Consortium Receives High Marks from National Review Team

On September 21-22, 2010 the S.C. Sea Grant Consortium was evaluated by an external National Sea Grant Site Visit Review Team, which was charged with reviewing and making recommendations for improvement on the Consortium’s program management and organization, stakeholder engagement, and collaborative network activities. The Team commended the Consortium for its effective management and organization; creativity; stakeholder engagement; collaborative networking; local, state, regional, and national leadership; ability to leverage resources and funding; and interactions with the private sector. In that light, the Site Visit Team had no recommendations to offer for program improvement.

To view the entire National Sea Grant Site Visit Review Team report, visit www.scseagrant.orgContent/ ?cid=461.

Consortium Assists Governors’ South Atlantic Alliance

The Consortium is actively involved with the Governors’ South Atlantic Alliance, formally established on October 19, 2009 at an official ceremony in Charleston, S.C. The South Atlantic Alliance (Alliance) involves the Governors from North Carolina, South Carolina, Georgia, and Florida, as well as representatives of the White House Council on Environmental Quality, National Oceanic and Atmospheric Administration (NOAA), U.S. Environmental Protection Agency, and the U.S. Geological Survey. Consortium Executive Director M. Richard DeVoe is a formal member of the Alliance’s Executive Planning Team (EPT), which consists of representatives of state and federal agencies, non-governmental organizations, businesses, and academic institutions. The EPT was organized to support the four Governor’s offices with Alliance activities.

In early fall 2010, the Consortium, in partnership with its sister Sea Grant College programs in the region, submitted a proposal to the Alliance to provide it with temporary program management support in the region. And in November 2010, the Alliance chose the Consortium to serve in this role for a period of two years.

With this responsibility, the Consortium worked with a host of organizations and institutions to prepare and submit to NOAA two major proposals totaling about $3.3 million to support Alliance activities. These competitive proposals, submitted on December 10, 2010, are currently awaiting final action by NOAA.

Learn more about the South Atlantic Alliance and its work at www.southatlanticalliance.org.
Consortium Spins Off SECOORA as Nonprofit

In 2010, the Southeast Coastal Ocean Observing Regional Association (SECOORA) was spun off from the Consortium and officially became an independent, nonprofit corporation.

SECOORA, one of 11 ocean observing regional associations established nationwide through the Integrated Ocean Observing System (IOOS®) network, coordinates coastal and ocean observing activities and facilitates dialogue among stakeholders in the southeastern United States.

The Consortium led the development of and managed SECOORA from 2002-2008. A diverse 10-member Steering Committee, consisting of representatives from state government, academia, industry, and business, was formed to oversee and direct the growth of the organization. The SECOORA effort officially began in October 2003 through a grant awarded by the NOAA Coastal Services Center to the Consortium. Over the last eight years, the Consortium and SECOORA successfully competed for more than $6 million in federal NOAA funding to support the organization’s growth and maturation, focusing on its ocean observing assets, data generation and integration, stakeholder engagement, and organizational and fiscal management.

SECOORA was incorporated in the state of South Carolina as a non-profit organization in September 2008, and has an annual operating budget of about $400,000. SECOORA consists of 46 dues-paying member organizations, and a host of partnering institutions. For more information, visit www.secoora.org.

Climate Adaptation Initiative Assists Charleston, S.C.

The Consortium received funds from the National Sea Grant College Program to implement a Community Climate Change Adaptation Initiative to assist a local community in South Carolina prepare for potential sea-level rise. Charleston, S.C., a historic harbor city with chronic flooding problems, was identified as a city that could benefit from adaptation planning. The four-month demonstration project, which concluded in September 2010, was one of 33 such initiatives across the U.S. Collaborating partners were the City of Charleston, College of Charleston, and NOAA Coastal Services Center.

