2007-2008

Annual Report

Program Highlights from the Mississippi-Alabama Sea Grant Consortium

Sea Grant Mississippi-Alabama

Funding sources support research, outreach

The Mississippi-Alabama Sea Grant Consortium funds its work through support from the National Oceanic and Atmospheric Administration (NOAA), Mississippi and Alabama state funding, non-federal project match money required for most projects, external grants, partner contributions and salary support from other agencies and organizations.

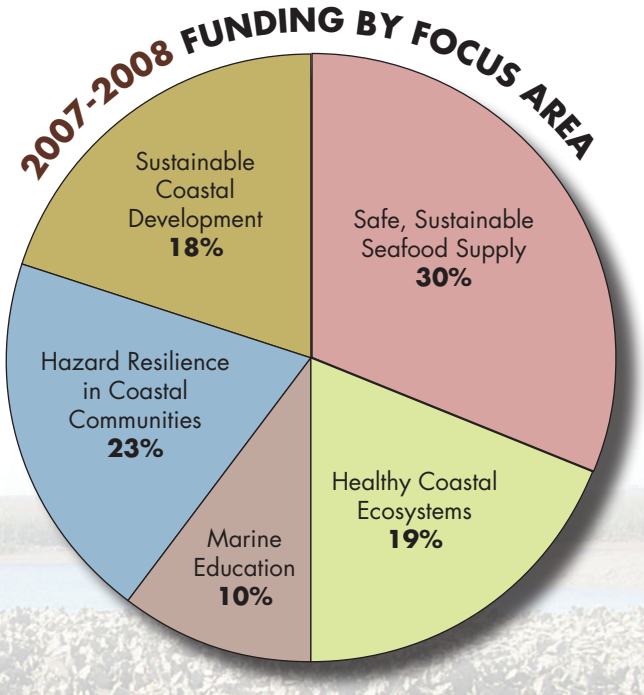
MASGC funding is centered around its newly defined five focus areas: hazard resilience in coastal communities; healthy coastal ecosystems; marine education; safe and sustainable seafood supply; and sustainable coastal development.

MASGC operated on about $7.4 million from Feb. 1, 2007, to Dec. 31, 2008. MASGC's budget allocation from NOAA Sea Grant was about $2.6 million. The additional $2.2 million in NOAA funding came from other NOAA grants, such as the Gulf of Mexico Coastal Storms Program and the Gulf of Mexico Regional Research Plan project.

Cost-recovery funds, such as sponsorships or additional grants obtained to support projects, brought in $277,234 or 4 percent.

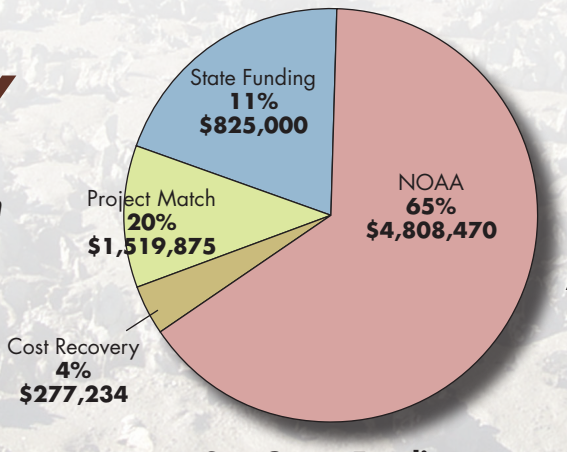
In 2007-08, MASGC worked with 413 partners, which included local, state, regional and federal government agencies, non-government organizations, industry and business entities, schools and other Sea Grant College Programs.

The National Sea Grant Law Center interprets marine laws and policies, coordinates ocean and coastal law research and disseminates information to coastal and ocean policy-makers.



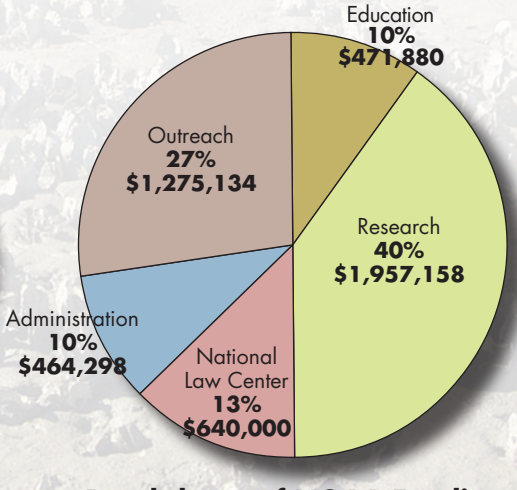
BUDGET SUMMARY

Mississippi-Alabama Sea Grant Consortium funding sources and spending priorities from Feb. 1, 2007, to Dec. 31, 2008.



