LOWCOUNTRY’S FISHING FUTURE: ARE LOCAVORES THE ANSWER?
South Carolina’s fisheries are sustainable ones, experts say. So buy local seafood with confidence.

BLACK WATERMEN AND COOKS CREATED OUR SEAFOOD CUISINE
Lowcountry seafood cuisine emerged from Gullah catches and dishes.

NEWS AND NOTES
• Consortium receives $1.28M for coastal and ocean research
• New web application showcases low-impact development projects
• Community Resource Inventory tool available online

EBBS AND FLOWS
• 2012 Land Grant and Sea Grant National Water Conference
• The Coastal Society’s 23rd International Conference
• EnergyOcean International Conference and Exhibition

ON THE COVER:
“We want to get out of the industrial food system and sell fish directly to customers,” says Mark Marhefska, a fisherman who owns and operates Abundant Seafood with his wife, Kerry.
PHOTO/GRACE BEAHM
On a brilliant winter morning, brown pelicans wait beneath a Shem Creek dock, snatching scraps of vermilion snapper and triggerfish tossed from Mark Marhefka's filet knife.

His paying customers meanwhile line up for seafood taken off his 39-foot boat, the Amy Marie. A happy vibe, everyone's smiling. Kids gawk at big fish in coolers. There are pelicans to watch and neighbors to meet while Marhefka, decked out in a white apron, shows customers how to filet their whole fish after they take it home. Customers pepper him with recipe questions. Grill, broil, or bake?

Behold a community-supported fishery, the first in South Carolina. Marhefka's Abundant Seafood opened three years ago, and now 130 customers purchase shares of a 12-week fishing season, receiving up to 10 pounds of whole fish a month.

Sturdy and ruddy, Mark Marhefka is an affable host, and you can't find seafood any fresher. He has a gift for making festive moments out of that most ordinary of errands—picking up something for dinner.

The prices are good, too, because middlemen haven't taken their cut. Abundant Seafood's shareholders can bring home snowy grouper at $14 a pound filleted while a seafood display at a Mt. Pleasant grocery store might have it at $25 a pound.

Most shareholders get one or two fish every fortnight at Shem Creek, placing orders via email just before the Amy Marie heads 45 miles off to the shelf break.

“I love two things about Charleston,” says shareholder Eileen Lentz, who moved from New Jersey to James Island six years ago. “One is the weather. The other is Mark and his fish.”

Some shareholders are taking home Gray triggerfish, which has a mild, creamy flavor. But it also has an unusually large head, thus providing relatively small filets, and a thick, tough skin that makes it difficult to
clean. It’s plentiful, though, in the U.S. South Atlantic while most other snapper-grouper fisheries are under tight catch restrictions or closures.

Wholesalers and chefs once viewed triggerfish as a “trash” or undesirable fish. Not any longer. It commands a price at least three times higher than it did a decade ago, and it’s featured on menus of elite lowcountry restaurants.

Marhefka and his fish are part of a southern culinary revival, and its vanguard is located in Charleston. Chefs and consumers are finding new flavors in overlooked fisheries and rediscovering local foods from an era when truck farms delivered fresh produce to Charleston every day, rice or grits were served at almost every meal, and fish hawkers stood on street corners, shouting “Porgy!”

For generations, African-American men would sail small vessels called the “Mosquito Fleet” out of Charleston Harbor to catch blackfish (known today as black sea bass), flounder, sheepshead, redfish, Spanish mackerel, porgy, bastard snapper, whiting, and summer trout. A Charleston cook could step outside her door to buy fish from carts that sellers pushed through the streets.

Yet, in the mid-2000s, Charleston chefs had difficulty finding fresh finfish right off a local boat.

“Seafood was coming into the docks here, but a lot of it was being shipped directly to dealers in Maryland, New York, and Canada,” says Megan Westmeyer, program manager of the South Carolina Aquarium’s Sustainable Seafood Initiative, who continues to teach chefs about the advantages of acquiring sustainably managed, local seafood in season.