Staff at NOAA Coastal Services Center, Jessica Whitehead, regional climate extension specialist with the South Carolina and North Carolina Sea Grant programs, and April Turner, coastal communities extension specialist, organized a focus group with city infrastructure and planning staff to assess current knowledge and needs. Based on focus group feedback, GIS maps were created by a graduate student at the College of Charleston that overlay critical infrastructure and historic properties with scenarios of tidal flooding and the current rate of sea-level rise for 2010-2040. To learn more about the Community Climate Change Adaptation Initiative, visit www.noaanews.noaa.gov/stories2010/20100909_seagrant.html. For more information about this project or other climate change programs, contact Jessica Whitehead at (843) 953-2078, Jessica.Whitehead@scseagrant.org, or visit www.scseagrant.org/Content/?cid=251.
Unique Interactions Cause Long Bay “Dead Zones”

In the summers of 2004 and 2009, there were “dead zones” in Long Bay, an area of coastal ocean from Cape Fear, N.C., to Winyah Bay, S.C. Scientists now believe that an unusual interaction of physical and biological processes caused these low-oxygen—or hypoxic—events. Waters that reach hypoxic levels are not able to sustain most animal life.

The Long Bay Working Group (LBWG), consisting of agency and academic partners, was formed to study the phenomena and identify causes of low-oxygen problems. Denise Sanger, the Consortium’s assistant director of research and planning, facilitates the work of the LBWG, which is carrying out several research and monitoring efforts. Scientists with the S.C. Department of Natural Resources, University of South Carolina, and Coastal Carolina University are conducting these studies.

Natural, physical oceanographic processes appear to play a crucial role in hypoxia development. Strong southwesterly winds pushed cold, deep water from far offshore toward the Long Bay beachfront in a process called upwelling. These southwesterly winds and upwelling resulted in constraining a mass of colder water in the nearshore zone just seaward of the surf zone. At the same time, hot summer days produced warm surface waters that limited mixing with cold waters on the ocean floor.

On the landward side, nutrients and organic matter draining off developed uplands is thought to be another important contributor to low-oxygen events. Tidal creeks (also known as swashes), stormwater-discharge pipes, and groundwater all carry nutrients and organic matter into the coastal ocean.

Under typical conditions, this material is widely dispersed. But when constrained within Long Bay’s nearshore zone, the material stimulates bacterial activity. The bacterial communities consume oxygen at a faster rate than it can be replenished, resulting in hypoxia.

The LBWG research is funded by the Consortium, S.C. Department of Health and Environmental Control-Office of Ocean and Coastal Resource Management, and S.C. Department of Natural Resources in partnership with the Apache Family Campground and Pier in Myrtle Beach and the Coastal Conservation Association of South Carolina.

For more information about hypoxia in Long Bay, South Carolina, contact Denise Sanger at Denise.Sanger@cseagrant.org, (843) 953-2078, or visit www.cseagrant.org/content/?cid=34.

Collaborative Research Project Examines “Swashes”

Swashes—a distinctive name given to tidal creeks in the Grand Strand area that have been modified in shape and hydrology—traverse local beach faces, funnelping stormwater and groundwater from developed uplands directly into coastal waters.

As an extension of the studies conducted by the Long Bay Working Group, Erik Smith and others with the University of South Carolina, Coastal Carolina University, and the Consortium are testing the idea that swashes are significant contributors to low oxygen—or hypoxic—events along the coast. The research is funded by the National Estuarine Research Reserve Science Collaborative, a partnership between the University of North Hampshire and the National Oceanic and Atmospheric Administration.

Preliminary data show that nutrients and organic matter are most concentrated in the waters discharging from these swashes, yet very little is known about how surface water and groundwater mix and flow through swashes, or how this mixing might transform nutrients and organic matter into forms more likely to contribute to hypoxic events.

Two workshops were held—one in November 2010 and another in April 2011—during which the project team, in collaboration with state and local officials, identified 14 swashes as potential research areas. Out of the 14, two swashes were chosen for study in 2011-2012: Dogwood swash in Surfside Beach and Withers swash in Myrtle Beach. The team aims to provide scientific information that would help local communities and state management agencies improve and protect coastal water quality in South Carolina’s Grand Strand. For more information, visit nerrs.noaa.gov/NSCIndex.aspx?ID=652.
Survival of Horseshoe Crabs After Bleeding for Medical Purposes Focus of Study

About 100,000 horseshoe crabs are captured annually in South Carolina by licensed fishermen and taken to research facilities, where a portion of their unique blue blood is extracted and used to make Limulus Amoebocyte Lysate (LAL). LAL is widely used to test for bacterial contamination in human intravenous drugs and medical devices. Long-term survival rates of horseshoe crabs released after being bled is not known, so the Consortium has funded a two-year tagging study being conducted by the S.C. Department of Natural Resources (SCDNR) to determine such rates.

