourism
- *Adventure Quenchers* programs included a *Sparrow Sweep* for World Wetlands Day, a *Botanical Stroll through the Savanna* with a noted botanist and a morning kayak adventure for the local Ecotourism event, *The Pascagoula River and Nature Festival*
- Coordinated Regional Science Fair
- Staff participated in many mini and summer camps hosted by the local community college and MEC
- EC moderated a session on regional socio-cultural/eco-tourism at regional sustainability conference
- Hosted Vidiography workshop for local educators—This NOAA-sponsored event was hosted to help teach us how to may mini-videos for pod casts, the Ocean Kiosk, etc.
- Reserve and MEC awarded an UUP Grant from GOMA and local UUP school district that will feature field trips and school visits with 4<sup>th</sup> graders to help them retain more of the information that they will have to know on the 5<sup>th</sup> grade standardized science tests.
- Coordinated Celebrate the Gulf Marine Education Festival, an award winning local festival now in its tenth year
- Presented at NMEA
- Interviewing many elders of the community for our Oral History project that will provide information for our exhibits
- EC serves on several committees promoting environmental education in the region
- Finalizing a poster on the flora of the Pine Flatwoods

### Research/Stewardship Collaborations

- A field guide to finding birds in the reserve is in development with the RC and his staff
- Working with Dr. Cho, a representative of our ECSC partner, Jackson State University, and our SC to produce an aquatic plants manual
- Sparrow Sweep Adventure Quencher was headed up by RC
- Research Staff helps with many of the field adventures
- Collaborated with researchers from our Coastal Preserves Program to

### Outcome Summary Section

Currently, we try to reach out to a wide variety of audiences with our K16 and Community Programs. Our audiences especially enjoy the tours of the reserve and the kayaking programs that we offer. As our reserve moves towards the opening of our new facility, we anticipate the need for narrowing our scope of work to topics such as Sustainable Construction and the “Greening” of Coastal Communities, Ecotourism, Biodiversity, Coastal Watersheds and Coastal Habitats.

## **Great Bay NERR – New Hampshire**

2008 Education Program Report

Kelle MacKenzie, Education Coordinator – [Kelle@greatbay.org](mailto:Kelle@greatbay.org)

### **Program Highlights**

- Great Bay's Education programs continue to grow steadily each year with over 6000 students and general public attending formal and non-formal programs year round.

### **General programs throughout the year include:**

**“BayVentures”:** Summer programs for children ages 7-11. Weekly themes include such topics as mudflat mania, flower power, scales and tails, oh deer a moose, and more.

**“Bay Views”:** Even adult discussion series including topics such as; A Sustainable Great Bay, Animals and Climate Change, Discovering Horseshoe Crabs, and more. One reptile program this summer attracted 400 people!

**“Once Upon an Estuary”:** Summer program for children ages 4-6. Topics mirror BayVentures.

**Interpretive Kayak Programs on the Estuary:** Lead by staff, these 4 hour tours include elements of research, stewardship and education. This program continues to sell out each summer and evaluations indicate that participants are from a non-traditional audience.

**Great Bay 5K:** Major fundraiser/awareness activity held at the Reserve each year. This year marks our 10<sup>th</sup> anniversary of the Race and is now capped at 1000 runners.

**Passport to Great Bay Publication:** Publication completed which highlights a dozen Reserve properties available for public access. Education and Stewardship staff combined to develop comprehensive pages of each property addressing both recreational opportunities, natural and cultural history as well as invasive species information.

**Geocaching Program:** Family program designed to introduce people to the activity with a focus on exploring Reserve properties and Geocache sites.

**K-12 Spring Natural History and Fall Cultural History Programs:** Remains the cornerstone of our education programs, attracting over 4500 students and chaperones to a 3+ hour program on-site. Programs are largely supported by volunteer educators with over 1600 volunteer hours contributed in this past year.

The EC, RC, SC and CTP Coordinators worked together on several programs this year. Some of the projects included climate change, salt marsh ecology, SWMP data interpretation, LID projects and more.

The completion of our porous asphalt parking lot and porous concrete walkways have added to the Hugh Gregg Coastal Conservation Center's green features, such as Geo-thermal heating and cooling, composting toilets, rain garden and native plantings. Exhibits for the HGCCC are currently in the design phase and will include these features.

**Outcome Summary:** For a comprehensive summary of educational impacts to various audiences, please contact the EC directly. Thank you.

## **Guana Tolomato Matanzas NERR – Florida**

2008 Education Program Report

Angie Golubovich, Education Coordinator – [Angie.Golubovich@dep.state.fl.us](mailto:Angie.Golubovich@dep.state.fl.us)

**2008 Regularly Scheduled K-12 Education Programs: (68 conducted serving 2,761 students)** Marsh Mania (4<sup>th</sup>), LIFE (Learning in Florida's Environment) (7<sup>th</sup>), High School & College Environmental Field Trips, Hike and Exhibit Hall Field Trip (K-3, 5<sup>th</sup>-6<sup>th</sup>, & 8<sup>th</sup>)

**2008 Regularly Scheduled General Public Programs: (4,105 attendees & counting)**

Brown Bag Lunch Lecture Series (1<sup>st</sup> Friday of each month), Nature Walks & Bike Tours (2<sup>ns</sup> & 4<sup>th</sup> Saturday of each month), Creature Feature (1<sup>st</sup> & 3<sup>rd</sup> Saturday of each month) Family Fun Hour for Toddlers and Parents (3<sup>rd</sup> Wednesday of each month), Ecology Explorers for Ages 6-9 (3<sup>rd</sup> Sunday of each month), Artist Receptions (Quarterly)

**2008 Annual On-site Community Outreach Events:**

*International Coastal Cleanup:* 3<sup>rd</sup> Saturday of each September. Data is collected each year and sent to The Ocean Conservancy as part of their worldwide effort. 73 people participated in the GTM NERR 2008 cleanup.  
*National Estuaries Day:* A variety of educational activities were offered to visitors including touch tank, sea turtle conservation puppet show by the Puppet People, outdoor games, live animal presentations, nature crafts, children's book signings, and Reserve partner activity booths. 508 people attended this event (# doesn't include those two years of age)

*Northeast Florida Birding & Foto Festival:* The Reserve has partnered with the Visitors & Convention Bureau to host a variety of professional photography and birding workshops by renowned experts from all over the world. In April, approximately 850 people from 25 different states enjoyed 150 programs.

**2008 Off-site Community Outreach Programs: (24 events attended)**

Examples of off-site outreach programs: Water Management District Splash into Science, Mosquito Control District Day of Science, & St. Johns County Sea Turtle Festival Events ranged in size from 200-12,000 citizens.