Many commercial fishermen have been hesitant to sell directly to chefs, worried that it might harm their relationships with wholesalers. When traditional fishermen guide their boats into dock, they plan to offload their catch and go back to what they know best. Their trade is fishing—not processing, distributing, and marketing seafood.

In 2007, though, Marhefka decided to experiment with a different business model, and Westmeyer matched him with talented local chefs who had made a commitment to serving local food.

Two years later, Amber Von
Harten, fisheries extension specialist with the S.C. Sea Grant Extension Program, held a series of Seafood Marketing 101 Workshops for low-country commercial fishermen struggling to find customers willing to pay premium prices for fresh, local seafood. One new marketing opportunity is S.C. MarketMaker™, an interactive, Web-based marketing tool that allows producers to register their businesses and make direct contact with seafood buyers.

Opening a community-supported fishery (CSF) is another way to connect with customers, Von Harten explained. Mark Marhefka’s wife, Kerry, who had left her job as a fishery biologist to raise their two children, was listening in the audience and wanted to learn more.

“After I talked with Kerry and Mark, I knew that a CSF model would work for them,” says Von Harten. “They had all of the right pieces in places for success—high quality seafood, a variety of fish species to offer, strong community connections, drive, and ingenuity.”

Now, the Marhefkas’ company, Abundant Seafood, buys catch from their own boat, the Amy Marie. As a licensed dealer, they can sell the catch to both local restaurants and their community-supported fishery shareholders.

“When I buy from Mark, I know I’m getting the freshest product,” says Charles Arena, executive chef at The Boathouse on Breach Inlet on the Isle of Palms. “It’s been handled perfectly from the get-go.”

“People are a lot more educated about local seafood than they were five years ago,” says Arena. “With people being on social media and following the Sustainable Seafood Initiative, they know more about local seafood. They like grouper, but when it’s out of season, we can offer tilefish, which is a good substitute with a slightly flakier texture.”

Still, buying local is usually more expensive for a chef. Today, about 90% of Abundant Seafood’s volume is sold and delivered directly to South Carolina chefs who pay Marhefka up to $1.50 more per pound of whole fish than conventional seafood dealers. The other 10% is distributed through his community-supported fishery. Marhefka also purchases fresh catches from other local snapper-grouper boats so he can offer a steady supply to restaurants.

Marhefka’s innovation is that he has drastically shortened his supply chain.

A typical grouper offloaded from a boat docked just a stone’s throw from your favorite seafood restaurant probably travels hundreds of miles before returning to your plate. Dealers acquire groupers from various docks, ship them to refrigerated warehouses where they are sorted, mixed into new boxes, and stored until orders from restaurants and retailers arrive.

For example, a dealer might acquire grouper from a South Carolina dock and truck it to a warehouse in Georgia or Maryland for distribution. The South Carolina grouper that arrives at a Georgia warehouse might be mixed with grouper from Mexico and stored for up to a week before eventually being trucked back to lowcountry restaurants and retail outlets.

“A lot of times when you buy from a dealer, some of the fish have been smashed up and beaten up from being handled so many times and put in different boxes and shipped,” says chef Bryan Lindsay as he picks up 25 pounds of vermilion snapper from Abundant Seafood to prepare at a local-food event sponsored by Guerrilla Cuisine. Lindsay is working on plans to open a new restaurant with an investor in downtown Charleston.

“You look at a smashed fish at the bottom of a box and ask yourself, ‘What am I going to do with that?’ ”

“Every time you handle a fish,” Marhefka says, “you degrade it a little.”

Generations ago, most ordinary folk in the lowcountry were “locavores” in modern parlance—they consumed chiefly local foods.

Truck farms and provision gardens
raised the region’s essential ingredients, including corn, cowpeas, potatoes, greens, and hogs. Local orchards harvested exotic delicacies such as Seville oranges and Italian olives and sold them at market stalls.

In colonial and antebellum days, planters cultivated the famous Carolina Gold rice. Slaves, and later freedmen, also grew their own subsistence fields of rice. Lowcountry residents could purchase fresh oysters, shrimp, terrapin, and dozens of species of fish.

