

# Mississippi-Alabama Sea Grant Consortium



  
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# Mississippi-Alabama Sea Grant Consortium 2006-2008 Implementation Plan



**Science, Education, and Outreach  
Serving America's Coasts**

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## **Mississippi-Alabama Sea Grant Consortium 2006-2008 Implementation Plan**

The Mississippi-Alabama Sea Grant Consortium (MASGC) is one of only two bi-state programs in the National Sea Grant Network. The Consortium members include 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, and the University of South Alabama. The mission of MASGC is to enhance the sustainable use and conservation of ocean and coastal resources to benefit the economy and manage and protect the environment in Alabama and Mississippi.

The implementation process allows for adaptive learning and management as new information and resources become available and circumstances change. The strategies realized are a blend of what was intended with what emerges in practice. The 2006-2008 MASGC Implementation Plan is flexible and adaptive. The implementation plan was developed from the input of internal and external stakeholder groups, current and anticipated staffing, priorities of local, regional, and national partners, current and anticipated funding, and current and anticipated priorities of the NOAA National Sea Grant College Program.

The plan includes the following sections:

1. A Review of the 2006-2010 MASGC Strategic Plan
2. Development of Implementation Plan
3. Evaluation Process
4. Implementation of the Program
5. Goals, Objectives, Milestones, Outcomes, and Performance Measures
6. Program Elements and Personnel
7. Revision and Results
8. Nationalization and Regional Application

The 2006-2008 Implementation Plan describes the actions required for the MASGC to accomplish the goals outlined for each priority area in our 2006-2010 Strategic Plan.

The five priority theme areas for MASGC include

1. Health and Restoration of Coastal Habitats;
2. Coastal Community Resiliency and Resource Management;
3. Seafood Safety and Processing Technology;
4. Fisheries Ecology and Aquaculture; and
5. Marine Education.

Through an integrated approach with research, MASGC utilizes its core education and outreach (communications, extension, and legal) programs in cross-cutting strategies to address each priority theme area. Priority theme areas are organized around three general categories including what is to be accomplished (goals), what needs to be done

to get there (objectives and milestones), and how to measure progress (outcomes and performance measures).

### **Review of the 2006-2010 Strategic Plan**

The MASGC 2006-2010 Strategic Plan was developed using emerging trends to shape new opportunities and strengthens the distinctive MASGC competencies that set it apart from its peers. The strategic priorities were developed using input from a broad group of constituents vested in solving the complex coastal issues in Alabama and Mississippi. The 2006-2010 Strategic Plan was written following the guidelines from the 2005 National Sea Grant Office's (NSGO) Guidelines for Program Assessment, the recently completed review of Sea Grant's program evaluation process, and the Government Performance and Results Act of 1993. The plan may be obtained at: [\(http://masgc.org/strategicplan/\)](http://masgc.org/strategicplan/)

The MASGC obtained extensive input from internal and external stakeholders. Internal stakeholders are defined as the Board of Directors, Management Team, and Administrative Staff. External stakeholders include the MASGC Advisory Council (Appendix 1) and stakeholders who participated in our Web-based strategic planning survey. External stakeholders included scientists, resource managers, elected officials, commercial fishers, seafood processors, educators, charter boat captains, marina owners, private businesses, planners, librarians, federal employees, realtors, and non-profit agencies.

### **Relationship with NOAA Sea Grant Plan**

The MASGC 2006-2010 Strategic Plan was developed using the goals and priorities listed in the National Sea Grant College Program's (NSGCP) 2003-2008 Strategic Plan, themes and objectives, the 2000-2005 MASGC Strategic Plan, and priorities outlined by local and regional plans, and newly identified issues obtained from stakeholder input. Eleven theme areas and the 50 priorities from the NSGO Plan were used as an anchor to select and rank MASGC priorities.

