

# Annual Report

Program Highlights from the Mississippi-Alabama Sea Grant Consortium



## Mississippi-Alabama Sea Grant supports cutting-edge research, outreach, education

The National Sea Grant College Program engages citizens, scientists, organizations and governments to sustain and enhance the vitality, value and wise use of the nation's coastal resources. Administered and supported by the National Oceanic and Atmospheric Administration (NOAA) and implemented through leading universities in 30 coastal, Great Lakes and island states, Sea Grant provides unique access to research-based knowledge and expertise. This federal-state partnership supports research, extension, outreach and education programs that generate, translate and deliver cutting-edge, unbiased information to help address the most complex coastal issues and the most promising coastal opportunities.

The Mississippi-Alabama Sea Grant Consortium (MASGC) has nine members: Auburn University, Dauphin Island Sea Lab, Jackson State University, Mississippi State University, University of Alabama, University of Alabama at Birmingham, The University of Mississippi, The University of Southern Mississippi (USM) and University of South Alabama. USM is the fiscal host for the program, and MASGC's adminis-

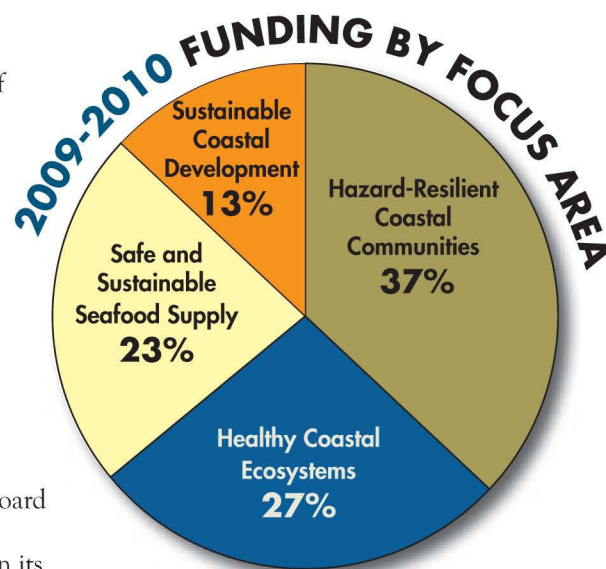
trative office is located at USM's Gulf Coast Research Laboratory in Ocean Springs, Miss. Extension offices are located at the Auburn University Marine Extension and Research Center in Mobile, Ala., and at Mississippi State University's Coastal Research and Extension Center in Biloxi, Miss. MASGC also has a nature-tourism specialist housed at Gulf Shores & Orange Beach Tourism in Gulf Shores, Ala.

Director LaDon Swann leads the MASGC team with input from the Board of Directors and Advisory Council.

MASGC concentrates its efforts on its focus areas: hazard-resilient coastal communities; healthy coastal ecosystems; safe and sustainable seafood supply; and sustainable coastal development.

Funding for MASGC comes from several sources, and NOAA provides the majority of support.

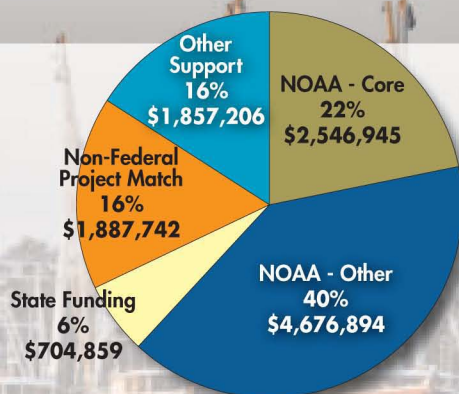
MASGC receives core funding from NOAA through the National Sea Grant College Program. MASGC staff also secures



