

# Annual Report

2016-2017

Program Highlights from the Mississippi-Alabama Sea Grant Consortium

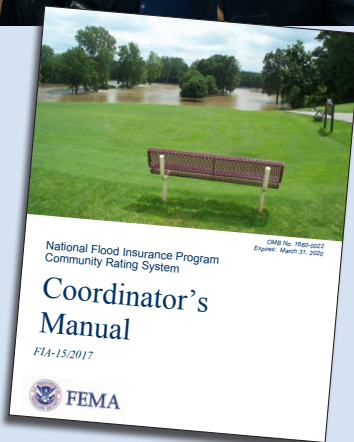
Sea Grant  
Mississippi-Alabama

## IMPACTS

The Mississippi-Alabama Sea Grant Consortium works to solve real-world problems using the local expertise found in university systems. MASGC research, outreach and education programs reported the following impacts for 2016-2017.



The MASGC outreach team worked extensively with local floodplain managers to craft continuing education activities, workshops and flood outreach projects. These efforts resulted in some communities securing Community Rating System credits and improving community ratings under the National Flood Insurance Program. MASGC saved coastal communities an estimated \$123,307 in flood insurance premiums.



green infrastructure techniques to minimize impervious cover in future developments.

## Research leads to more competitive, sustainable fish feed production

MASGC-supported researchers examined information on the efficacy and safety of crystalline taurine used in fish feeds and conducted research to fill knowledge gaps. They petitioned the Food and Drug Administration (FDA) and the Association of American Feed Control Officials (AAFCO) to amend the current taurine definition to include fish. The FDA and AAFCO approved the use of taurine on Jan. 18, 2017. Feed manufacturers can now include crystalline taurine in their formulation, further reducing use of fishmeal and other animal proteins to lower cost and improve sustainability of their feeds.

## Integrated program expands oyster farming industry in Alabama

Sea Grant-funded scientists, extension staff and legal staff created an integrated program on production methods and best management practices for oyster farming. Based on a survey of 2016 farms, nine of 13 permitted farms reported 18.1 acres of production with total annual sales of almost \$2 million. More than 2.8 million oysters were produced on 18.1 acres. The nine farms who responded to the survey employed 20 full-time employees and 10 part-time employees.



## City ordinances encourage Smart Growth practices

MASGC and the Mobile Bay National Estuary Program has facilitated the D'Olive Watershed Working Group (DWWG), a coalition of federal, state and local agencies, property owners, developers and commercial interests, since its inception. In 2016, the cities of Daphne and Spanish Fort adopted design guidance ordinances to encourage low-impact development/



## Thousands of students increase understanding of science, math

MASGC-supported environmental centers in Mississippi and Alabama (Dauphin Island Sea Lab, Environmental Studies Center and the Gulf Coast Research Laboratory) implemented programs for P-12 students. More than 16,000 students increased their environmental literacy and improved their STEM skills by participating in field-based education experiences at the centers.

## MASGC develops workforce through graduate education

Graduate education is a significant component of MASGC's annual budget. Graduates go on to land jobs in academia, industry and environmental non-profit organizations. During the 2016-2017 reporting period, two Ph.D. degrees and three master's degrees were awarded.



service. The program held a basic training course and certified 13 individuals. Current program participants documented a total of 2,090 volunteer hours.

## Living shorelines program saves residents money, preserves habitat

MASGC living shorelines education and extension efforts focused on educating resource managers and landowners on the site suitability, cost and benefits of current erosion control techniques. The efforts led to protection, restoration or enhancement of more than 3 linear miles of shoreline and saved two landowners more than \$40,000 in sustainable erosion control.

## Alabama volunteers grow oysters to help replant reef habitat

MASGC supports the Mobile Bay Oyster Gardening



Program, a volunteer-based project focusing on education and restoration of oyster reef habitat in Mobile Bay. In 2016, 90 volunteers at 45 sites grew 58,500 advanced stocker sized oysters for replanting degraded reefs. The oysters brought the total program restocking potential to 36.5 acres since its inception. The 2016 replanted oysters were sufficient

for restoration of 2.89 acres, valued at \$55,997.

## Mississippi Coastal Cleanup removes 14 tons of litter

The Mississippi Coastal Cleanup Program, coordinated by a Sea Grant extension specialist, was responsible for removing over 14 tons of litter



from the coastal environment and educating more than 2,500 volunteers about litter prevention. Volunteers contributed 7,467 hours collecting litter from coastal Mississippi beaches, waterways, wetlands and roads. The value of this volunteer effort exceeded \$145,681.

## Stewardship training increases knowledge, volunteer service

The Mississippi Master Naturalist Program is an organization of knowledgeable volunteers who help promote conservation and management of natural resources through education, outreach and



## Sea Grant shares oil spill science, reduces anxiety, uncertainty

Sea Grant shared facts and detailed explanations with industry leaders concerned about impacts of the 2010 Deepwater Horizon oil spill on their livelihoods. The leaders turned to Sea Grant for answers to their questions because they trusted Sea Grant as a source of science information based on previous relationships.