The planning process began in 2003 with an internal assessment by members of the MASGC Management Team (Appendix 2) of programmatic strengths, weaknesses, opportunities, and threats (SWOT) and an external SWOT with the MASGC Advisory Committee. In 2005, a Web-based stakeholder survey was conducted using Survey Monkey (surveymonkey.com). The planning survey and responses may be reviewed at: <http://www.surveymonkey.com/Report.asp?U=61798933458>. Demographic and other value-based information was also obtained.

### **Institutional and Territorial Characteristics**

Geographically, the MASGC is located in the north central Gulf of Mexico and consists of the Mobile Bay estuary, Mississippi Sound, and Perdido Bay. Combined, these three watersheds contain a 45,593-square-mile drainage and 50 barrier islands. The bi-state

region also includes nearly 3,200 square miles of inland water and 966 miles of estuarine shoreline and supports more than 7 million residents. The coastal counties of Mobile, Baldwin, Harrison, Hancock and Jackson have a total population of more than 900,000 with population density five times greater than state averages.

The MASGC administrative office is located at the University of Southern Mississippi's Gulf Coast Research Laboratory. Management and policy decisions are based on input from the board of directors, the management team, and the advisory council. The University of Southern Mississippi also serves as the fiscal host for MASGC. Programmatically, the MASGC supports research, education, and outreach. MASGC's education program is housed within the University of Southern Mississippi's Marine Education Center, the Dauphin Island Sea Lab's Discovery Hall Program, and the Mobile County School System's Environmental Studies Center. The MASGC outreach program consists of communications, extension, and legal programs located at the University of Southern Mississippi, Auburn University Marine Extension and Research Center, Mississippi State University's Coastal Research and Extension Center and The University of Mississippi Law School. Research support is provided to MASGC institutions and other institutions within Mississippi and Alabama, local governments, and non-profit organizations.

### **Constituent Involvement**

More than 350 constituents participated in external and internal stakeholder planning activities. This included utilizing an online survey. The response (level of importance) average was sorted and ranked to assist in identifying trends in levels of importance among priority areas. The management team's role in the assessment of the results of the survey was to identify priority themes and then develop a single priority from among the elements of the overlapping priorities. The 24-person MASGC Advisory Council participates in review and revisions of the strategic and implementation plans.

### **Development of the Implementation Plan**

Implementation of the MASGC strategic plan occurs through biennial plans utilizing competitively funded research, education, and outreach programs. Two biennial implementation plans are developed during each strategic planning period. Each implementation plan provides details though the addition of milestones for each strategic plan objective. Each objective contains research, education and/or outreach milestones that will lead to fulfilling the stated objectives. Tracking the progress toward objectives is achieved by benchmarking anticipated outcomes and performance measures with a post-implementation plan evaluation of program outcomes and performance measures.

Education and outreach are mandated to integrate research by focusing on youth and adult audiences who are provided with learning opportunities through education, communications, extension, and legal programs. Each core area cuts across priority theme areas to address the goals and objectives by translating research discovery into

issue-based education and outreach programs. MASGC education and outreach use numerous delivery methods including one-on-one and group meetings, distance education, print media, and the Internet, among others. MASGC outreach produces a variety of print media including publications, newsletters, Web sites, and radio. MASGC Education focuses on formal and informal programs for teachers, students and adult audiences. Delivery of these education programs is achieved through teacher in-service training, student workshops and camps, and exhibits.

The final priority theme areas from the 2006-2010 Strategic Plan were used to develop the MASGC 2006-07 Omnibus request for proposals (RFP) and will be used again for the 2008-09 Omnibus RFP. The 2006-2008 MASGC Implementation Plan is implemented during years one and two of the four-year omnibus cycle. A second biennial implementation plan for 2009-2010 will address years three and four of the 2006-2010 MASGC Strategic Plan and will be submitted with the 2008-2009 MASGC Omnibus proposal.