To date, 1,600 crabs have been tagged and released, and the public is urged to report tagged crabs through a toll-free number printed on the white button tag attached to the shell. The U.S. Fish and Wildlife Service supplied the tags for this study. To learn more about the horseshoe crab tagging study, visit www.scseagrant.org/Content/?cid=419.

Video Cameras Collect Fishery Data

In a new fisheries research project, Amber Von Harten, fisheries extension specialist, and Scott Baker, her counterpart at N.C. Sea Grant, are using on-board video cameras to monitor fishing activities, including the age and size of catch. The video is then compared with data recorded from fishermen’s logbooks and federal fisheries at-sea observers. The pilot project, which involves six snapper grouper vessels operating out of Southport, N.C., Little River, Georgetown, and Mt. Pleasant, S.C., and Townsend, GA, is evaluating the use of video camera technology as a more cost-effective method of capturing data compared to using human observers and fishermen’s logbooks.

In April 2011, a half-day workshop on at-sea observing approaches for the snapper grouper fishery was held for the South Atlantic Fishery Management Council’s Snapper Grouper Advisory Panel. Von Harten and Baker described the study design, how electronic monitoring works, electronic monitoring data recorded so far compared to traditional methods of data collection, and the pros and cons to using this technique. This project is part of a regional National Oceanic and Atmospheric Administration Cooperative Fishery Research grant to N.C. Sea Grant, with a sub-award to the Consortium. To learn more, contact Amber Von Harten at (843) 255-6060 ext. 112 or ambervh@clemson.edu.

Commercial Shrimpers Earn Credit for Trade Assistance

Ten workshops were held for commercial shrimpers in South Carolina between February and May 2011 as part of the Trade Adjustment Assistance (TAA) program offered by the U.S. Department of Agriculture. The TAA program offers technical training and cash benefits to farmers and shrimpers who have been adversely affected by competition from imports. Shrimpers who qualify for TAA must complete 12 hours of coursework and create a long-term business plan in order to receive up to $12,000 in cash benefits.

Amber Von Harten, fisheries extension specialist, led workshops in Georgetown, Charleston, and Beaufort, S.C., giving technical training to over 200 shrimpers on U.S. Coast Guard licensing, federal laws, shrimp processing options, and shrimp marketing opportunities. The workshops in Beaufort and Georgetown brought in the expertise of Sunny Rice, fisheries specialist with the Alaska Sea Grant Marine Advisory Program, to discuss shrimp processing and lessons learned about cold storage of product.

A workshop in Charleston was held in conjunction with the 2nd annual S.C. Seafood Summit, sponsored in part by the Consortium. This workshop consisted of an intensive eight-hour training session on seafood sustainability, alternative marketing options such as Community Supported Fisheries, best management practices for promoting seafood products, and how to legally sell seafood.

In addition, a three-hour training session on developing a business plan was held during the annual S.C. Shrimpers Association meeting in Beaufort.

More information about the TAA program is available at www.taafarmers.org.
Publications Offer Alternative Stormwater Management Strategies

The Consortium, in collaboration with the University of South Carolina, the City of North Charleston, and the Noisette Company, LLC, has developed three new publications that address low-impact development (LID) techniques to reduce the impact of stormwater runoff.

The publications are based on four years of Consortium-funded research which assessed stormwater management practices—such as pocket parks, bioretention swales, and pervious pavement—that were implemented in North Charleston’s Oak Terrace Preserve residential community.

The Low Impact Development brochure highlights LID strategies, including bioswales, pervious walkways, pervious alleys, pocket parks, and forebay, that communities can use to better manage stormwater runoff.

The Maintenance of Low Impact Development (LID) Stormwater Practices brochure was developed for homeowner associations and others interested in LID techniques. This guidance document provides general information about inspecting and maintaining LID technologies.