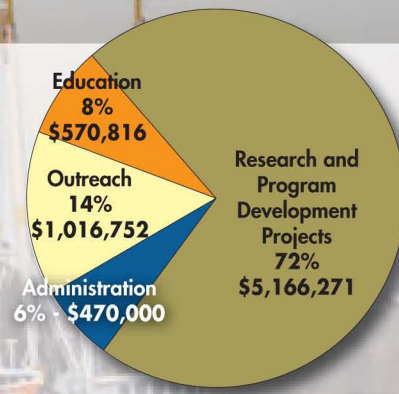
other NOAA funding through additional grants. In 2009 and 2010, NOAA supplied 22 percent of the MASGC budget through core funding and 40 percent through other funding. State funding from Mississippi and Alabama provided 6 percent. Non-federal project matching funds made up 16 percent. And, other support, such as sponsorships, leveraged funds and non-NOAA grants, supported 16 percent of the budget.

### BUDGET SUMMARY

Mississippi-Alabama Sea Grant Consortium funding sources and spending priorities from Feb. 1, 2009, to Jan. 31, 2011.



**Sea Grant Funding**  
Total: \$11,673,646



**Breakdown of NOAA Funding**  
Total NOAA Funding: \$7,223,839



# Impacts

## How MASGC makes a difference.

MISSISSIPPI-ALABAMA SEA GRANT CONSORTIUM research, outreach and extension reported the following impacts for 2009-2010.

### HAZARD-RESILIENT COASTAL COMMUNITIES

#### *Social networking site builds capacity for hazard events*

Coastal communities that previously did not discuss their storm preparation plans are now regularly sharing resources on storm preparation and recovery through a social networking website designed for local decision makers and coastal resource managers.

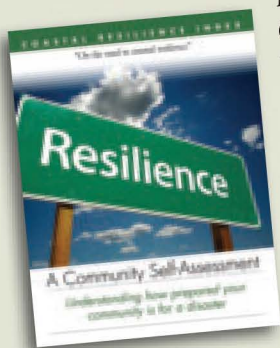
Twelve coastal communities were trained in how to navigate the online networking site ([stormsmartconnect.org](http://stormsmartconnect.org)). Four of these communities created a group for their municipality to post updated resources for coastal residents.

Communities that usually do not contact one another about issues such as Community Rating System points and requirements (which can help lower insurance rates) are now helping each other to be successful in the program.

#### *Self-assessment helps communities identify vulnerabilities*

Sixteen coastal communities in Florida, Alabama, Mississippi, Louisiana and Texas completed the Coastal Community Resilience Index. The Resilience Index was created as a self-assessment tool to provide community leaders with a simple and inexpensive method of predicting if their community will reach and maintain an acceptable level of functioning and structure after a disaster.

The self-assessment helped communities identify strengths and vulnerabilities prior to future storm events.



#### *South Mississippi is building hazard-resilient communities*

Through education and outreach, the Southern Mississippi Planning and Development District is working with jurisdictional officials, floodplain managers, elected officials and the general public to heighten awareness of the need to become more hazard-resilient and to assist officials in applying to or enhancing their participation in the Community Rating System (CRS) program and its recommended activities.

Since this project was initiated, two coastal Mississippi counties (Stone and Hancock) have applied for the CRS program, and one additional county (Jackson) is considering an application to participate.

#### *Parish saves \$1.3 million using financial health storm program*

A \$20,000 project that examined the financial health of parishes and coupled it with probability of potential storm-related costs resulted in a cost savings of \$1.3 million in interest expenses in Tangipahoa Parish, Louisiana. Measuring the expected cost of future natural disasters helped decision makers better identify proper levels of emergency funds and insurance-like tools their community needs to be more financially resilient to the next tropical natural disaster.