Sea Grant Funding

Total: $7,430,579



Breakdown of NOAA Funding

Total NOAA Funding: $4,808,470

Impacts

How MASGC makes a difference.

MISSISSIPPI-ALABAMA SEA GRANT works to solve real-world problems using the local expertise found in university systems. MASGC recently supported projects that had the following impacts.

Waterfront community plans for improved future

MASGC funding helped develop a long-term strategic and implementation plan for Dauphin Island, Ala. The strategic plan led to major changes in the town's economic growth, cultural tradition and environmental stewardship by increasing nature-based tourism, developing the working waterfront district and replacing impermeable surfaces with pervious surfaces to reduce the impact of development.

Scientists develop ways to farm live bait

MASGC researchers developed techniques to produce baitfish as a sales product. Inland bait producers for the project sold nearly $1,000 in sales of bull minnows to dealers participating in bait auctions. An estimated total of $6,000 in retail sales was generated from marine baitfish sales associated directly with the project. Cultured baits will provide incomes and employment opportunities and complement management strategies for natural populations.

Research enhances sea urchin farming

MASGC researchers developed feeds and inshore capable aquaculture systems for growing sea urchins. The produced sea urchins are high quality and can be used for the sushi market. The feed is being developed for commercialization. This has created a job to assist in the development of the feed.

Plan charts future of marine research

The Gulf of Mexico Research Coordinator created a draft Gulf research plan by analyzing 117 strategic plans and input from 1,582 surveys and 300 people who attended workshops to help form the plan. Researchers and resource managers used information from this strategic planning process to help formulate their own strategic plans. This effort focuses on defining research areas, reducing duplication and facilitating partnerships.

Nursery grows from marsh plant project

MASGC-supported research on improving methods for growing and planting marsh plants has allowed local researchers to start a native marine and marsh plant nursery to supply healthy plants to the local department of marine resources and other groups interested in restoration. This has created one full-time position for a nursery technician.

More shrimping effort is recorded

Fishery managers now have access to new information from the Asian fishing community on when, where and for how long fishermen use specific areas in the Gulf of Mexico. This information can help improve management of shrimp populations. MASGC extension personnel assisted LGL Ecological Research Associates in expanding the number of shrimpers in Mississippi and Alabama who use electronic logbook technology to 74.

Supercritical carbon dioxide improves safety for shellfish consumption

Scientists improved seafood safety using supercritical carbon dioxide. Their technology was licensed to a new startup company called Triton Biopharma, which is in negotiations with seafood and other industries, such as Kraft foods, to apply the new method to increase the safety of seafood products on a commercial scale.

Legal research makes decisions possible

Law and policy analysis at the National Sea Grant Law Center led to the Hawaii Department of Business, Economic Development and Tourism dispelling "an urban myth" about liability that had prevented implementation of a marine debris retrieval program. The Law Center also helped save thousands of dollars and hundreds of hours by compiling legal information and policy analysis on "Michigan's New Ballast Water Regime: Navigating the Treacherous Waters of States' Rights, Federal Preemption, and International Commerce." Additional Law Center analysis about conflicts of interest dealing with 501(c)(3) organizations and recipients of federal funds allowed members of the Wild American Shrimp Inc. Board of Directors to remain on the board.

Technology detects *Vibrio, Salmonella*

By combining various innovative genetic methods of detecting disease-causing bacteria in shellfish, Sea Grant-funded researchers improved the ability to detect pathogens *Vibrio* and *Salmonella* and made the process more efficient. These improved and more efficient methods of rapidly detecting pathogens led to better monitoring capabilities and safer consumption of shellfish.

Study shows nature attracts dollars

MASGC is using economic data gathered from local nature festivals to highlight the importance of ecotourism to local decision-makers. The total expenditures impact of two local nature festivals was $293,559, which created employment in the areas that was equivalent to 12 jobs during the festival period. Event organizers used the study to strengthen support from communities.