Today, a genuine locavore is pretty rare. It takes time, planning, money, and self-discipline to find and purchase local foods in a marketplace awash with products from around the world.

The modern industrial food system pits producer against producer in a struggle for survival and market share, each seeking to take advantage of economies of scale. Who can provide the largest volume of a desired food item for the lowest price? It’s a system that has made American food the cheapest in the world, but at a cost to freshness and flavor, small producers, and the environment.

Consider how apples changed in the decades between the 1920s and the 1960s. Apple growers took advantage of improvements in ice-cooled railcars in the Twenties to ship their products from the hinterlands to markets hundreds of miles away. Cold-storage warehouses allowed wholesalers and retailers to store apples longer, and national supermarket chains replaced regional ones.

Soon apple breeders created new varieties that looked great, traveled well, and stored without quick spoilage. For the first time, the taste and texture of an apple didn’t matter all that much. Instead, growers, wholesalers, and retailers continuously trimmed costs and improved efficiency. Losers went out of business and winners continued the fight.

By the 1960s, many apples sold in American stores tasted like cardboard. Eventually consumers wised up, and apple consumption fell. In recent years, apple breeders have developed tasty, juicy varieties that meet the efficiency demands of the industrial food system. But for generations of children who grew up wary of flavorless apples, it was too late. Many Americans never developed a taste for apples. We eat far fewer apples than Europeans, who have subsidized many local agricultural producers.

In the seafood arena, a small producer-dealer just can’t compete with big wholesalers on price and volume alone. But Mark Marhefka is a creative, independent entrepreneur, and on his side is a passionate, growing local-food movement.

“More people want to meet and put a face on a fisherman,” says Amber Von Harten. “They want to know where their seafood is coming from.”

A DIFFERENT BUSINESS

A second-generation commercial fisherman, Mark Marhefka has plied his trade for three decades, but it’s a far different business now than when he started out—or even than it was five years ago.

Now he’s on call by phone, email, and text message, and his wife, Kerry, CaTCH OF THE DAY. Mark Marhefka’s catches are valued by top chefs, such as Ben Berryhill (right), owner of Red Drum and Next Door restaurants, who seek sustainably caught fish.

PHOTO/GRACE BEAHM

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Gray triggerfish (left) and vermilion snapper are two species that were long ignored by fishermen, chefs, and consumers. Now they appear on menus of the lowcountry’s finest restaurants.

**Image/South Atlantic Fishery Management Council**
local people purchase shares in harvesting seasons to receive vegetables, eggs, meat, or other products. Most of these farms are in the Northeast, around the Great Lakes, and in California.

In 2007, some venturesome Maine fishermen, aided in part by Sea Grant, were the first seafood providers to create a community-supported fishery. The Midcoast Fisherman’s Cooperative of Port Clyde began offering weekly shares of pink wild-caught shrimp to 29 customers. The following spring, shrimp shareholders tripled.

Additional boat-to-table services have since sprung up in other New England states and in North Carolina, but none is like Abundant Seafood, owned by a single producer-dealer.

Marhefka’s community-supported fishery has given him a financial leg to stand on. He gets top prices and a steady income, and he knows how much fish each of his shareholders will receive during a season. An unexpected benefit is that his shareholders have taken it upon themselves to market Abundant Seafood around town.

When his shareholders go to restaurants, they ask for Marhefka’s fish. More chefs, as a result, are seeking his catches and promoting Abundant Seafood as their local producer on their menus and Web sites. In turn, cooks at home often experiment with recipes and ingredients they have enjoyed in restaurants, and this is particularly true of seafood. Talented chefs have enormous influence on consumers’ seafood choices. So when diners sample Abundant Seafood’s fish, they wanted to know more and they look into his community-supported fishery.

It’s this synergy among chefs, diners, and home cooks that could keep Marhefka in business and provide a model for other ambitious fishermen to investigate.

**FOOD AS COMMODITY**

The lowcountry has a long history in global food markets. In fact, Charleston’s wealth before the Civil War was built on an early version of today’s ruthlessly efficient industrial food system.