### HEALTHY COASTAL ECOSYSTEMS

#### *Master Naturalists provide training to thousands of residents*

Mississippi Master Naturalists are volunteers who have completed a 40-hour education course that focuses on ecology, natural history, water quality and more. As a component of



*Students learn about items found on the beach of a barrier island.*

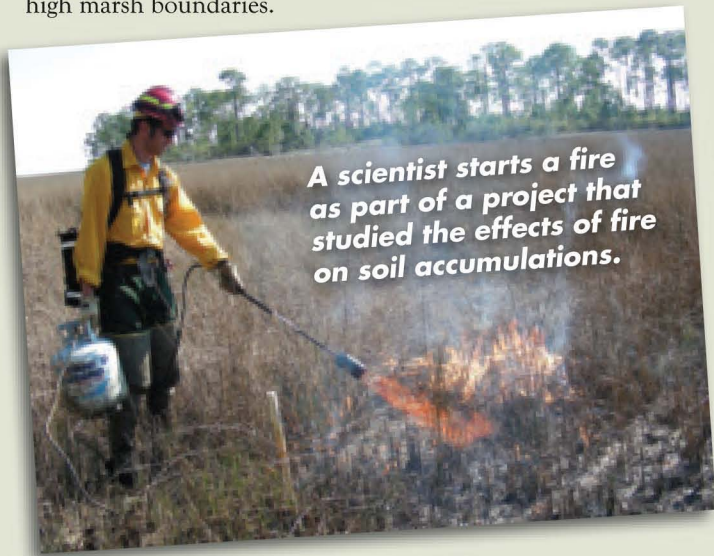
their yearly certification requirements, they conducted a variety of research, educational and outreach projects, such as helping with conference and workshop registration, education booths and events like Bugfest, the Mullet Festival and Cranefest. They also participated in tree giveaways, dune restoration projects, water-quality testing and other natural-resource-based events. They provided 910 hours of training for more than 4,100 coastal residents. This volunteer program increases environmental literacy and expands outreach capabilities in restoring and protecting coastal ecosystems.





### *Hurricane and fire interactions inform management plans*

Based on Sea Grant-funded research, managers at the Grand Bay National Estuarine Research Reserve will now consider marsh location and elevation in their research programs and fire prescriptions. They also will modify their practices to take into account the presence of wrack along potentially more-vulnerable high marsh boundaries.



In a Sea Grant-sponsored project, researchers worked to assess the interactive effects of prescribed fire and hurricanes on a black needlerush marsh. High marsh areas were more vulnerable to fire than other marsh areas because they accumulated highly combustible wrack after hurricanes and the plants were slower to recover following a fire. This study was the first to document fire effects in a Grand Bay marsh, and it will serve as a baseline for an emerging research program on marsh fires.

### *Nature-tourism workshops result in use of sustainable practices*

Three workshops titled “The Business of Nature” were conducted in Baldwin County, Alabama. Sixty-two participants learned about the economic impact of nature tourism and the value of good stewardship practices on Alabama’s Gulf Coast. Three nature tour operators who participated in the Business of Nature workshops and training sessions taught at least 16,000 tourists sustainable wildlife viewing practices and promoted stewardship of healthy ecosystems on the Alabama Gulf Coast.

### *Volunteers grow oysters, improve water quality*

Water quality in Mobile Bay was improved when 62 coastal residents invested 510 volunteer hours raising 45,000 oyster gardeners for restoration and enhancement of degraded sites in the bay. These oysters filter fed up to 4 gallons per hour, equal to 6.5 Olympic swimming pools per day. The oyster gardening volunteers created 2.2 acres of habitat.

### **SAFE, SUSTAINABLE SEAFOOD SUPPLY**

#### *Electronic logbooks provide fishery managers with effort data*

MASGC extension personnel worked with the shrimping industry to deploy Global Positioning System (GPS) transponders on selected vessels operating in the Gulf of Mexico. Data from the vessel-tracking system, GPS monitoring and observers were integrated with data obtained from observers to evaluate existing bycatch and fishing mortality estimates. NOAA Fisheries and state regulatory agencies are using these direct measures of fishing effort to monitor red snapper bycatch in the shrimping industry.

#### *Energy-efficient trawl gear saves fishermen money*

In partnership with Texas Sea Grant and the Gulf and South Atlantic Fisheries Foundation, Inc., MASGC extension personnel continued to promote the use of energy-efficient trawl gear in the Gulf shrimp fishery. They were able to document a 2-gallon-per-hour fuel savings by using Sapphire™ trawl webbing compared to traditional nylon webbing. Ten boat owners switched to the new gear, saving them each an estimated \$45,000 per year.