**Programs Highlights (programs not regularly scheduled):**

*Volunteer Program:* Newly initiated training programs have allowed 255 wonderful volunteers manage a variety of projects/programs. Examples include: butterfly monitoring, shorebird monitoring, & 4<sup>th</sup> grade Marsh Mania. 7,398 hours served and counting for 2008!

*Exploring our Environment Adult Day Camp with Florida Sea Grant, 4 teacher workshops including Florida Aquarium Everglades, Water Odyssey for Elementary Teachers, Coastal Geology Teacher Workshop, FL Marine Science Educator's Association Collecting Permit Workshop.*

**Outcome Summary** The opening of the Education Center in 2005 marked the beginning of a tremendous transitional phase for the Reserve. It's taken the last three years to settle into our new order of operations and adjust to a site with public use activities that draw 150,000 visitors annually. Education staff are looking forward to working on projects that will promote basic estuarine awareness but also allow for advancing other messages derived from our new management plan. Future projects include formalized teacher workshops, 10 year anniversary programs, beginning to design an effective program evaluation process, and continuing to teach residents about the mission of the GTM NERR (which is a continuous process given our site history).

## **Hudson River NERR – New York**

2008 Education Program Report

Jean McAvoy - [jmccavoy@gw.dec.state.ny.us](mailto:jmccavoy@gw.dec.state.ny.us)

### Education Highlights 2007-2008

This year we have consolidated our presence at Norrie Point Environmental Center with monthly public programs and various programs for a range of visitors. Our main public event was our celebration of National Estuaries Day and the Hudson River Valley Ramble: Science on the River, an open house highlighting our research and that of some of our colleagues in the Hudson Valley. It was a big success, attracting over 200 people of all ages.

Our main sustained focus at Norrie Point has been on launching site-based programs for students of middle school, high school and beyond. We had a very busy spring season, already at capacity for our level of staff, and are right now encouraging teachers to schedule visits in the fall to spread out the numbers of students we can serve. At the heart of the fall programs at Norrie is our participation in Snapshot Day, a coordination of estuary-wide observations by school children, which is sponsored by our fellow NYS Department of Environmental Conservation partner, the Hudson River Estuary Program. Over 50 school groups and partnering Hudson River educators flocked to the banks of the Hudson between New York City and the Adirondack Mountains. A notable offsite K-12 program is the Glass Eel Project, a collaboration between students and researchers to document the arrival of young glass eels to the Hudson River Estuary in the spring.

In addition, we have continued our former education efforts: guided canoe programs were increased in number this year, in response to popular demand, and programs at the Tivoli Bays Visitor Center have continued at previous levels (Tivoli Bays Talks monthly lectures; monthly Saturdays for Families; weekly Wild Wednesdays, a collaboration between the visitor center and the Tivoli Free Library).

Once school visits taper off in November, we are planning some experiments in distance learning programs. There also remains work to be done to expand cold-weather public programs at Norrie Point. All told though, the education program is growing. We served a total of 2305 people in 2007 and have already served over 3000 people in 2008.

### Outcome Summary 2007-2008

Education programs primarily targeted the public and student/teacher audiences. These programs highlighted the vitality and diversity of the Hudson River Estuary and its tidal habitats; threats to these habitats, such as invasive species, climate change and land use practices; and the role of research by the Reserve and other organizations in understanding the dynamics of change in the estuary. Our primary goal was to raise awareness of the link between personal habits and lifestyle choices and the integrity of the Hudson River Estuary.

## **Jacques Cousteau NERR**

2008 Education Program Report

Melanie Reding, Education Coordinator- [reding@marine.rutgers.edu](mailto:reding@marine.rutgers.edu)

### **Program Highlights**

- **Professional Teacher Training**

The 2008 MARE Summer Institute introduced 24 teachers to a variety of New Jersey marine and coastal habitats both in the classroom and in the field. This weeklong program features a variety of hands-on activities from the MARE curriculum as well as guest lectures from local scientists and field trips. The JC NERR also partnered with Pinelands Preservation Alliance to provide education on Submerged Aquatic Vegetation (SAV) and Eutrophication to their professional teacher trainings.

- **K-12 Programs**

Over 3500 students have visited the JC NERR's Life on the Edge interactive exhibit this year. The JC NERR partnered with the NJ DEP's Urban Fishing program to provide 8 days of extensive watershed education to a couple of our MARE schools. JC NERR educators conducted a series of hands-on marine programs for over 300 summer campers through a partnership program with the Cape May Nature Center.

- **Recreation and Public Programs**

2008 recreation programs were specifically designed to familiarize the community with the Reserve and its land management partners; nine programs were offered. These recreation programs along with a variety of other public programs are helping to raise awareness of estuarine and marine habitats. Our RUMFS Open house introduced a record breaking 738 people to research being done at the Reserve.

- **Lunch n' Learn Series**

In partnership with the Tuckerton Seaport, the JC NERR continues to provide a very successful monthly speaker series focused on the research, cultural history and "critters" of the Great Bay and Barnegat Bay estuary systems. Participants learn from the speakers, who are experts in their respective fields, of what is happening "in their own backyard".

- **New Education Coordinator**

Melanie Reding was hired in January as the new Education Coordinator.

### **Outcomes Summary:**

The Jacques Cousteau NERRS education program focuses on teacher training and public education. With the hiring of our new education coordinator an increased effort is being made to provide programs that educate the community about the Reserve and the research projects being conducted by the Reserve. During the summer a classroom teacher was hired to help with "field work" and then create three lesson plans for the classroom based on this work. Lesson plans focus on nonpoint source pollution, eutrophication, and using indicators to assess environmental quality. In the future the RC and EC will partner to provide outreach programs to a variety of community organizations.

## **Jobs Bay NERR – Puerto Rico**

2008 Education Program Report

Sandra J. Lebrón- Education Coordinator (EC) – [slebron@jbnerr.org](mailto:slebron@jbnerr.org) or [sanjleb@gmail.com](mailto:sanjleb@gmail.com)