The report, An Assessment of Stormwater Management in Coastal South Carolina: A Focus on Stormwater Ponds and Low Impact Development (LID) Practices, also is available. The report addresses issues of water quality, the permitting process, and stormwater management project design, construction and maintenance, strengths and weaknesses of stormwater ponds, and LID practices. The report is based on information gathered through interviews with stormwater professionals and from participants of a coastal South Carolina stormwater management workshop.

For copies of these publications, contact the Consortium at (843) 953-2078 or visit www.scseagrant.org/Content/?cid=156.

New Web Application Showcases Low Impact Development Projects

The Low Impact Development (LID) Atlas for South Carolina is a web application that highlights innovative LID projects communities can implement to address stormwater and growth-related issues. Hundreds of LID projects throughout the U.S. are mapped; these include the use of bioswales, rain gardens, permeable pavement, and green roofs.

Part of a national mapping effort by the Nonpoint Education for Municipal Officials (NEMO) program, Clemson University’s Baruch Institute and Carolina Clear program, and the North Inlet-Winyah Bay National Estuarine Research Reserve, has developed an online Community Resource Inventory (CRI) mapping tool for South Carolina. The tool is based on the CRI developed by the University of Connecticut in partnership with the national NEMO Network. The initial version is a pilot program being tested for Georgetown County with the overarching goal of expanding the tool to include all coastal counties in South Carolina. Funding for this project was provided by a grant from NOAA’s Cooperative Institute of Coastal and Estuarine Environmental Technology at the University of New Hampshire. In addition, Intelligent River™, an application that “visualizes” watershed data.

The tool can be used to overlay data layers with USGS topographic maps, satellite imagery, and street maps. The inventory data layers are grouped by category, and data layers from multiple categories can be used within a single map. The current categories include Stormwater Engineering, Planning and Zoning, and Habitat Assessment. As needs are identified, more categories and data layers will be added to the tool. To view the CRI tool, visit www.clemson.edu/public/rec/baruch/cri. For more information, contact April Turner, coastal communities specialist, at (843) 953-2078 or April.Turner@scseagrant.org.

Community Resource Inventory Tool Available Online

The Consortium, in partnership with the S.C. Nonpoint Education for Municipal Officials (SCNEMO) program, Clemson University’s Baruch Institute and Carolina Clear program, and the North Inlet-Winyah Bay National Estuarine Research Reserve, has developed an online Community Resource Inventory (CRI) mapping tool for South Carolina. The tool is based on the CRI developed by the University of Connecticut in partnership with the national NEMO Network. The initial version is a pilot program being tested for Georgetown County with the overarching goal of expanding the tool to include all coastal counties in South Carolina. Funding for this project was provided by a grant from NOAA’s Cooperative Institute of Coastal and Estuarine Environmental Technology at the University of New Hampshire. In addition, Intelligent River™, a collaboration of Clemson University and federal agency partners, provided funds for the mapping technology, which is an application that “visualizes” watershed data.

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Revised Land-Use Policy Includes Working Waterfronts

Traditional uses of coastal waterfront property are quickly changing as more of the U.S. population moves to the coast. In several coastal communities, commercial fishermen are finding it difficult to secure dependable and affordable docking space, fuel, and/or ice. Water-dependent access needed by both shore-based and boating recreational anglers is also at risk as public boat landings and access to shore-side fishing areas decline due to private development.

Photo: April Turner, S.C. Sea Grant Extension Program
In order to help coastal communities preserve land for public access, Amber Von Harten, fisheries extension specialist, coordinated with Beaufort County planning staff to incorporate working waterfront issues and needs into land-use policy and planning mechanisms. Von Harten worked with local commercial and recreational anglers and planning staff to draft new language for revisions to the Beaufort County Comprehensive Plan that would consider the historical significance and future needs for waterfront access. She also worked with stakeholders and planning staff to revise the Commercial Fishing Village overlay district to accommodate traditional and emerging land uses. The revised Beaufort County land-use policy was adopted by county council members in 2010 and is available on their website at www.co.beaufort.sc.us.