Inventory puts working waterfronts on map

A database and report created a baseline inventory of existing infrastructure of working waterfronts in Alabama and will allow the coastal communities to track changes over time. The aerial imagery, GPS equipment and expertise for this database would cost $500,000 if created by a private consulting firm.

Communities increase storm preparedness

In cooperation with NOAA Coastal Services Center, MASGC hired a coastal storms outreach coordinator to work with communities in Mississippi, Alabama and southeastern Louisiana to help them better prepare and recover after storms. A Gulf Storms Web site (masgc.org/gulfstorms) was created as a source of Gulf hurricane information. The Coastal Community Resilience Index, a tool to help communities identify their strengths and weaknesses in preparedness and recovery, was piloted tested. A $500,000 grant program also is under way to help communities create tools and services to enhance resilience.

Genes forecast parasite outbreaks

Scientists identified genes important for oyster defense and resistance to outbreaks of the Dermo parasite. The genetic information can be used to forecast ecosystem health using genome expression signatures as indicators. It also allows for improved predictions in oyster diseases.

Tool predicts storm impact on seagrass

Scientists created a forecasting tool to predict the impacts (low, medium or high) of hurricanes on the ecosystem services that seagrass beds provide. The tool will help resource managers prioritize restoration sites after hurricanes. Scientists also determined that Hurricane Ivan did not significantly affect the ecological functioning of three coastal lagoons.

Researchers assess estuarine populations

MASGC-funded scientists used advanced statistical techniques to analyze archived fisheries data for Mississippi and Alabama. The work is a starting point to understanding the incremental impacts of human population growth and industrial development on fisheries. The Mississippi Department of Marine Resources formed a committee to update sampling protocols and initiated a comprehensive program to address monitoring issues.

Sea Grant focuses on practical solutions to coastal issues

LaDon Swann, MASGC Director

The National Oceanic and Atmospheric Administration's (NOAA) Sea Grant College Program is a federal, state and local partnership that helps communities apply practical solutions to coastal issues through competitive research, graduate student training, K-12 education, extension and outreach. Sea Grant is NOAA's primary university-based research, extension, outreach and education program.

The strong connection between NOAA and university-based programs ensures that federal funding is directed toward solving coastal and marine issues at the local, regional and national levels.

The Mississippi-Alabama Sea Grant Consortium (MASGC) was created in 1972 and consists of nine consortium members in the bi-state region. Each member supports the MASGC by providing membership fees and non-federal match on most MASGC-supported projects.

The Alabama and Mississippi legislatures also provide funding. MASGC supports consortium members by sponsoring research, extension, outreach and education over the long term. MASGC grants are awarded through a rigorous merit-review process, which ensures high quality.

This 2007-2008 Annual Report provides highlights from a sampling of MASGC-supported programs.

Consortium includes nine university members

The Mississippi-Alabama Sea Grant Consortium covers two states and has nine members. They 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

MASGC trains marine-science leaders, workforce

In a time when the federal departments of commerce and education are predicting a future shortage of marine scientists, MASGC programs are providing funding for research efforts that also train future marine-science leaders.

MASGC supports students working on their undergraduate, graduate and doctoral degrees. It also supports K-12 education through programs for teachers, students and families.

Outside of universities and school classrooms, MASGC personnel work in their communities to develop programs that address difficult coastal issues, provide workforce training, help promote tourism, decrease nonpoint source pollution, prevent coastal erosion and increase survival of water-dependent businesses.

MASGC's strength is having its people on the ground (or on the docks). Employees live and play where they work.

The MASGC outreach program includes the extension, communications and legal programs. The extension program gives residents information and leadership on the wise use of resources. The communications program provides timely information about MASGC research, education and outreach. The Mississippi-Alabama Sea Grant Legal Program conducts research on marine laws and policies and disseminates the information to policymakers.

MASGC's education program, which includes the Environmental Services Center in Mobile County, Ala., the Dauphin Island Sea Lab in Dauphin Island, Ala., and the J.L. Scott Marine Education Center in Ocean Springs, Miss., implements educational programs for teachers and students in grades kindergarten through 12. MASGC outreach personnel also educate stakeholders in workshops, seminars and training programs.