### **Program Highlights - Special Activities**

- From October 2007 to March 2008 we received a total of 1690 visitors including K-12, undergraduates, tourists, and other groups. 528 visitors from Puerto Rico, 60 foreigners and 72 people search information in the Information Center of the Reserve. From April 2008 to September 2008 JBNERR received 1,487 visitors, 30 foreigners and a total of 30 people used the library at the Reserve.
- January 11-13, 2008 JBNERR EC, Environmental Educator- Nilda Peña, Enid Malavé-chemist, Acting Manager- Luis Encarnación and worker Luis Ortiz participate in the 1<sup>st</sup> FERIA AGRICOLA de Salinas, in the coliseum Angel Cholo Espada, Salinas.
- Reforestation activity in Jagüeyes Forest with Alpha-zeta organization UPRM Mayaguez and Research Coordinator-Angel Dieppa.
- On January 23, 2008 chemist, EE and EC participated in the UV-V spectrophotometer workshop.
- Inaugural official ceremony of the pier of JBNERR on January 29, 2008 with participation of JBNERR staff, DRNA Secretary Javier Velez Arocho and other DRNA employees, Woodrow Wilson Elementary School and other JBNERR users.
- Continue distribution and reproduction of educational material and Jobs fact sheets.
- Environmental Fair sampling on January 31, 2008 with RC and EC and middle school students of Juvenile Correctional Facility of Salinas.
- On February 4, 2008 the EC and EE offer a guided tour through Jagüeyes Forest for the Director of the Tourism Company of Salinas and photographer.
- Meeting with Colegio Perpetuo Socorro of Aguirre for the creation of a cooperative agreement with the Education Program of the Reserve.
- On February 12-13, 2008 the EC, EE, and RC participated as judges in the Science Fair of Salinas.
- During February-march, 2008 the EC visited schools of Salinas and Guayama and e-mailed several teachers and members of the Education Committee to distributed the Jobs Education Guide for its revision.
- The EC and EE have several meeting for the revision of the Education guide.
- The EC and chemist participated as judges in the Regional Science Fair on March 4, 2008 in the Catholic University of Ponce.
- Meeting on March 6, 2008 with teacher Noemí Vazquez Colegio Perpetuo Socorro, Education & Service Network and Carlos A. Muñoz, Proyecto Ecopaz for coordination of field trips with EC and EE.
- March 11-24, 2008 Revision of 31 Pre-proposals for NOAA ELG.

### **Workshops in Jobs Bay Reserve**

- On February 15-17, 2008 the EC and the Sea Grant Education assistant offer the workshop “Jobs: Un Estuario Especial” (“Jobs: A special estuary”) to 12 undergraduate students of the University of Puerto Rico-Humacao. The participants had snorkeling and field trip in Cayos Caribe.
- On August 23, 2008 we held the first field trip and presentation of the new activities for the updated version of the Jobs Bay Education Guide. The Education Committee provided new lessons to the education staff to improve the Jobs Bay education guide.

### **Special Education Activities**

- During April 2008 for the celebration of the Earth Week the Education Staff participated with the new Reserve traveling exhibit in several Environmental Fairs such as the Planet Earth Fairs of the University of Puerto Rico, Cayey Campus, and Baxter Pharmaceutical Inc.
- Boy Scouts of Caguas participated in a mangrove reforestation and cleans up of Cayo Caribe during July 17-18, 2008.

- During July 21-25, 2008 Jobos Bay held the 2<sup>nd</sup> Community Summer Camp for Junior and High School students from Municipalities of Salinas and Guayama. It was coordinated by the environmental community leaders and the Reserve's personnel.

### **Outcome summary**

- Nilda Peña (EE) and Sandra Lebrón (EC) continue to offer conferences and field trips to K-12 and undergraduate students, community and environmental organizations, elder groups of tourists from and outside PR and/or general public.
- With the purpose of increase environmental awareness among the young users of the Estuary, we held the 4<sup>th</sup> Summer Camp “Los Guardianes del Estuario Bahía de Jobos” from July 7 – 11 of 2008 at the facilities of the Visitors Center of the Jobos Bay National Estuarine Research Reserve in Aguirre, Salinas. This Summer Camp had the participation of 30 students between the ages of 8-14 including volunteer students. During 5 days from 8:00 a.m. to 3:00 p.m. the students participated in activities such as conferences about Jobos Bay Estuary, coral reefs, mangroves, and other marine ecosystems. They had the opportunity to enjoy a boat trip to Cayos Caribe and Mar Negro, visit the Aguirre's Old Sugar Mill, mangrove forest and Jagüeyes Forest interpretative trails. Also they learned about the NERRS monitoring program in laboratory and hands-on activities such as sand castles and crafts. Once completed the workshop the students make an oral presentation with a booklet that they created about what they learned, and received a certificate of participation and educational materials.

## Mission Aransas NERR - Texas

2008 Education Program Report

Rick Tinnin, Education Coordinator - [rick.tinnin@mail.utexas.edu](mailto:rick.tinnin@mail.utexas.edu)



The new Wetlands Education Center located on-site at my marine lab.

The WEC will serve as the educational centerpiece for the Mission-Aransas NERR. This project was 13 years in the making and we cut the ribbon on August 16<sup>th</sup>. The WEC is a 3.5 acre salt marsh, planted with submerged sea grass, Spartina, Black Mangrove and a variety of high and low salt marsh vegetation. A public access pathway and boardwalks guide visitors around the WEC past an amphitheatre and five overlook pavilions. Each pavilion focuses on a specific aspect of salt marsh and barrier island ecology. There are three floating platforms which focus on oyster reefs, sea grass/plankton, and fish/water quality. A K-12 curriculum has been developed to complement the four teaching pavilions and three floating platforms. The WEC is adjacent to a 1200 sq. ft. running sea water teaching lab. Tidal flow into the WEC is provided by tow pipes extending into the adjacent ship channel and UT marina. The WEC will feature prominently in the EC/CTP sector meetings in March 2009.



## **Narragansett Bay NERR – Rhode Island**

2008 Education Program Report

Kristin Van Wagner, Education Coordinator – [Kristin@nbner.org](mailto:Kristin@nbner.org)

### **Public Outreach and Communications**

- Signature Event: Designed and developed the 2009 Rhode Island Tide Calendar highlighting research, education, monitoring, stewardship, CTP projects and Reserve partners (4,000 copies to be distributed in Massachusetts and Rhode Island).
- Held a successful statewide photo contest for the calendar's cover shot.
- Published two Reserve newsletters including articles about ongoing research, monitoring and restoration science in Narragansett Bay.
- Sent out monthly eAlerts to the Reserve's email list of over 1200 people.
- Worked with the media to publish several Reserve articles in printed and on-line publications.

### **Education Programs**

- Ran year-round, family oriented, educational 6-hour tours of the Reserve.
- Summer campers, home school students, at risk youth, private school students, and accompanying teachers and chaperones attended educational programs on Prudence Island (limited island access largely excludes traditional K-12 school visits).
- Organized and implemented a community service project for local fourth grade students to assist with oyster restoration work in Narragansett Bay.
- Participated in school science events, presentations at RI Community College, and exhibited at several public events.
- Education partner, Save The Bay, brought approximately 800 K-12 students and campers to the Reserve by boat on school field experiences and summer camps.

### **Teacher Training**

- Presented at the NSTA conference in Boston and worked closely with other New England NERRS to run a daylong short course for teachers attending NSTA.
- Ran a daylong teacher training on Prudence Island partnering with the Southeastern New England Marine Educators (SEMEME).
- Working with WBNERR and Wells NERR, the Reserves secured a B-WET grant to initiate and implement TOTE in New England.