From the 1720s to 1860s, lowcountry rice planters established the largest and most sophisticated agricultural business anywhere in North America at that time. With slave labor and expertise, planters engineered massive networks of dikes to grow rice at a low cost for global markets.

The lowcountry, however, was not a significant importer of food. More than 80% of the population of Beaufort and Georgetown counties, for instance, were plantation slaves, the lowcountry’s “black majority.” Slaves were issued modest rations from plantation supplies but grew most of their own food in subsistence gardens and sold surpluses to other slaves or even to their owners. The lowcountry had a locavore food system in consumption—but an industrial food system for export markets.

After the Civil War, the South Carolina coast’s rice industry collapsed, and the region disappeared from the industrial food system.

By the 1880s and 1890s, though, dredging and over-harvesting had damaged New York and Chesapeake Bay oyster banks, and consumer demand for oysters in Chicago, Baltimore, and other big cities continued to rise. So dealers looked to Georgia and South Carolina’s oyster reefs—just when new railways were linking Savannah to northern cities. (Charleston was bypassed in favor of her sister city to the south.)

From 1893 to 1905, the heyday of South Carolina’s oyster industry, 16 canneries operated in the state, most of them in Beaufort County, close to Savannah’s railroad yards.

During fall and winter, men went out in flat-bottomed boats called “bateaux,” or in larger sloops or engine-powered scows, from which they used short-handled “grabs” to harvest oysters from the creek banks. In deep water at high tide, they used long-handled tongs.

One man could gather 60 to 100 bushels during a low tide. The men transported oysters to local canneries, where the shellfish were steamed, shucked, and canned. At first, experienced cannery workers, mostly of Polish descent, came down from Baltimore, but later African-Americans were the primary source of...
By the 1990s, however, the industrial food system no longer needed lowcountry shrimp, even though local catches remained strong. With the aid of technologies developed in part by U.S. scientists, aquaculture operations in Asia and Latin America grew extremely high densities of pond shrimp distributed it around the country. Shrimpers were a small part of perhaps the most sophisticated food production/transport/storage/marketing network up to that time.

In places like Des Moines and Idaho Falls, diners feasted on Atlantic and Gulf crustaceans, a luxury that would have seemed unimaginable in generations past.

Today, South Korea and other Asian nations supply nearly all of the canned oysters eaten in the United States. But the most knowledgeable South Carolina consumers buy local fresh oysters.

Toby Van Buren, along with his son Mark, cultivates clam beds and harvests oysters in waters behind the Isle of Palms and serves as president of the S.C. Shellfish Growers Association. Van Buren sells his delicious, fresh harvests directly to restaurants and individuals. “Everybody in the industry is trying to skip the middleman. It’s the only way to survive.”

The lowcountry’s blue crab processors also benefited for a time from modern processing technologies and efficient shipping, but they also eventually fell to competitors.

Twenty years ago, local crab “picking” plants shipped South Carolina blue crabs to markets along the Atlantic seaboard from New York to Florida. But, by the 1990s, floods of imported, inexpensive Asian crab imports drove prices down for South Carolina processors, which eventually went out of business. A strong “basket trade,” however, continues in whole hard-shell blue crabs shipped to restaurants around South Carolina.

The lowcountry shrimping industry enjoyed a few decades of prosperity as well. In the late 1940s, local fishermen for the first time began using powerful diesel engines that allowed large boats to pull heavy trawl nets across the seafloor to catch shrimp.

When South Carolina’s shrimp industry was peaking from the 1970s to the mid-1980s, more and more fishermen sold catches for good prices to wholesalers who processed shrimp in the Gulf Coast region and then distributed it around the country.

DIRECT MARKETERS. Near the Isle of Palms, Toby Van Buren and his son, Mark, of Tobias Seafood cultivate clams that they sell directly to local restaurants and other customers, bypassing middlemen. PHOTO/GRACE BEAHM
and shipped them to U.S. markets at low cost, driving many American shrimpers out of business.

Today, only a fraction of shrimp eaten by Americans is caught in U.S. waters; the rest are farm-raised or caught overseas. When you eat a shrimp in a lowcountry restaurant, it’s far likelier to have come from a South American or Asian aquaculture operations than harvested from the waters off the South Carolina coast.