#### *Sea Grant helps shrimp farmers improve shrimp survival*

MASGC-funded research results have been transferred to shrimp farmers to improve on-site acclimation of post-larval shrimp, resulting in better survival during the production season. Farmers increased their production at harvest from an average of 2,500-2,700 pounds/acre a couple of years previous to greater than 3,000 pounds/acre in 2009 or a 10- to 20-percent increase in production.

Alabama producers are now more aware of the effects of shifting temperature and salinity and their effects on shrimp survival.

#### *Sound information will support ecosystem-based approaches*

The Gulf of Mexico Research Plan effort included an examination of more than 100 existing strategic plans, administration of a survey that had more than 1,200 responses and development of five regional workshops. More than 200 organizations participated in the process.

#### *Research plan guides regional research initiative*

The four Gulf of Mexico Sea Grant College programs coordinated the development of the Gulf of Mexico Research Plan (GMRP), which is a regional plan that identifies, prioritizes and addresses research needs. It bridges the gap between national research planning and local research plans and helps groups mobilize to address regional needs through collaborative RFPs and partnerships.

Several groups that fund research developed a joint grant competition to address priorities identified in the GMRP. The partners supported approximately \$1.4 million in research and outreach that addressed the GMRP-identified theme “sea-level change, subsidence and storm surge.”



# MASGC connects with communities, industries

MASGC's outreach and extension specialists work to make people aware of MASGC-funded research and its applications. It also supports education programs for K-12 teachers and students.

In 2009, MASGC supported the Environmental Studies Center in Mobile, Ala., the Dauphin Island Sea Lab Discovery Hall Program on Dauphin Island, Ala., and The University of Southern Mississippi Gulf Coast Research Laboratory Marine Education Center in Ocean Springs, Miss.

MASGC has extension and outreach personnel located in Biloxi and Ocean Springs in Mississippi and in Mobile and Gulf Shores in Alabama. Here are some of the extension, outreach and education team's 2009 accomplishments:

- Twenty-one people received Hazard Analysis and Critical Control Points certification as a result of outreach program training sessions.
- MASGC activities resulted in the restoration of 3.7 acres of degraded ecosystem.
- Two resource managers used ecosystem-based management approaches as a result of Sea Grant activities.
- Three hundred eighty-five formal and informal educators took part in professional development workshops offered by MASGC-supported programs.
- Mississippi Master Naturalists provided 910 volunteer hours of service.
- Fifty-one oyster gardeners grew 45,000 oysters for restorations.
- Approximately 100 high-school students participated in the Mobile County Grasses in Classes program and restored 1.5 acres of marsh with native vegetation.
- MASGC extension specialists facilitated acceptance and delivery of two greenhouses to K-12 aquaculture programs.
- Under the leadership of MASGC, the Alabama Waterfront Study Committee developed recommendations to the Alabama Legislature.
- Sixty-four nature tourism businesses were identified in Baldwin and Mobile counties in Alabama. And at least 10 were identified on the Mississippi Gulf Coast through surveys and face-to-face meetings.

## EDUCATION AND OUTREACH ACTIVITIES

### STUDENTS

NUMBER

Master's/Juris Doctor students supported.....	15
Ph.D. students supported.....	9

### K-12

K-12 students reached through MASGC educators or MASGC- trained teachers.....	7,420
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### ADULT TRAINING PROGRAM

NUMBER OF TRAININGS/ PRESENTATIONS      NUMBER OF PARTICIPANTS

Sea Grant-sponsored seminars, workshops and symposia.....	51	2,116
Public presentations.....	100	4,789

*Students collect volunteer-raised oysters to plant as part of the oyster gardening program.*





# Grant competitions identify top-quality research

Research and its application support many of MASGC's efforts. Every two years, MASGC releases a request for proposals and receives project ideas from researchers. Scientists, technical review panels and the MASGC Advisory Council put research proposals through a rigorous technical and relevancy review before grants are awarded.