### **Public Event Programs**

- Held two annual Prudence Island beach cleanups; Earth Day and the ICC.
- Signature Event: Hosted two seasonal events; the summer Narragansett Bay Block Party and the Holiday Open House with our best attendance yet.
- Signature Event: Organized, hosted and gained sponsors for the annual Prudence Island Sustainable Fishing Tournament.

### **Exhibit Development**

- Completed a stunning new bay mural on two walls of the exhibit room highlighting biodiversity.
- Set up an "Estuarium" exhibit with ID cards for estuary species in the tank.
- Began development of a self-guided hike booklet for a loop trail in the Reserve.

**Program Outcome**

The NBNERR education sector expanded our teacher training capacity, developed new overnight marine science camps, enhanced our education program offerings, and improved organizational recognition around the state.

## **North Carolina NERR – North Carolina**

2008 Education Program Report

Jill C. Fegley, Education Coordinator – [jill.fegley@ncmail.net](mailto:jill.fegley@ncmail.net)

### **Program Highlights**

- **New Summer Camps**

This summer the NCNERR held 4 different summer camp programs for children including: an 8-week Junior Naturalist program for students in grades 4-8; a summer camp for students in grades 1-3 (Adventures in the Estuary); a Saltwater Science camp for students in grades 4-5; and a monthly preschool story-time with arts and crafts program. Students learned about a variety of topics including estuarine habitats, invertebrates, fish, plankton, coastal mammals and conservation.

- **Community Outreach**

This year we focused on increasing our recognition in the community through our outreach programs and as a result the number of participants attending our community outreach programs has more than doubled since last year. We gave field trips and presentations to a variety of community organizations including: the Carteret County Wildlife Club, AARP, Holy Mackerel Fishing club, pre-school groups, Boy Scouts, science clubs, church groups, Boys and Girls Clubs, university classes and garden clubs.

- **Publications**

Last fall and winter the education staff revised and redesigned all activities in our Project Estuary and Sound Ideas curriculum guides. New activities were also written based on emerging estuarine issues and new research results. Education staff also designed and developed six interpretive signs for our new boardwalk on the Rachel Carson Reserve. The Reserve newsletter, “The Tidal Flat”, is now on a regular publishing schedule (Fall, Winter & Spring).

- **Field Trips**

We had twenty school groups visit our Reserve since January to learn about estuarine ecology. In addition, this summer we held eighteen public field trips to the Rachel Carson Reserve. No field trips were held at the other national components (Currituck, Masonboro or Zeke’s) due to reduced staffing and funding.

- **National Estuaries Day and Take a Child Outside Week**

In celebration of National Estuaries Day (September 27) and Take a Child Outside Week (September 24 -30), we offered free, daily public boat trips around the Rachel Carson Reserve during the last week of September. National Estuaries Day is a nationwide event encouraging the protection and preservation of estuarine environments. Take a Child Outside Week is an international program designed to help break down obstacles that keep children from discovering the natural world. The goal is to help children develop a better understanding and appreciation of the environment in which they live, and a burgeoning enthusiasm for its exploration.

### **Outcomes Summary**

The NCNERR education program focuses on hands-on science education. Over 380 school children have been given guided tours of our Reserve since January. Our summer public field trips at the Rachel Carson Reserve have increased by approximately 80% since last year (101 participants in 2007 to 184 participants in 2008). We also have an active outreach program where our staff provide programming for community organizations (780 participants). We are also involved in Teacher Professional Development and plan to expand this area in the future when the TOTE program is fully developed and after the NC Office of Environmental Education revises their workshop guidelines.

## **North Inlet-Winyah Bay NERR – South Carolina**

2008 Education Program Report

Beth Thomas, Education Coordinator - [beth@belle.baruch.sc.edu](mailto:beth@belle.baruch.sc.edu)

### **K-12 & Public Outreach**

Our K-12 programs are reaching more students than ever before; our top school program by far is the salt marsh field study-typically including transects, seining, and water testing. Classroom visits have also increased slightly, likely due to rising field trip costs. Public programs have remained steady, with kayaking, biking, birding, and crabbing programs still the most popular. Two new wildflower programs were added in spring and fall this year. Total students reached thus far in 2008: 1688; total public reached: 263 (public number does not reflect two large festivals each with attendance >6000).

### **Construction begins on education center expansion**

Construction of an updated and expanded Hobcaw Barony Discovery Center (HBDC), new home of the NIWB NERR K-12 & public education program and the NERRS Centralized Data Management Office (CDMO) began August 1, 2008. It is anticipated that the building will be ready for occupation 12-13 months from start date, with a grand reopening in fall 2009.

### **New exhibit design project**

Split Rock Studios of Minnesota has been awarded the contract for exhibit design and fabrication for the Hobcaw Discovery Center expansion. New exhibits will include information on pine forest and cypress swamp ecology & research, estuarine research & monitoring, sea level rise, Baruch history, and a “Big Wow” saltwater tank incorporating a replica of a local shell midden will be some of the highlights.

### **Teacher workshop: ‘ACE Basin Adventure 2008’**

The NIWB NERR partnered with the ACE Basin NERR, SC SeaGrant, and COSEE-SE to offer a teacher workshop in June for northern coast SC teachers (hosted at the ACE Basin) which included multi-day field and classroom experiences on estuarine habitats and ecology, watersheds and water quality, phytoplankton monitoring, and hands-on classroom activities.

### **Partnership with Waccamaw Regional Education Center and National Geographic ‘Jason’ project for Georgetown County schools**

The NIWB NERR and the Baruch Foundation is working with the Georgetown County School District to offer field components to the two new Jason Expedition series, ‘Resilient Planet’ and ‘Monster Storms’. These curriculum modules were developed to incorporate science careers and students spend part of their classroom time visiting research sites and speaking with scientists-our RC spoke with local students about vegetation monitoring and sea level rise.

### **Coastal Waccamaw Stormwater Education Consortium (CWSEC) core education provider**

The CWSEC is working with Georgetown High School on stormwater education, rain garden installation and water quality monitoring. With community improvement grant funding from Walmart, local schools are installing rain gardens with native vegetation and purchasing monitoring equipment to analyze school runoff before and after infiltration through the rain garden.

### **Outcome Summary**

Developing and maintaining collaborative partnerships has helped increase the impact and profile of our programs. In particular, the expanded Discovery Center offers higher visibility and space for more and larger group programs, and new expertise with shared staff and volunteers. A strong partnership with the CWSEC has also helped raise community awareness of water quality and quantity.