Shrimper Tommy Edwards, who docks his 70-foot boat, Miss Judy Too, on the Shem Creek waterfront, complains about purchasing choices of nearby restaurants. “People think they are eating fresh local shrimp, but those restaurants aren’t buying our local shrimp. They’re buying imports and calling it local. I’m staying in business by selling shrimp to local customers who know the season and buy 50 to 100 pounds at a time directly from me. People need to realize that they can come straight to the boat to buy the freshest shrimp.”

TRAVELING TOO FAR

Today’s industrial food system is unsustainable in part because it requires burning huge volumes of fossil fuels to transport products across vast distances, releasing carbon dioxide into the atmosphere and contributing to climate change, according to journalist Michael Pollan, who has written extensively on the local-food movement.

On average, an item of U.S.-grown fresh produce is hauled roughly 1,500 miles from farm to plate. Most of the lettuce and spinach, for example, purchased in South Carolina grocery stories are from California, nearly 3,000 miles away. The average distance from where a fish has been caught to where it’s consumed is probably also a long one.

Americans spend a smaller percentage of our income on food than any people in history—slightly less than 10%—because of the relentless efficiencies of the marketplace. The most effective way for consumers to provide some balance to this food system is to be willing to pay more for local products, according to Pollan. Certainly those who can afford it, he writes, should “vote with your forks.”

Some corners of the marketplace have begun counting those votes. A few supermarket chains now compete with farm stands and farmers’ markets for a wider variety of local fresh fruits and vegetables.

In July 2011, Walmart announced its plan to spend $400 million that year on locally grown produce, making it the largest player in this market.

Many of us are divorced from food production, lacking an elementary understanding of where ingredients come from and who produces them.

In a 2011 book, Karen Weir-Jimerson, who lives on a three-acre farm in Iowa raising chickens and sheep, offers an anecdote about her teenage son’s friend, Chance, who often stayed over for supper. Weir-Jimerson and her family live in a renovated farmhouse surrounded by some of the richest agricultural land in the world.

One evening, she was running water over the arugula that she had just picked from her garden, preparing it for a salad, when young Chance leaned his elbow on the counter and said, “Hey, how come you guys grow your own food? Don’t you have enough cash to buy it at the grocery store?”

Each new generation seems to know less about the origins of their food than the one before. But Pollan has hopes for the local-food movement, viewing farmers’ markets—5,000-plus today and growing—as an indicator of a change in tastes and expectations. Customers can learn about food and those who produce it, while also connecting to broader social networks.

“Children are everywhere [at a farmers’ market],” Pollan writes, “sampling fresh produce, talking to farmers. Friends and acquaintances stop to chat . . . Someone buying food here may be acting not just as a consumer but also as a neighbor, a citizen, a parent, a cook. In many cities and towns, farmers’ markets have taken on (and not for the first time) the function of a lively new public square.”

In the Charleston area, Mark Marhefka’s community-supported fishery offers that kind of neighborly experience every two weeks when...
shareholders arrive at the dock on Shem Creek. Will other lowcountry fishermen follow his path?

THE FUTURE

It's tough for a fisherman to leave the industrial food system and survive financially.

“You have to be a unique, innovative individual to succeed in direct marketing your catches,” says Amber Von Harten, fisheries specialist with the S.C. Sea Grant Extension Program. “You must have impeccable customer service, producing only the highest quality seafood. You need to enjoy interacting with customers, bringing them into the inner workings of how your fishery operates. How do you catch your fish? Why do you offer certain fish in one season and not another?”

Von Harten is collaborating with extension specialists and researchers from Pacific Coast Sea Grant programs to study direct-sale seafood businesses in North Carolina and South Carolina.

Abundant Seafood is one-of-a-kind—the only community-supported fishery in the nation operated by a single seafood producer-dealer. The others are collectives, with fishermen working together to manage risk and provide a diversity of seafood.

There are plenty of reasons why Marhefka makes his new venture work. He has 30 years of fishing experience, a stellar reputation as a seafood provider, a sophisticated understanding of markets and fishery management, and an eagerness to meet his customers face-to-face and talk about his business.