Volunteers in MASGC-supported programs gave 2,400 volunteer hours in 2007.

The following tables include highlights of MASGC's outreach, education and extension programs.

2007 Publications

TYPE OF PUBLICATION	NUMBER
Peer-reviewed journal articles or book chapters	11
Fact sheets, brochures and posters	22
K-12 curricula	3
Theses/dissertations	4
Newsletters	45
Press releases	20
Media placement	81
Web sites	23
Known citations of MASGC journal articles/book chapters	53

Students collect marine samples for a Discovery Sea Camp project.

EDUCATION ACTIVITIES

COLLEGE LEVEL	NUMBER
Undergraduate students supported	25
Master's/Juris Doctor students supported	26
Ph.D. students supported	11

K-12 TRAINING PROGRAM	NUMBER OF TRAININGS	NUMBER OF PARTICIPANTS
K-12 teacher training	16	183
Programs for children/families	91	27,931

ADULT TRAINING PROGRAM	NUMBER OF TRAININGS/ PRESENTATIONS	NUMBER OF PARTICIPANTS
Sea Grant-sponsored meetings, workshops and conferences	61	1,785
Public presentations	959	1,066
Number of continuing education credits provided		116

MASGC takes science from research to application

One of MASGC's major roles is to support research and its application. Every two years, MASGC releases a request for proposals and receives potential project ideas from researchers. The proposals are peer-reviewed and evaluated by a technical review panel. The panel decides which projects are the strongest and best fit for Sea Grant's focus areas.

The panel scores the proposals and recommends projects for funding. Funding also is set aside for immediate research needs and projects that may surface during the funding cycle.

The following table shows which projects are being funded in 2008 and 2009, the project leaders and the level of funding. Funding amounts include Sea Grant and match funding.

ONGOING RESEARCH, EDUCATION AND OUTREACH PROJECTS

Hazard Resilience in Coastal Communities

Development of an innovative load transfer mechanism to reduce hurricane-induced failures in new and existing residential construction, *Arindam Gan Chowdhury, Amir Mirmiran and Emil Simiu, Florida International University, and Steve Cai, Louisiana State University, $300,000 (regional project)*

Modeling business return in New Orleans after Katrina: its implications for Gulf of Mexico economic recovery, *Nina Lam and Kelley Pace, Louisiana State University; Jim LeSage, Texas State University; and Richard Campanella, Tulane University, $300,886 (regional project)*

NOAA Coastal Storms Program Gulf of Mexico Pilot Cooperative Agreement, *LaDon Swann, MASGC, $879,600 (three years of funding)*

Healthy Coastal Ecosystems

Evaluating the role of restored black needlerush marsh *(Juncus roemerianus)* as a buffer of anthropogenic eutrophication of coastal systems: an isotope enrichment approach, *Just Cebrian, Dauphin Island Sea Lab, $300,307*

Quantifying the importance of benthic vs. pelagic trophic pathways to sport fish production in Mississippi Sound in support of ecosystem-based fisheries management, *Kevin S. Dillon and Richard Fulford, The University of Southern Mississippi, $25,766*

Effects of fire on water quality, plant production, and biogenic accretion in a *Juncus roemerianus* dominated marsh, *Julia A. Cherry, The University of Alabama, Tuscaloosa, and Christopher A. May, Grand Bay National Estuarine Research Reserve, $160,289*

The use of stable isotope ratios to link wastewater sources to effects on shellfish and human health, *Ruth H. Carmichael, Dauphin Island Sea Lab, $99,995*

***Ruppia maritima* restoration using seedlings in Bayou Cumbest, Grand Bay National Estuarine Research Reserve, Mississippi,** *Hyun Cho, Jackson State University, $17,242*

Use of passive acoustics to identify and characterize spotted seatrout spawning habitat in two Mississippi estuaries, *Eric Hoffmayer, Bruce Comyns and Jim Franks, The University of Southern Mississippi, $212,407*

Using stable isotopes to explore trophic connectivity in sharks in the northern Gulf of Mexico, *Sean Powers, University of South Alabama, $15,810*

The diversity and role of root-associated fungi in saltmarsh and seagrass plants and implications for restoration success, *Jinx Campbell, The University of Southern Mississippi, $213,781*