Scientific literacy and workforce development

University of South Carolina Student Awarded Knauss Fellowship

Sierra Jones, a recent graduate of the University of South Carolina with a Ph.D. in Biology, has been awarded a 2011 John A. Knauss Marine Policy Fellowship. She is serving as a congressional affairs specialist in the National Oceanic and Atmospheric Administration (NOAA) Office of Legislative and Intergovernmental Affairs. Jones’ task is to facilitate communications between NOAA scientists and Congress on a range of issues, including invasive species, harmful algal blooms, education, and oceans and human health.

The National Sea Grant Office sponsors the John A. Knauss Marine Policy Fellowship Program, which brings a select group of graduate students to the nation’s capital where they work in the federal government’s legislative and executive branches. The students learn about federal policy regarding marine and Great Lakes natural resources and lend their scientific expertise to federal agencies and congressional staff offices.

Each of the nation’s 32 Sea Grant programs can nominate up to six students to the Knauss fellowship program each year. Selections are then made competitively from among those nominations. To learn more about this program, visit www.scseagrant.org/Content/?cid=56.

College of Charleston Student Secures Research Fellowship

Jennifer Hein, a candidate in the Master of Science in Environmental Studies Program at the College of Charleston, has been awarded a 2011 Coastal Research Fellowship.

The Consortium and two South Carolina National Estuarine Research Reserves (North Inlet-Winyah Bay and ACE Basin) established this new fellowship for South Carolina-based graduate students with significant support provided by North Carolina Sea Grant. The fellowship will foster collaborative research between the two NERR sites.

Hein will compare the impacts of an invasive parasitic species on American eel populations in each of the two NERRs and the more developed Cooper River. The invasive parasite, originally from East Asia, infects the swim bladder of American eels. She speculates that the NERRs are healthy ecosystems that maintain healthier eel populations, which are more capable of resisting infections by this invasive parasite. Hein’s hypothesis is that eel populations from the three different sites, representing a range of development impacts, will exhibit different abilities to resist infection.

For more information about the NERR-Sea Grant fellowship, visit www.scseagrant.org/Content/?cid=56 or contact Denise Sanger at Denise.Sanger@scseagrant.org or (843) 953-2078.
Salt Marsh Restoration Program Engages Students

South Carolina has more than 350,000 acres of salt marsh, but the pressures of development, natural processes, and other stresses continue to threaten this critical habitat. Now, a new Consortium education program—“From Seeds to Shoreline”—aims to help restore the salt marsh while educating students about the important functions of this habitat.

Approximately 700 students from eight elementary, middle-, and high-schools in the Charleston, S.C., area are involved with the program, as well as one homeschool. Students grow Spartina alterniflora, the smooth cordgrass that makes up salt marsh habitat in South Carolina, in a greenhouse, and then transplant young seedlings in areas that need restoration. Among the restoration sites are areas around oyster reefs built by S.C. Department of Natural Resources’ S.C. Oyster Restoration and Enhancement program. More than 10,000 plants have been seeded, the majority of which are transplanted, but some are kept at the schools so that students can test different variables such as exposure to different levels of sunlight, water, and temperatures. The program is aligned to South Carolina State Science Standards.

“From Seeds to Shoreline” is funded by the Consortium, and collaborating partners include the Clemson University’s Coastal Research and Education Center, S.C. Department of Natural Resources, and the Ashley-Cooper Stormwater Education Consortium.

To learn more about this program, contact Elizabeth Vernon Bell, marine education specialist, at (843) 953-2078 or Elizabeth.Vernon@scseagrant.org. Information is also available online at www.scseagrant.org/Content/?cid=497, where a downloadable science journal template to record observations and measurements can be accessed.

2010 Beach Sweep/River Sweep a Success

Nearly 4,700 volunteers statewide participated in the 22nd annual Beach Sweep/River Sweep litter cleanup on September 18, 2010, clearing 24 tons of debris from beaches, marshes, and waterways. Organized by the Consortium and S.C. Department of Natural Resources, the Sweep is held in conjunction with Ocean Conservancy’s International Coastal Cleanup.