Going solo isn't the only way to find success, however. Von Harten has encouraged a number of lowcountry seafood producers to team up and form a community-supported fishery, offering mixed shares of shrimp, oysters, clams, crabs, and fish, depending on weekly and seasonal availability.

But she's run into a roadblock. “It’s difficult to get fishermen to trust one another,” she says, “and venture into this kind of business model cooperatively.”

In the future, she says, some fishermen will stick to the traditional model of selling to wholesalers and some will try marketing innovations. “The public wants to know the fishermen who harvest their seafood,” Von Harten says, “just as they want to know the farmers who produce their fruits and vegetables. They want to see the boat come in to the dock and offload the catch. They want to learn why they can only get vermillion snapper or grouper during certain times of the year. This is really about building community connections and helping people understand where their food comes from.”

THE OFFICE. Fisherman Mark Marhefka of Abundant Seafood meets his customers at a Shem Creek dock. PHOTO/GRACE BEAHM

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By the mid-18th century, a group of “fishing Negroes” had a near monopoly on fishing in waters around Charleston, using their skills to supply their masters with seafood, sell the surplus in city markets, or trade with other slaves.

In 1770, the South Carolina legislature acknowledged, “The business of Fishing is principally carried on by Negroes, Mulattoes, and Mestizoes.”

A decade later, a French visitor noticed that the most popular local fish was blackfish, caught with hook and line by Africans in sailing canoes. At dawn, fishermen would arrive at the Charleston fishing banks 10 to 20 miles offshore and return with the midday wind. This flotilla of small boats eventually became known as the “Mosquito Fleet.”

Early in the 19th century, a French visitor near the banks noticed “twenty-five dugouts, each containing four Negroes who were having excellent fishing.” Every 10 minutes, he wrote, they would haul a 12-to-15 pound fish into one of their canoes.

At some point before the Civil War, however, northerners became successful fishermen in the Charleston area. By 1860, 15 New England “smacks”—ships fitted with wells to hold live fish—sailed south each autumn to Charleston and remained until May. A single smack could catch several thousand blackfish that were stored in partly submerged cages in coastal rivers and sold throughout the region.

Following the war, South Carolinians bought most of the New England smacks, and Charleston became an important seafood-trading center along the southern Atlantic seaboard for a time—until Savannah won the crucial railroad connections to lucrative northern seafood markets in the late 19th century.

Charleston’s “Mosquito Fleet”
sailed their small fishing canoes out of the harbor every morning until a 1940 hurricane destroyed most of the boats. The fleet never recovered. After World War II, some of the men found jobs on the newer diesel-powered boats that trawled for shrimp.

For hundreds of years, the Gullah people—slaves and their descendants who lived primarily along coastal rivers and on sea islands—created or enriched the lowcountry’s seafood recipes and flavors. They supplemented their diet and income by oystering, shrimping, crabbing, and fishing.

Gullah cooks made seafood dishes (shrimp and grits, Frogmore stew, and she-crab soup) by blending European, African, and North American ingredients and recipes.

A common lowcountry dish is a pilau (pronounced “perlow” by the Gullah people), a kind of stew.

To make a pilau, a cook heats a broth fattened by salted pork, shrimp, or oysters. Once the broth is simmering, long-grained rice is added—two parts liquid to one part of rice by volume—and often the cook also puts in field peas, greens, or other ingredients. The pot is then covered, the rice steamed until nearly dry.

Hoppin’ John is a pilau of rice, field peas, pork, and sometimes greens that many South Carolinians eat for good luck and prosperity on New Year’s Day.

“You name the pilau after what you put in it,” Emory Campbell, former chairman of the Gullah/Geechee Cultural Heritage Corridor Commission, once said. “If you put oysters in, that was an oyster pilau; put in shrimp, that was a shrimp pilau.”

TO MARKET. In the 1920s, some Mosquito Fleet fishermen replaced or supplemented sails with one- or two-cylinder gasoline engines, landing their catch at Adger’s Wharf on the Cooper River.