## **Old Woman Creek NERR – Ohio**

2008 Education Program Report

Phoebe Van Zoest, Education Specialist - [phoebe.vanzoets@oldwomancreek.org](mailto:phoebe.vanzoets@oldwomancreek.org)

Heather Elmer, CTP Coordinator - [heather.elmer@oldwomancreek.org](mailto:heather.elmer@oldwomancreek.org)

### **PROGRAM HIGHLIGHTS**

*Estuary Explorations* – 365 local residents and visitors participated in this series of nearly 30 learning opportunities. Topics included nature sketching, wildflower and tree identification, rain garden design/construction, and an open house featuring Reserve research and monitoring on National Estuaries Day. Canoe tours of the estuary are among the most popular events - two additional tours were added this year for a total of ten in response to increasing demand.

*Using Local Research in the Classroom* –A two day graduate credit class offered educators a chance to work with a NOAA Hollings Fellow conducting research on larval fish use of the Old Woman Creek estuary. Educators collected and processed samples and discussed how they could bring research into their classrooms, effectively teach the scientific method, correlate material to Ohio academic content standards, and the potential benefits of bringing a scientist into the classroom. Participants also reviewed the [estuaries.gov](http://estuaries.gov) website, accessed real-time data on-line, and were introduced to *Estuaries 101*.

*K-12 Education:* General education staff provided 105 programs focused on the ecology of freshwater estuaries and coastal wetlands for 2,320 students (3000 contact hours). Program leaders began completing program evaluation surveys in June 2008, data not available at the writing of this report.

### **PARTNERSHIPS**

*Firelands Coastal Tributaries Watershed Project* –Education Specialist chairs the education sub-committee which publishes a quarterly newsletter for Old Woman Creek watershed residents, develops communication products, and coordinates volunteer stream monitor training.

*Lake Erie Coastal Education Partners* - The reserve is collaborating with the Ohio Sea Grant College Program, Ohio Coastal Management Program, and Ohio Lake Erie Commission to inventory and align programs, craft a unified strategic plan for Lake Erie education, develop Lake Erie literacy principles, and partner to leverage resources and address regional needs.

### **OUTCOMES**

*Community education:* Evaluation surveys are distributed on postage paid postcards at the conclusion of each *Estuaries Exploration* program. Surveys gather participant feedback on content, format, increases in understanding, and intent to use new information or skills at home or work. Most of this year's participants reported a high likelihood of using information they learned in their daily lives.

*Using Local Research in the Classroom* – Most participants indicated that this was a useful workshop that enhanced their ability to teach about the scientific method, estuaries, and use real time data in the classroom. Several indicated that they would likely increase their coverage of estuaries and Lake Erie as a result of participating in the workshop.

## **Padilla Bay NERR – Washington**

2008 Education Program Report

Glen “Alex” Alexander, Education Coordinator - [alex@padillabay.gov](mailto:alex@padillabay.gov)

### **Highlights**

This year we started a new program called Climate Stewards. With a grant from Northwest Clean Air Agency (a state agency that focuses on air quality issues in our corner of the state) we collaborated with WSU Cooperative Extension (Land Grant) to teach more than 30 adult citizens about climate change. In exchange, they are committed to volunteer for projects that will reduce the dangers in our community. Padilla Bay organized the 20 hours of training and WSU will organize the volunteer projects.

We received a B-WET grant from NOAA Education Office to fund our K-12 program including school field trips to Padilla Bay, teacher education and curriculum development. This grant begins October 2008 and lasts for one to three years.

In September, 2008 I made a presentation to the National Academies of Science in Irvine, CA. As you probably know, recent legislation authorized NOAA to expand education about ocean, Great Lakes and atmospheric science. There is a new NOAA Education Office (Louisa Koch presented to the educators at the fall meeting in Shepherdstown) and a draft education plan. There is also a requirement for review every five years. My presentation was part of that review. I described the education programs we have at Padilla Bay and answered specific questions posed by the review committee. I also jumped in the ocean just as the sun was going down and the full moon was rising.

[www.padillabay.gov](http://www.padillabay.gov)

Check out the Tide Predictor on the home page that can create a graph of tides in Padilla Bay from data from the NOAA. Then go listen to estuary songs recorded by Alex and Luke (AmeriCorps Member)

### **Flagship**

Our K-12 program offers field trips to Padilla Bay Reserve. Students in grades 4 and up are eligible for a five-hour program including Estuary Soup and a trip to the beach to collect organisms that are later viewed under microscopes. Any grade can get a 1.5 hour experience in the building without guidance at the beach or microscopes

### **Outcome**

K-12: 8,000 people including about 1,000 parent volunteers

Other youth groups: about 1,000 (scouts, home schools, summer programs, etc.)

Adults: about 1,000 (colleges, civic groups, churches, senior citizens, etc.)

Families: 1,000 (National Estuaries Day, youth science clubs, summer programs)

Public programs: 1,000 (taught by contracted experts)

## **Rookery Bay NERR – Florida**

2008 Education Program Report

Randy McCormick, Education Coordinator - [randy.mccormick@dep.state.fl.us](mailto:randy.mccormick@dep.state.fl.us)

### **Formal Education Programs**

- **Fourth grade Estuary Explorers Program** – These field trip programs are a collaborative effort with our county school system. Estuary Explorers requires teachers to participate in a training session before their class will be allowed to participate. Pre- and post-trip activities in the classroom are an integral part of this program.
- **Marine and Environmental Science Field Trips for High Schools, Colleges and Universities** – These boat-based field trip programs may include activities such as water quality analysis, trawling, oyster reef explorations, mangrove studies and barrier island ecology.
- **Coastal Environment Institute for Teachers (CEIT – See It!)** – This was a weeklong teacher training institute (our TOTE component) for middle and high school science teachers held in July. Teachers were given lectures, field work, lab projects and hands-on classroom activities.

### **Non-formal Education Programs**

- **Boat based field trips** – These trips are provided to a wide variety of community groups, lifelong learning programs, scouts, volunteers, etc.
- **Florida Master Naturalist Program** – We conduct these 6 day courses as a part of this adult education program administered through the University of Florida.
- **Community Education** – A selection of public programs (typically PowerPoint followed by discussion) are provided to various community groups. Attendance at presentations has ranged from 10 to over 100.
- **Amazing Adventures Guest Speaker Series** – This presentation series covers a wide variety of natural history topics. They take place monthly, in the evenings, from November through April. They are open to the public.
- **Daily Coastal Connections Programs** – These are 1 hour presentations given twice daily to visitors to the Environmental Learning Center. Topics include sea turtles, manatees, waterbirds, native plants, etc.