### **Selection of Priorities**

Final priorities for the MASGC strategic and implementation plans were identified using the results of the online survey, input from the MASGC management team, and input from the MASGC Advisory Council. Survey priorities were compared to the MASGC mission, other agencies' missions, available funding, staffing, expertise within Consortium member institutions and future management goals. The 25 highest-ranked survey priorities from the 88 total were compared with priorities from the 2000-2005 Strategic Plan. If there were obvious connections, then the priorities were included in the 2006-2010 plan. Reviews of the Gulf of Mexico Alliance Action Plan, the EPA Gulf of Mexico Program plan, and other Gulf Sea Grant program plans were valuable in understanding how MASGC's priorities fit into a regional context. Plans of local agencies were also used in the final priority selection process. Recurring research priorities identified by local, state, and regional partners provided a means of validating ranked priorities and identifying potential opportunities for collaboration. Final priorities for MASGC were determined with the intent of matching highest ranked priorities with MASGC's management and the scientific expertise found within consortium member institutions. The final priorities selected also involved, at a minimum, two of the three MASGC core areas (research, education, and outreach). Goals, objectives, milestones, outcomes, and performance measures were written based on the final priorities. MASGC priority theme areas were formulated by grouping objectives into a priority area corresponding to a theme area of the NOAA Sea Grant national plan.

### **Evaluation Processes**

#### **Performance Measures**

NOAA has adopted three performance measures for the Ecosystem-Based Management Matrix. These measures provide categories where MASGC can report the impacts from each of its five strategic areas. The performance measures are:

1. Return on investment from the discovery and application of new sustainable coastal and ocean products.
2. Cumulative number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management.
3. Percentage/number of tools, technologies, and information services that are used by NOAA Sea Grant partners/customers to improve ecosystem-based management.

The MASGC conducts formative, summative, and confirmative evaluations of research, education, and outreach programs to determine progress toward achieving stated objectives and progress toward longer term impacts identified as performance measures. Long-term programs chosen to undergo a confirmative evaluation are identified by education and outreach management team members. Education and outreach staff will complete confirmative evaluations with assistance from the MASGC administrative staff.

During the 2006-2008 implementation period the MASGC will conduct a summative and confirmative evaluation of the following programs.

1. Pre-college and professional development education
2. Clean Marine Program
3. Seafood Safety Program
4. Aquaculture Network Information Center
5. *Sea Briefs* newsletter
6. *WaterLog* newsletter

The MASGC research technical review panel (TRP) coordinates the research review process, which includes the review of preproposals and proposals. This research review process also includes 2-3 external peer reviews per proposal and input from MASGC Advisory Council and Management Team. The Research TRP with support from the MASGC management team conducts a relevancy review of supported research to determine how well supported projects meet the goals and objectives of the MASGC strategic plan.

The management team reviews the plan each year to determine the progress toward accomplishing objectives (referred to as benchmarks in the 2003-2005 Implementation Plan). The management team will also review annual progress reports to determine the effectiveness in meeting the expected outcomes and performance measures specified in the current plan and the penultimate implementation plans. The results of internal assessments are then discussed with the MASGC advisory council to determine the effectiveness of meeting stated goals and objectives and used to revise the Strategic and Implementation Plan if necessary.

## **Goals, Objectives, Milestones, Outcomes and Performance Measures**

The objectives and milestones listed in this document will be addressed during the 2006-2008 implementation period. Objectives and milestones are presented for MASGC-supported research projects under way during the 2006-2008 implementation timeframe. Each research project is required to implement an outreach objective, which integrates research with one or both of MASGC's core areas of education and outreach. MASGC's education and outreach programs work across priority areas through collaborative efforts involving scientists, educators, students, and extension specialists, who partner with local communities to integrate research discovery into issue-based outreach programs. Additional outreach objectives and associated milestones are included for each priority theme area not directly associated with a funded research project. Milestones beginning with R/ or ED/ provide a means to identify the currently funded research biennial Omnibus, program development, or National Strategic Investment grants.

### **Health and Restoration of Coastal Habitats**

The goal of Health and Restoration of Coastal Habitats theme area is to reduce nonpoint source pollution and increase the use of improved technologies and techniques for creation, enhancement, and restoration of coastal habitats.