PERFORMANCE MEASURE	NUMBER
Fishermen, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities	3
Communities that implemented sustainable economic and environmental development practices and policies as a result of Sea Grant activities	5
Acres of coastal habitat protected, enhanced or restored as a result of Sea Grant activities	23
Resource managers who use ecosystem-based approaches in the management of land, water, and living resources as a result of Sea Grant activities	13
People engaged in Sea Grant supported informal education programs	179,427
Sea Grant-supported graduates who become employed in a career related to their degree within two years of graduation	6
Peer-reviewed journal articles	10

## Programs reach students, teachers, communities

MASGC's outreach and extension specialists work to make stakeholders aware of MASGC-funded research findings and their applications. Their work also helps identify information gaps and areas where new research is needed.

MASGC also supports STEM (science, technology, engineering and math) education programs for K-12 teachers and students at the Environmental Studies Center in Mobile, Alabama, the Dauphin Island Sea Lab Discovery Hall Programs on Dauphin Island, Alabama, and The University of Southern Mississippi Gulf Coast Research Lab's Marine Education Center in Ocean Springs, Mississippi.

Outreach staff (which includes extension, legal and communications programs) are located in Biloxi, Ocean Springs and Oxford, Mississippi, and in Mobile, Dauphin Island and Gulf Shores, Alabama.

Here are some of the program's education and outreach accomplishments for 2016-17:

- Provided volunteer opportunities to coastal residents whose contributions were valued at more than \$370,000.
- Secured two federal grants to assist local governments with funding and technical assistance to meet resilience needs.
- Deepened 150 high-school students' awareness of coastal and societal issues through the National Ocean Sciences Bowl.
- Created and shared 66 outreach products that translated complex research and legal issues and other coast-related topics.
- Developed and began to implement a work plan to address identified gaps in sea-level rise science and management.

- Developed an inventory of all continuously operating reference stations in the Gulf, which improved access to data and will increase accuracy and application of elevation and subsidence data in the northern Gulf of Mexico to address sea-level rise related issues.
- Conducted wage and employment surveys in Alabama and Mississippi that allowed seafood processing plants to apply for the H2B visa program and hire foreign workers to sustain seafood processing.
- Created and delivered oil spill science outreach products to thousands of people in the Gulf of Mexico region.



# RESEARCH ACCOMPLISHMENTS

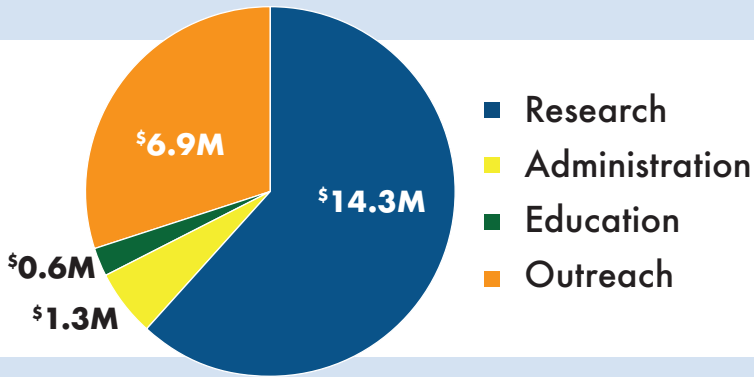


Mississippi-Alabama Sea Grant supports university-based research through a competitive process. During the 2016-17 reporting period, MASGC had more than 40 active research projects. Here are some of the accomplishments scientists reported from those projects:

- **Applied** statistical methods to understand the effect of the Community Rating System on National Flood Insurance Program participation rates and flood damage claims.
- **Developed** a technique to effectively kill invasive ciliates in copepod cultures resulting in a better, more cost-effective production method for copepods.
- **Determined** through surveys that more than 70 percent of coastal residents would be willing pay \$80-\$162 to preserve waterfront open space.
- **Developed** a science-based approach to increase efficiency and save government agencies thousands of work hours to estimate the population size of the Gulf menhaden fishery.
- **Led** the development of a red snapper experimental design to estimate reef fish abundance in a large marine ecosystem.
- **Developed**, tested and demonstrated proof-of-concept for a large-scale mark-recapture method to directly trace larval movement in situ under variable salinity conditions, making results broadly transferable to other systems.
- **Applied** data on oyster and pathogen co-occurrence to inform understanding of wastewater influence on local oyster farms.
- **Discovered** that the temperature of surface waters in the Pacific Ocean can influence seasonal weather patterns in coastal regions of Alabama and Mississippi. Year-to-year changes in these patterns may affect when farmers can plant crops in the spring as well as how dry the following growing season may be.
- **Discovered** a history of more extreme droughts prior to the 20th century for an important coastal waterway using tree rings and stream-flow data. This information will help resource managers better account for drought risk.
- **Determined** that easy-to-use fishing techniques involving tackle modifications and fish descenders increases the survival rate of caught fish and reduces negative interactions between bottlenose dolphins and recreational anglers.

# BUDGET

## Core and managed projects 2014-2017



The Mississippi-Alabama Sea Grant Consortium receives core funding in four-year cycles from the National Oceanic and Atmospheric Administration's National Sea Grant College Program. It also manages many additional grants and contracts.

For the 2014-2017 funding cycle, MASGC spent \$14.3M on research; \$6.9M on outreach; \$1.3M on administration; and about \$600,000 on education. (These numbers do not include matching funds.)

## FOCUS AREAS

Environmental Literacy and Workforce Development

Healthy Coastal Ecosystems

Resilient Communities and Economies

Sustainable Fisheries and Aquaculture

The Mississippi-Alabama Sea Grant Consortium is a bi-state program and has several member institutions. 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



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