### **Activities and Events**

- **Art Gallery Exhibitions** – Rookery Bay, in partnership with our local Arts Council, presents four art exhibitions per year. Each juried exhibit includes opening receptions for anywhere from 50-100 people.
- **International Coastal Cleanup** – Rookery Bay is a local sponsor of this international event. Volunteers come together to clean up trash and marine debris in various parts of the Reserve and in adjacent coastal waters.
- **National Estuaries Day** – A variety of hands-on activities, guided walks, kid's activities, and interpretive programs are offered to the public. Admission to the Environmental Learning Center is free on this day.
- **Southwest Florida Birding Festival** – Created and hosted by Rookery Bay, this event includes guided field trips, speaker presentations, films, and various family fun activities. The festival's mission is to stimulate people to appreciate, and motivate them to preserve, the rich bird life and bird habitats of southwest Florida.
- **Dive Into Oceans** – Over a three day period of time this event offered an opportunity for middle school students, as well as the general public, to learn about oceans and the coastal environment. A 20,000 gallon pool is set up by the Dive Equipment Manufacturers Association and students were given the opportunity to try scuba equipment in a safe and structured environment.

Other education team activities include recruitment and training of volunteers, production of marketing materials, media relations, development of a new climate change exhibit, participation in parades, etc., etc.

## **San Francisco Bay NERR - California**

2008 Education Program Report

Sarah Ferner, Education Coordinator – [daviess@sfsu.edu](mailto:daviess@sfsu.edu)

### **Program Highlights**

#### **• Estuary Ecology Day, March 2008**

Highschool science teachers listened to talks by and participated in discussions with estuarine ecologists conducting research in the reserve sites. The Education Coordinator led hands-on activities that complemented the science talks. Teachers also participated in a research experience – conducting vegetation monitoring at the China Camp site or participating in a mini-research cruise on the San Francisco Bay.

#### **• Rush Ranch's 'Ranch Day' and Romberg Tiburon Center's 'Discovery Day', April and October 2008**

Reserve staff educated visitors about wetlands during open house events at Rush Ranch, the brackish marsh component of the Reserve, and the Romberg Tiburon Center, the marine lab where our Administrative Headquarters are located. Visitors got up close with marsh plants and animals, and learned about their adaptations to life in the salt marshes.

#### **• On-going Curriculum Development**

The Education Coordinator helped lead the development of new national curriculum that uses research from NERRS sites to teach high school science students about basic science concepts. Three national modules were completed and launched along with the new Estuaries.gov website. We will be using these lesson plans, and additional locally developed lessons, in future teacher workshops.

#### **• On-Going Interpretive Exhibit Development**

With funding from a NOAA Construction grant, the EC is overseeing the design and installation of exhibits at both reserve sites and a local aquarium in San Francisco. The exhibits feature interactive components, large murals, and changeable components that highlight current research in the reserve. We are currently developing text and selecting final images for the exhibits, which will be completed in the Spring of 2009.

### **Outcome Summary**

This year we continued our focus on educating the public about the importance of wetlands and estuarine research through the development of interpretive exhibits, authoring articles about estuarine research for other organizations' newsletters, and participating in Open House events. We also engaged high school science teachers about estuarine research and worked with other reserves to develop curriculum for those teachers.

## Sapelo Island NERR – Georgia

2008 Education Program Report

Brooke Vallaster, Education Coordinator - [brooke@darientel.net](mailto:brooke@darientel.net)

### *Program Highlights*

- Successfully completed a NOAA 312 Review in February. The SINERR management plan has been updated (2008-2013) and is available for reference at [www.sapelonerr.org](http://www.sapelonerr.org)
  
- Teacher workshops include: Georgia's Amazing Coast (with COSEE SouthEast), Marine Mammals, and Georgia Shorebirds in fall '07. Green Eggs & Sand (with UGA Marine Extension), Sea Turtle Conservation, and Coastal Ecology workshops in spring and summer '08.
  - SINERR collaborated on presentations at the North American Association for Environmental Education conference in November and the Southeastern Recreation Research Conference in February. SINERR staff was involved, as presenters and planning committee members, with the GAME and NMEA conferences this year. SINERR staff and volunteers also participated as exhibitors at Georgia Coastal Resources Division Beach Days, Coastfest, and Coastal Georgia Birding Festival.
  
- Artist in Residence – Jeannine Cook spent a series of weekends on Sapelo Island last year creating paintings, sketches, and silverpoint drawings that feature the Reserve. The collection was featured at Emory University and the Fernbank Museum in Atlanta this summer. We will be working with another local artist in 2009. Christy Trowbridge will showcase her Sapelo-inspired artwork in the Golden Isles area.
  - *Ecology as History in the Sapelo Island National Estuarine Research Reserve*, written by Buddy Sullivan (SINERR manager), was published and distributed. It is posted along with *Seasons on Sapelo*, a collection of Jeannine Cook's artwork, on the SINERR website.
  
- Collaborated with Stewardship Coordinator to develop GPS/GIS activities for teachers, students, and volunteers. Further, CTP/Stewardship trained volunteers for live oak cataloging project on south end of Sapelo and in the city of Darien.
  
- SINERR representation on advisory boards of GAME, Georgia Conservancy Education Committee.
  - SINERR education program was featured on *Georgia Outdoors* on Georgia Public Television in November. Local newspaper and DNR/NOAA coverage of energy efficient upgrades at Sapelo Island Visitor Center. *Seasons on Sapelo* art showcase featured in local and Atlanta newspapers.

### **Volunteers**

New coordinators took the reins in February. FOS members have helped with a wide variety of projects in the past few months including the NERRS marsh bird-monitoring program, making improvements and repairs at several island facilities, shorebird monitoring at Nannygoat Beach, phytoplankton monitoring, and more! The FOS Board and membership have worked diligently to tackle issues such as medical insurance options for volunteers, developing an on-island medical emergency response plan, and upgrading FOS files and communications by moving to a computer-based and email system.

## **South Slough NERR – Oregon**

2008 Education Program Report

Tom Gaskill, Education Coordinator - [tom.gaskill@state.or.us](mailto:tom.gaskill@state.or.us)

Education and interpretive programs at South Slough NERR continue to be popular with the local community and visitors to the area. School visits to the Reserve are complimented by classroom work and teacher training activities with partner organizations have helped to broaden the scope of content to include complimentary marine and forest curriculum. South Slough education staff has expanded outreach efforts through work with volunteers to build greater community awareness of the mission and goals of the Reserve. This work has also incorporated service learning to develop ways in which students can become active participants in efforts to improve the environment while expanding their understanding of topics like native and invasive species.

### **Formal Education and Training activities (Our Flagship Program)**

Over the past year, 104 formal education programs have been delivered for 2,795 students in grades k-20. The majority of these classes are k-12 students that participate in the Estuary Study Program with several different levels of curriculum. Average program contact time is approximately 2 hours, although many classes are on-site at the Reserve for 4 hours or more. A total of 296 contact hours and 132 preparation hours were recorded.