PHOTO/THE CHARLESTON MUSEUM


S.C. Sea Grant Extension Program Fisheries/Living Marine Resources. www.scseagrant.org/Content/?cid=43

Seafood Choices Alliance. www.seafoodchoices.com

SILO—Sea Islands Local Outlet. www.silo-beaufort.com

Slow Food—Slow Fish. www.slowfood.com/slowfish

South Atlantic Fishery Management Council. www.safmc.net

South Carolina Aquarium’s Sustainable Seafood Initiative. www.scaquarium.org.SSI

South Carolina Dept. of Natural Resources’ Saltwater Fisheries Regulations. www.dnr.sc.gov/regs/saltwaterregs

South Carolina MarketMaker™. sc.marketmaker.uiuc.edu

South Carolina Seafood Alliance. www.scseafood.org

Walking Fish, a community-supported fishery in North Carolina. www.walking-fish.org


Wild American Shrimp. www.wildamericanshrimp.com
Consortium receives $1.28M for coastal and ocean research

The National Sea Grant College Program awarded $1.28 million to the S.C. Sea Grant Consortium to support the first year of its research, extension, communications, and education efforts for 2012-2014. Ten peer-reviewed research projects were selected to address critical issues related to coastal and ocean resource use, management, and conservation. Details of each project are posted in the Research Section of the Consortium’s website at www.seagrant.org/Research. For more information, contact Rick DeVoe, executive director, at (843) 953-2078.

HAZARD RESILIENCE IN COASTAL COMMUNITIES

- Observational and Modeling Studies to Benefit the Management and Selection of Borrow Sites for Beach Nourishment in South Carolina. Kehui Xu and Ansley Wren, Coastal Carolina University. This study aims to predict infill rates of borrow pits used for South Carolina beach nourishment projects based on expected borrow-area placement and design.

SUSTAINABLE COASTAL DEVELOPMENT AND ECONOMY

- Green Infrastructure Design for Stormwater Management in Coastal South Carolina: An Assessment of Eco-Hydrological Function. Anand Jayakaran, Clemson University. Researchers will study the degree to which rain gardens and other vegetative practices can reduce stormwater volume and improve water quality in landscapes where shallow water tables and interactions between surface and groundwater are prevalent.
- Assessing Aeration as a Means of Improving Stormwater Pond Performance and Reduced Organic Loading to the Coastal Zone. Erik Smith, Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina. This study focuses on the use of aerating fountains in stormwater ponds as an alternative to chemical treatment in limiting phytoplankton growth and associated production of biological oxygen demand.
- Understanding Demand for Value-Added Products and Services Associated with For-Hire Boat Trips on the South Carolina Coast. Robert Brookover and Laura Jodice, Clemson University. Researchers will explore the potential for charter-boat operators to expand their knowledge and customer base to include tours that address marine ecology, fisheries management, history and culture, and offshore energy development.
- Examining Capacity for a Cooperative Seafood Tourism Trail as a Value-Added Marine Resource-Based Recreation and Tourism Product on the South Carolina Coast. Robert Brookover, Clemson University. Researchers will address the strengths, weaknesses, opportunities, and problems associated with a potential formation of a seafood-related tourism trail on the South Carolina coast.
- Coastal Livelihoods and the Local Sense of Place: Assessing Social-Ecological Relationships and Environmental Values in the Face of Demographic Changes in Mount Pleasant, Awendaw, and McClellanville, South Carolina. Annette Watson, College of Charleston. This study will develop common indicators that community leaders can use to track changes in coastal livelihoods and local sense of place in rural areas and recently suburbanized places experiencing rapid development.