Beach Sweep/River Sweep is funded primarily from private sources, and major sponsors include Applied Technology and Management, BP Cooper River Plant, Charleston City Marina, Charleston Water System, Coastal Expeditions, Mt. Pleasant Waterworks, S.C. State Ports Authority, The Duke Energy Foundation, and Walmart Market #34. The next statewide Sweep is scheduled for Saturday, September 17, 2011. For more information or to volunteer, visit www.scseagrant.org/Content/?cid=49 or contact Susan Ferris Hill at Susan.Ferris.Hill@scseagrant.org or (843) 953-2078.

Clean Marine Nets Large Debris

Clean Marine, a cleanup targeting boaters and anglers, was held on April 8-10, 2011 at 12 locations in Charleston County. This three-day event collected 10,380 pounds of large debris items, including parts of boats, dingies, Styrofoam, and fishing gear. Dumpsters at each drop-off site were provided by Carolina Waste, and the Charleston County Bees Ferry landfill waived disposal fees.

Funded by the NOAA Marine Debris Program, Clean Marine was organized by the Centers for Ocean Sciences Education Excellence-SouthEast in cooperation with S.C. Department of Health and Environmental Control-Office of Ocean and Coastal Resources. Other partners included the Consortium, S.C. Department of Natural Resources, South Carolina Aquarium, S.C. Marine Association, Charleston Waterkeeper, Charleston County Park and Recreation Commission, and the U.S. Coast Guard.

In addition, a poster, Marine Debris: The Preventable Problem, was produced and distributed to schools, aquaria, and informal education centers in North Carolina, South Carolina, and Georgia. The poster defines the term “marine debris,” and lists ways that people can become involved to help solve the litter problem.

The Clean Marine program is currently recruiting volunteer spotters to participate in fall training sessions in the Charleston and Murrell’s Inlet areas; contact Lundie Spence at Lundie.Spence@scseagrant.org or (843) 953-2078 for more information. To learn more about this program, including online reporting of abandoned vessels and marine debris, visit www.scdhec.gov/environment/ocrm/marine_debris.htm. Posters can be ordered by calling the Consortium at (843) 953-2078.
Awards and staff news

**MarketMaker™ Recognized with Two Awards**

All state partners of MarketMaker™, an interactive web-based tool that contains a searchable database connecting consumers of South Carolina products with suppliers, recently won a 2010 Partnership Award for Multistate Efforts from the U.S. Department of Agriculture’s (USDA) National Institute of Food and Agriculture. South Carolina MarketMaker™ also won the 2011 National Food MarketMaker™ Innovation Award from Farm Credit for developing a seafood component that was later expanded nationally to include several new states offering seafood products to consumers through MarketMaker™.

Developed by the University of Illinois, MarketMaker™ is supported by the National Institute of Food and Agriculture, the Ag Marketing Resource Center, the Applied Sustainability Center, and 16 state partners. To view participating states and product offerings, visit [http://national.marketmaker.uiuc.edu](http://national.marketmaker.uiuc.edu). The South Carolina MarketMaker™ website is [http://sc.marketmaker.uiuc.edu](http://sc.marketmaker.uiuc.edu).

**Coastal Heritage Wins Prestigious Award**

Coastal Heritage, a free quarterly publication that gives readers an in-depth look at issues related to science, culture, and history, recently won an Award of Excellence from the Society for Technical Communication (STC)—Carolina Chapter. The rigorous judging process was based on content and organization, copy-editing, visual design, and creativity. Coastal Heritage is available online at [www.scseagrant.org/Sections/?cid=82](http://www.scseagrant.org/Sections/?cid=82).

**Communications and Extension Staff Elected to National Sea Grant Leadership Positions**

Susan Ferris Hill was elected chair of the National Sea Grant Communications Network and Robert Bacon was elected chair of the National Sea Grant Extension Assembly. Each serves as a liaison for their respective networks to other Sea Grant networks and works closely with the extension and communications leaders at the National Sea Grant office on projects and issues of importance to NOAA and Sea Grant. In addition, they are members of the Sea Grant Association’s Program Mission Committee and Networks Advisory Council.