Marine Education

Mississippi-Alabama Sea Grant Outreach Program, *Stephanie Showalter, The University of Mississippi; Dave Burrage, Mississippi State University; and Melissa Schneider, The University of Southern Mississippi, $634,843*

B-WET – Shifting Baselines: Watershed Connections to Landscape Changes, *Jessica Kastler and Sharon Walker, The University of Southern Mississippi, $362,177 (three years of funding)*

Fisheries Extension – Strategies to engage the Asian constituency, *Dave Burrage, Mississippi State University, $119,774 (three years of funding)*

Educational Efforts at J.L. Scott Marine Education Center, Dauphin Island Sea Lab and the Environmental Studies Center, *Sharon Walker, The University of Southern Mississippi; John Dindo, Dauphin Island Sea Lab; and Lloyd Scott, Mobile County Schools, $226,998*

Safe, Sustainable Seafood Supply

Development of field guide resources for aquatic plants of the Mississippi Coast, *Hyun Jung Cho, Jackson State University, $17,241*

The interaction of salinity and temperature on growth of native and non-native shrimp species cultured in Alabama, *D. Allen Davis and Luke A. Roy, Auburn University, $211,535*

Characterizing individual and season variation in tissue-specific C, N, and S stable isotope ratios of spotted sea trout in support of proposals to use stable isotope data to quantify trophic pathways to sport fish, *Kevin S. Dillon and Richard Fulford, The University of Southern Mississippi, $25,766*

Assessment of supercritical CO_2 inactivation of oyster-associated bacteria, *Mark T. Hamann and Jiangnan Peng, The University of Mississippi, $24,130*

Assessment of depredation by bottlenose dolphins in the Northwest Florida and Alabama sport fishery, *Steve Shippee, University of Central Florida, and Randall Wells, Sarasota Dolphin Research Program of the Chicago Zoological Society, $80,000*

Conversion of seafood processing waste into triglycerides, a biodiesel feedstock, *Todd W. French, Rafael A. Hernandez and Hossein Toghiani, Mississippi State University, $195,356*

(Continued)

Sea Grant Mississippi-Alabama
MISSISSIPPI-ALABAMA
SEA GRANT CONSORTIUM
703 East Beach Drive • Ocean Springs, MS 39564

Science serving America's coasts

masgc.org
aquanic.org
masgc.org/gmrp

MASGC supports award-winning students

- **Jason Abernathy:** "National Animal Genome NRSP-8 Travel Award" (2007 and 2008)
- **Shalolin Wang:** "National Animal Genome NRSP-8 Travel Award" (2007)
- **Victoria Gibbs:** "Harold Martin Travel Award" from the University of Alabama at Birmingham (2007) and "Best Oral Student Presentation" Aquaculture America meeting in Orlando, Fla., (2008)

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RESEARCH, EDUCATION AND OUTREACH PROJECTS

(Continued from previous page)

Safe, Sustainable Seafood Supply

Development of an isothermal nucleic acid test with lateral flow detection for *Vibrio vulnificus*, *Ahim Bej, The University of Alabama at Birmingham, $15,437*

Preserving oral histories of water-front-related pursuits in Bayou La Batre, *Gregory Waselkov, University of South Alabama, $15,000*

The crustacean molt-inhibiting hormone receptor and induction of molting in blue crabs *(Callinectes sapidus)*, *R. Douglass Watson, The University of Alabama at Birmingham, $100,000*

Sea urchins are improved candidates for aquaculture and biomedical/ecotoxicological models, *Stephen Watts, The University of Alabama at Birmingham, $227,606*

Sustainable Coastal Development

Gulf Coast Design and Development Lab, *Michael Robinson, Auburn University, $61,000*

Will climate change cause wetland loss on the Mississippi Gulf Coast more than upland land-use/land-cover change within the next century? *Wei Wu, The University of Southern Mississippi, $15,000*

An interdisciplinary assessment of population growth and development impacts on the Fish River Basin coastal community, *Latif Kalin, Charlene LeBleu, Rebecca C. Retzlaff, Pan Susan and B. Graeme Lockaby, Auburn University, $281,833*

Regional Project

Planning, prioritizing and implementing Gulf of Mexico regional marine research and information needs, *LaDon Swann, MASGC; Jim Cato, Florida Sea Grant; Chuck Wilson, Louisiana Sea Grant; and Bob Stickney, Texas Sea Grant, $600,000*