Some funding also is available to meet immediate research needs throughout the two-year funding cycle, and MASGC joins with the other Gulf programs to fund regional research. MASGC also runs other grant competitions.

In 2009, MASGC received 52 proposals in two grant competitions. Seven projects from 12 institutions were funded.

## PROJECTS

This table shows ongoing multi-year projects and new projects that began in 2010. The information includes names of project leaders, their affiliations and funding amounts, including matching funds. Project funding totals include two years of funding unless otherwise noted. Eight projects from the 2008-2010 funding cycle were still open as of Jan. 31, 2011.

### EXTENSION, OUTREACH AND EDUCATION

#### *Mississippi-Alabama Sea Grant Outreach Program.*

Dave Burrage, Mississippi State University; Stephanie Showalter, The University of Mississippi; and Melissa Schneider, The University of Southern Mississippi.  
\$3.15 million (four years)

#### *MASGC Educational efforts at the GCRL Marine Education Center, the Dauphin Island Sea Lab and the Environmental Studies Center.*

Christopher Snyder, The University of Southern Mississippi; David L. Scott, Environmental Studies Center; and Tina Miller-Way, Dauphin Island Sea Lab.  
\$751,741 (four years)

#### *BWET – Shifting Baselines: Watershed connections to landscape changes.*

Jessica Kastler, The University of Southern Mississippi.  
\$362,177 (three years)

### HEALTHY COASTAL ECOSYSTEMS

#### *Residence time as a factor controlling harmful algal blooms and fecal coliform bacteria in Little Lagoon, Alabama.*

Hugh L. MacIntyre, Dauphin Island Sea Lab, and Alice C. Ortmann and Kyeong Park, University of South Alabama.  
\$441,549

#### *2010-2011 Gulf of Mexico Alliance nutrient reduction campaign for social marketing consultation to reduce nutrient runoff into the Gulf of Mexico through educating homeowners on proper lawn fertilization techniques.*

Jack Wilbur, Social Marketing Consultants.  
\$20,000

### REGIONAL

#### *Enhancing community-based habitat restoration in the Gulf of Mexico through science and assessment.*

Steve Sempier, MASGC, and Gulf Sea Grant College Programs.  
\$626,483 (one year)

#### *Planning, prioritizing and implementing Gulf of Mexico regional marine research and information needs: 2006-2011.*

LaDon Swann, MASGC; Karl Havens, Florida Sea Grant; Chuck Wilson, Louisiana Sea Grant; and Bob Stickney, Texas Sea Grant.  
\$600,000 (five years)

#### *Hazard-Resilient Coastal Communities*

#### *Implications of takings law on innovative planning for sea-level rise in the Gulf of Mexico.*

Stephanie Showalter, The University of Mississippi; Timothy M. Mulvaney, Texas Wesleyan University School of Law; Richard J. McLaughlin, Texas A&M University-Corpus Christi; James G. Wilkins, Louisiana State University; Thomas K. Ruppert, Thomas T. Ankersen and Michael A. Wolf, University of Florida College of Law.  
\$605,204

#### *A parameterized climate-change projection model for hurricane flooding, wave action, economic damages and population dynamics.*

Jennifer L. Irish, James M. Kaihatu and Francisco Olivera, Zachry Department of Civil Engineering, Texas A&M University; Dawn Jourdan, Department of Urban and Regional Planning, University of Florida; and Zhong-Ren Peng, Department of Urban and Regional Planning, University of Florida.  
\$600,000 (regional project)

#### *NOAA Gulf of Mexico Coastal Storms Program.*

LaDon Swann, Auburn University, and Tracie Sempier, The University of Southern Mississippi.  
\$1.2 million (three years)

#### *Improving wave height prediction during barrier island overtopping.*

Bret M. Webb, University of South Alabama; Andrew Kenney, University of Notre Dame; and Spencer Rogers, University of North Carolina Wilmington.  
\$19,201 (one year)

#### *Gulf of Mexico oil spill rapid response.*

LaDon Swann, MASGC.  
\$58,875 (one year)