Training is now a growing component of the formal education activities at South Slough and 10 training events were conducted during the past year for volunteers and teachers. Currently, these trainings are focused on content related to the delivery of Estuary Study Program activities although a significant amount of natural and cultural history is also included to enhance the quality of student experiences. A total of 67 participants received training with a total of 18 hours of contact time and 10 hours of preparation time committed.

New activities at South Slough include the use of the TIDES curriculum which engages schools at a variety of estuary locations along the shores of the Coos estuary to conduct studies. These activities are supported by equipment and field guides provided in packs as a part of the Explore Your Estuary project, a new program of guided activities designed to encourage personal observations and collection of data.

### **Interpretive and Outreach activities**

A greatly diverse program of interpretive activities including guided paddle trips, hikes, hands-on workshops, and special events continues to be popular with children, adults, and families. 130 interpretive activities were attended by a total of 1,722 participants. 262 contact hours and 135 preparation hours were recorded. These events included several summer science camps which are growing in popularity and plans are currently in development to expand this area of program offerings. One of the science camps, the “Summer Science Institute” is offered for middle and high school students and blends field-based science and monitoring activities with data collection and interpretation.

Outreach events such as SeaFest, the Charleston Seafood Festival, OctoberFish, and the Coos Bay Farmer’s Market have become an important component for building community awareness of South Slough NERR and developing support for the programs of the Reserve. 17 outreach events provided contact with 2,506 individuals. A total of 148 hours of contact time was supported with 34 hours of preparation. Community Education has also grown as an element of the overall outreach activities of the Reserve with 4 programs conducted for 181 total participants.

### **Outcome Summary Section**

A total of 261 education activities were delivered to 7,271 participants. Contact times varied from short duration 20 minute informal interactions to 8 hour long classes with a total of 732 contact hours recorded. Formal evaluations were conducted for a subset of the total formal education and interpretive programs and demonstrated that most participants could define the major life zones of an estuary and name several activities that impact the waters of the estuary. Overall satisfaction with South Slough’s education programs was high!

## **Tijuana River NERR – California**

2008 Education Program Report

Anne Marie Tipton, Education Coordinator - [amtipton@parks.ca.gov](mailto:amtipton@parks.ca.gov)

We did three trainings for the Estuary Ambassadors from the South Bay District for our new partnership with that District. There is one ambassador per school. They were on Life, Physical, and Earth Science lesson plans that correlated with their text. We did an in-service at 8 South Bay District Elementary Schools during their afternoon staff meetings. We gave an orientation on the Reserve and gave them the first half of the Tijuana Estuary Explorers Training. We trained over 200 teachers, many of whom have never taken a field trip to the Reserve. We did two separate trainings of the second half of Tijuana Estuary Explorers for the South Bay District, with a total of 20 teachers. All are qualified to bring field trips to the Reserve. Before this year, 49 elementary teachers were trained in Explorers, so this is almost a 50% increase. We conducted 6 elementary programs.

We had 5 high school programs. Two had 60 students from San Ysidro at the visitor center and two were down at the border with Patrick Henry. The Patrick Henry tour was joined by Stewardship Coord. Peregrin and CTP Coord. Romo along with Dennis Bowling from Rick Engineering. PHHS is an Engineering Academy. We had a High School Teacher Training for 4 teachers in February. Budget constraints kept a lot from coming. We invited Sweetwater and San Diego Districts. The September training had 11 teachers, mostly from the San Diego District.

The first walk of the Bird and Butterfly Garden was done by Reserve and County docent Joan Brooks on March 9th. It wasn't a huge turnout but it was a good tour. This was our first coordinated walk with County Parks.

We had regular speakers after the volunteer meetings on the third Saturday of the month as part of our Speaker Series. GRF Serena Moseman talked about her PhD work on the restoration success of the Model Marsh. District archaeologist Therese Muranaka gave an interesting presentation on the human side of Border Field. Other topics were local history and anti-biotic resistant bacteria in the marsh.

We gave out three transportation grants, our first disbursements. Two to high schools and one to an elementary school by SDSU. We also reimburse Districts for our September High School Teacher Training.

We had a booth at the first annual Imperial Beach Earth Day in the end of April. Several hundred students came by in the morning as well as community members. We presented to about 80 preschoolers during Earth Week at VIP Village.

We had a booth at Wetland Avengers in May at Hamilton Elementary School in San Diego. The principal is interested in bringing her student down here. We had two docents helping us table at the event. There were almost 1000 volunteers restoring a slope by the school. Two hundred stopped by our booth. We did the Wetland Metaphors activity from Project WET.

We celebrated International Migratory Bird Day on May 10<sup>th</sup> for (at least) the 13<sup>th</sup> year. Over 20 guests, adults and children, were “captured and banded.” We sent them all a graph of the “bird sampling” results. Almost 50 people attended this busy weekend in May.

We tabled at two community events in August, one was the Green and Clean Family day at the Otay Ranch Town Center for our partnership with Chula Vista and the other one was the Festival of Sails for the Museum Council. We reach at least 200 people at each event.

Education Coordinator Tipton represented the Environmental Education Council of the Californias at a Binational Environmental Education Conference in Juarez, Mexico in June.

The fifth annual Fiesta del Rio was the biggest one ever. We doubled our attendance from last year to 4000 people. We think flyers to both South Bay and San Diego Unified elementary schools and radio traffic spot advertising made a difference. This fifth annual Fiesta, on Sunday, October 5, 2008, featured a full afternoon of adventure with brand children’s activities and playwright Daniel Valdez’ short production that commemorates the 1769 expedition. Dr. Zoolittle returned along with Wild Wes and his engaging songs about the environment. Fourteen booths featuring San Diego’s leading environmental and cultural organizations were there, including the Native handicraft booth with the art and pottery of contemporary Kumeyaay artisans. Children got a passport with their own avatar sticker to take around to booths and win a prize. The new and improved County *Splash Lab* van, painted by marine artist Wyland, was there for all to enjoy. The amazing Chula Vista High Mariachi finished off the afternoon for everyone’s listening pleasure. The FREE event took place at the Imperial Beach Pier Plaza.

## **Waquoit Bay NERR – Massachusetts**

### 2008 Education Program Report

Joan Muller, Education Coordinator – [Joan.Muller@state.ma.us](mailto:Joan.Muller@state.ma.us)

Education year round staff: Pat Harcourt, K-12 and Teacher Training Coordinator, Nancy Church, Volunteer and Interpretive Coordinator, Laurie Tompkins, Events Coordinator

#### Social Science Research:

- Graduate Research Fellow Lisa Greber, U.Mass., Boston, was awarded a NOAA grant to study Religion and Climate Change in the Waquoit Bay watershed.
- A needs assessment of immigrant communities in the area was conducted. This audience was selected based on information contained in a socio-economic report prepared by NOAA's Special Project Office.