SUSTAINABLE FISHERIES AND AQUACULTURE

- Development of a Novel Genetic Approach to Rapidly Detect and Quantify Fish Eggs of Economically Important Species: A New Tool for Fisheries Management. Dianne Greenfield, Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina. This study aims to develop a rapid, cost-efficient, and novel molecular tool that will facilitate fish egg identification and quantification using the economically important species red drum (Sciaenops ocellatus) as the target organism.
- Managing Reproductive Behavior in Fisheries and on Fish Farms: A Joint N.C./S.C. Sea Grant Project. Robert Chapman, S.C. Department of Natural Resources. Researchers will look for patterns of ovarian gene expression associated with high and low egg quality in striped bass, examining specific physiological functions that are impaired and point the way toward changes in husbandry practices that can optimize egg quality.
- Development of a Sustainable, Minimal-Water Exchange, Poly-
and several partners have developed an online Community Resource Inventory (CRI) mapping tool for South Carolina. The tool has been piloted in Georgetown County, and is currently being expanded to include all eight coastal counties in S.C.

The CRI can be used to overlay data layers with U.S.G.S. topographic maps, satellite imagery, and street maps. No GIS software or training is needed. Current data categories include Water Quality, Planning and Zoning, and Flood Zones.

As needs are identified, more categories and data layers will be added. Other partners include the S.C. Nonpoint Education for Municipal Officials program, Clemson University’s Baruch Institute and Carolina Clear program, and the North Inlet-Winyah Bay National Estuarine Research Reserve.

To access the CRI tool, visit www.scseagrant.org/Content/?cid=42. Contact April Turner at (843) 953-2073 for more information about this and other programs provided to coastal communities.

New web application showcases low-impact development projects

The Low Impact Development (LID) Atlas for South Carolina is a web application highlighting innovative LID projects that 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

THE COASTAL AND OCEAN LANDSCAPE

• Consequences of Altered Temperature Regimes on the Reproduction, Survival, Growth, and Interactions of Two Key Estuarine Fauna. Juliana Harding, Coastal Carolina University.

Researchers will study three decades of historical measurements and data from new field experiments to learn how patterns, directions, rates, and mechanisms of change in oyster and goby populations occur as estuarine water temperature rises.

Municipal Officials (NEMO) program, South Carolina NEMO, S.C. Sea Grant Consortium, and Clemson University, the atlas contains detailed information on 82 projects across South Carolina.

View the LID Atlas and visit the Coastal Communities web page at www.scseagrant.org/Content/?cid=42 for more program activities.

Community Resource Inventory tool available online

The S.C. Sea Grant Consortium

Rain gardens soak up stormwater and reduce groundwater pollution.
PHOTO/S.C. SEA GRANT EXTENSION PROGRAM

This CRI screenshot shows Georgetown County zoning and shellfish monitoring stations.
2012 Land Grant and Sea Grant National Water Conference
Portland, Oregon
May 20-24, 2012

Water scientists, engineers, educators, and managers can share knowledge and ideas, and identify and update emerging issues. The conference is hosted by a team from Land Grant and Sea Grant institutions around the nation, in cooperation with national program leaders from the U.S. Department of Agriculture and National Oceanic and Atmospheric Administration. For more information, visit www.usawater-quality.org/conferences/2012.

The Coastal Society’s 23rd International Conference
Miami, Florida
June 3-6, 2012

Join forces with your colleagues in an international society that addresses technical, policy, educational, and management issues that relate to coastal areas. This conference will include workshops, field trips, poster sessions, and concurrent sessions that will help foster dialogue, forge partnerships, and promote communication and education on coastal issues. For more information, visit www.thecoastalsociety.org.

EnergyOcean International Conference and Exhibition
Boston, Massachusetts
June 19-21, 2012

Hundreds of industry stakeholders will unite for EnergyOcean International, an educational platform and networking forum for the industry. Conference delegates will learn of the latest technological advances, investment opportunities, regulatory issues, and planned and implemented projects around the world. For more information, visit www.energyocean.com.

Subscriptions are free upon request by contacting: Annette.Dunmeyer@scseagrant.org

ATTENTION SCHOOL TEACHERS! The S.C. Sea Grant Consortium has designed supplemental classroom resources for this and past issues of Coastal Heritage magazine. Coastal Heritage Curriculum Connection, written for K-12 educators and their students, is aligned with the South Carolina state standards for the appropriate grade levels. Includes standards-based inquiry questions to lead students through explorations of the topic discussed. Curriculum Connection is available on-line at www.scseagrant.org/education.