#### *A Deepwater Horizon education project for formal and informal educators around the Gulf of Mexico.*

Sharon Walker, Institute for Marine Mammal Studies.  
\$172,789 (one year)

### SAFE, SUSTAINABLE SEAFOOD SUPPLY

#### *Oyster farming in Alabama: Identifying most viable practices.*

William C. Walton, F. Scott Rikard and Terrill R. Hanson, Auburn University Department of Fisheries and Allied Aquacultures.  
\$97,366

#### *Farming the Fertile Crescent: Intensification of oyster culture in the northern Gulf of Mexico.*

William Walton, Auburn University, and John Supan, Louisiana Sea Grant.  
\$615,593  
(National Sea Grant Initiative, three years)

#### *Eliminating human-pathogenic Vibrio vulnificus from Gulf Coast oysters with high salinity depuration.*

William Walton, Cova Arias, M. Dougherty and Scott Rikard, Auburn University; and LaDon Swann, Mississippi-Alabama Sea Grant.  
\$219,580  
(National Sea Grant Initiative, two years)

#### *An engineered multi-trophic approach to minimizing effluent impacts from marine recirculating aquaculture systems.*

Reginald B. Blaylock and Patrick Biber, The University of Southern Mississippi; and Douglas G. Drennan II, Aquaculture Systems Technology, LLC.  
\$670,322 (National Sea Grant Initiative)

### SUSTAINABLE COASTAL DEVELOPMENT

#### *Decreasing nitrate loads to coastal ecosystems with innovative drainage management strategies in agricultural landscapes.*

Robert Kröger, Mississippi State University; Matthew T. Moore, USDA – Agricultural Research Service; and Jerry L. Farris, Arkansas State University.  
\$141,280

#### *Identifying flood-generating areas in 8-Mile Creek watershed through a novel approach.*

Latif Kalin, Puneet Srivastava and Charlene LeBleu, Auburn University.  
\$269,705

#### *Characterizing stormwater nitrogen inputs to Mississippi's coastal waters: A landscape approach.*

Kevin S. Dillon, The University of Southern Mississippi.  
\$151,529

#### *Fish and invertebrate community structure and food-web dynamics in tidal creeks in an anthropogenically fragmented, coastal landscape.*

Mark Peterson, The University of Southern Mississippi.  
\$18,730



# Annual Report 2009-10

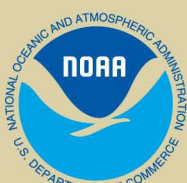
[www.masgc.org](http://www.masgc.org)

The Mississippi-Alabama Sea Grant Consortium covers two states and has several members. Consortium members include the following institutions:

- Auburn University
- Dauphin Island Sea Lab
- Jackson State University
- Mississippi State University
- The University of Alabama
- The University of Alabama at Birmingham
- The University of Mississippi
- The University of Southern Mississippi
- University of South Alabama

**MASGP-11-012**

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## MASGC receives honors in 2009

### MASGC-supported projects, people receive five awards

- Project SEA ICE (Special Enrichment Activities in Coastal Ecology) was named Best Environmental Course/Curriculum by the Environmental Education Association of Alabama's Best Environmental Education Programs Awards.
- MASGC Executive Support Associate Kay Bruening was awarded the Outstanding Staff Award from The University of Southern Mississippi Gulf Coast.
- Graduate Student Michael Stieber was awarded the Chad Smith Student Travel Grant for a presentation at the North American Society for Oceanic History, Steamship Historical Society of America and National Maritime Historical Society's Annual Conference for his presentation "Using Oral Histories of Waterfront-Related Pursuits in Bayou La Batre to Explain the Declining Industry."
- The University of Mississippi Environmental Law Moot Court team came in 9 of 84 teams in the 22nd Annual National Environmental Law Moot Court Competition.
- High School Student Steven Denning won first place at local, regional and state science and engineering fairs in Mississippi for his project "Can Oysters Save the Coast?" He also won the Mississippi Department of Marine Resources' Excellence in Marine Environmental Science Award.



*Kay Bruening*



*Michael Stieber*