#### Teacher Training:

- Graduate credit courses offered include energy/renewable energy, climate change, anadromous fish, coastal marine science, and data analysis using SWMP data.
- Reserve educators collaborated with the other New England NERRS to host an NSTA session. This led to Wells, Narragansett and Waquoit Bay applying for and receiving a three year \$256,000 NOAA BWET grant to implement TOTE.

#### Community Education

- The visitor center was “redecorated” with large aerial photos, original estuarine art work and photos from the 20<sup>th</sup> anniversary photo contest. A panoramic interpretive panel labeling the parts of the Reserve that can be seen also provides an introduction to the Reserve and estuaries was installed.
- For the Reserve's 20<sup>th</sup> anniversary, education staff created a crowded calendar of events to appeal to different sectors of the community to introduce and bring them into the Reserve. Sample programs include using science to find and catch fish, local history of the area, a reminiscing tea, as well as a benefit auction.

#### Collaboration with research department (a few examples):

- Series of hands-on field programs co-led by research or stewardship and education staff introducing projects to community members.
- Research staff led session at seasonal interpretive training for coastal interpreters from MA State and Urban Parks hosted and coordinated by education staff.
- Education staff worked with research to incorporate data into teacher workshops.
- Summer interpretive staff incorporated data collected by research staff in salt marsh restoration program offered as part of summer interpretive schedule.
- Research staff provided hands-on demonstrations at Watershed Block Party.
- Education staff helped research and stewardship staff collect monitoring data.

Outcome Summary: Teachers were trained, contacts were made with the local Brazilian community, new community members were introduced to the Reserve and educated. Contact WBNERR staff for more information due to space constraints here.

## **Wells NERR – Maine**

2008 Education Program Report

Suzanne Kahn Eder, Education Coordinator - [suzanne@wellsnerr.org](mailto:suzanne@wellsnerr.org)

### **Docent Program**

Our docent program continues to be a great boon to the education department. These 55 volunteer naturalists are trained seasonally to lead popular K-12 educational programs and summer interpretive tours for a total of 423 training hours.

### **K-12 Programs**

Our school programs included Exploring Estuaries (2-5<sup>th</sup> grade), Microscopic Drifters, and Water Quality Monitoring Field Studies (both 6-12<sup>th</sup> grade). These programs reached 1156 students, resulting in 4080 contact hours. Education staff also designed and led several custom programs for school and community groups, as well as providing support to self-guided groups. Forty-four groups came for 3570 contact hours. We also provided 12 half-day summer camp sessions for kids 6-9 and 3 weeks of camp for kids 9-13, resulting in 1786 contact hours.

### **Public Programs**

We offered daily interpretive walks through the summer on seven topics; summer weekly bird banding demonstrations; 3 evening lecture series; 7 off season midday lectures; and 18 special themed programs, all resulting in 1046 contact hours.

### **Volunteer Monitoring**

We trained and supervised volunteers from three local schools to conduct bi-weekly water quality tests at 18 sites in two local watersheds, March through December (754 contact hours). The education department staff continues to work on improving both the educational and research utility of this water quality data with support from the WNER System Wide Monitoring Program staff.

### **Interpretive Trail Signs**

We completed phase one of our interpretive trail sign project. There are now eight beautiful signs along the Reserve's seven miles of trails. Themes include native plants, invasive species, food webs in a salt marsh, wildlife and human uses of an estuary, salt marsh dynamics, types of wetlands, and watersheds.

### **Special Events**

We held the 9<sup>th</sup> Annual Bird Seed Sale in November; Winter Family Fun Day in February; our Earth Day celebration in April; and Punkinfiddle: A National Estuaries Day Celebration, which attracted an estimated 3,000 people to the Reserve.

### **Outcome Summary**

Through our school and public programs, special events, and educational exhibits, we are increasing our community's awareness of the importance of estuarine habitats. These efforts foster a greater sense of stewardship and ultimately, a heightened consciousness of the need for protecting these valuable resources.

## **Estuarine Reserves Division**

2008 National Education Report

Atziri Ibanez, National Education Coordinator – [Atziri.Ibanez@noaa.gov](mailto:Atziri.Ibanez@noaa.gov)

Amy Clark, Program Specialist – [Amy.Clark@noaa.gov](mailto:Amy.Clark@noaa.gov)

### **Program Highlights during Fiscal Year 2008.**

**Launched Estuaries 101 Curriculum.** This year has been dedicated to working together with TERC, and the Estuaries 101 Workgroup, to complete the development of Estuaries 101, a new on-line science curriculum on estuaries for grades 9 – 12. Three modules were produced, piloted, and launched, as part of National Estuaries Day, September 2008.

**Revamped Estuaries.Gov site Makes a Splash during National Estuaries Day.** ERD spent quite a bit of time working in re-designing and updating the content on the Estuaries.Gov site. The site is live now and offers rich content for both educators and students,

### **NEW! Curriculum Module on Monitoring Estuarine Water Quality – Grades 5-8**

Together with the National Marine Sanctuary Program and the National Oceanographic Data Center, NERRS launched three modules that promote the use of data, and are part of the NOAA Data Education project. The third module focuses on how changes in water quality conditions have an impact on organisms living in estuaries, by using an interface that relies on the NERRS/SWMP data.

**ERD worked closely with the NOAA Office of Education and the Education Council in drafting the NOAA Education Strategy Plan.**

### **ERD Working Hard at Solidifying Partnerships within NOAA**

- NOAA's **National Marine Fisheries Service**, Office of Protected Resources contributed a series of fish factsheets - <http://www.estuaries.gov/estuaries101/About/FishHome.aspx>
- **NOS Communications and Education Division (CED)** – Developed the Estuaries Professional Development, a series of exemplary web resources that have been pre-evaluated and aligned to the NSES - <http://oceanservice.noaa.gov/education/pd/estuaries/welcome.html>

**Laying the Groundwork to develop a full Data Exploration Tool for Educators & Students & an EstuaryLive Video Gallery.** Tellus Applied Sciences has been contracted to develop a data exploration application using SWMP data for educators & students. Marine Grafics, Inc. has been contracted to develop a video collection made up of clips on specific topics pulled from 10 years of EstuaryLive broadcasts and a series of virtual field trips.

### *Outcomes:*

- Educators, students and the public have access to new resources (Estuaries 101) and content about estuaries via Estuaries.Gov that builds upon a scalable architecture, has an improved user experience, and provides access to a new user-interface application.
- Increased visibility and attention to NERRS Education programs. This is reflected by the interest of other NOAA offices to partner with NERRS in the development of products; additional resources that have been contributed by the NOAA Chesapeake Bay Office, IOOS Office; and requests for information and materials that have come in through the Estuaries.Gov.
- Expanded our reach to approximately 1500 people through the NERRS Education Bulletin.