#### Objectives and Milestones

1. Improvements in water quality and health of coastal watersheds will be achieved through a better understanding of ecosystem system components and by adopting new technologies derived through MASGC-supported research and outreach.
  - a. R/CEH-22-PD: Test of Foraminifer Hypoxia in the Mississippi Bight. Charlotte A. Brunner, The University of Southern Mississippi.
  - b. R/CEH-21-PD: Examining the effects of Hurricane Ivan in Coastal Alabama and Northwestern Florida: A positive impact on shallow coastal lagoons? Just Cebrian, Dauphin Island Sea Lab.
  - c. MASGC will co-sponsor the 2006 Alabama and Mississippi Bays and Bayous Symposium.
  - d. R/CEH-23-PD Current Status and Controlling Factors of Submersed Aquatic Vegetation (SAV) Beds in Western Grand Bay. Hyun Jung Cho, Jackson State University.
  - e. Two Continuing Legal Education seminars on wetlands law and regulation will be provided to educate attorneys, engineers, developers, and other interested parties on federal and state developments.
2. Fifty acres of estuarine habitat will be created, restored, or enhanced using techniques developed through MASGC sponsored research or outreach.
  - a. R/CEH-24: 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 and Craig Tobias, University of North Carolina at Wilmington.
- b. R/CEH-25: The Diversity and Role of Root-Associated Fungi in Salt Marsh and Seagrass Plants and Implications for Restoration Success. Jinx Campbell and Patrick Biber, The University of Southern Mississippi.
  - c. R/CCD-9-PD: Habitat Protection and Restoration Website and Database. George F. Crozier, Dauphin Island Sea Lab.
  - d. Four new community-based restoration grants will be funded in Alabama and Mississippi.
3. Increase the number of new and provide support to existing volunteers participating in volunteer programs.
    - a. Two outreach workshops in partnership with the Mobile Bay National Estuary Program, and the Auburn University Shellfish Lab will support the Mobile Bay Oyster Gardening Program.
    - b. Outreach specialists will partner with Alabama and Mississippi Coastal Cleanup annually by maintaining the Mississippi Cleanup Web site and serving as zone captains in each state.
    - c. One hundred crab fishermen will be educated about the issues surrounding derelict crab traps, and three fishing/conservation groups will assist in derelict crab trap removal.
  4. Five new marinas will join the Alabama and Mississippi Clean Marina program.
    - a. Boater education materials will be disseminated to marinas in Alabama and Mississippi.
    - b. Workshops and informal meetings with marina personnel will be held for Clean Marina Program participants to teach best practices that will minimize pollution in marina basins.
    - c. Certification programs will be completed for new clean marinas.
    - d. Three displays, a radio public service announcement, and other outreach materials will be developed to educate boaters and fishermen on the negative impacts of marine debris.
  5. Two shoreline protection alternatives will be implemented in coastal Alabama and Mississippi.
    - a. Alabama Department of Conservation and Natural Resources State Lands Division will implement living shorelines modeled after a MASGC demonstration located on Dauphin Island, Alabama.
    - b. In partnership with other agencies, one outreach program in each state will be provided to restoration practitioners on engineering alternatives to vertical bulkheads including shoreline alternatives at the Alabama and Mississippi Bays and Bayous Symposium.
  6. Over 3,000 members of special interest groups such as Realtors and educators, as well as, schoolchildren and the general public, will gain a better understanding of issues pertaining to habitats and water quality in the coastal region.
    - a. Implement education classes on wetlands identification, distribution of printed material and workshops on land use planning and landscaping with native species.

- b. Distribution of printed information related to environmentally friendly alternative to common household and landscape chemicals.
  - c. Water Log, published quarterly, will provide an analysis of state and federal court decisions and legislation that affects health and restoration of coastal habitats.
  - d. Five organizations will receive timely research and outreach information on legal questions related to ocean and coastal resources, submitted to the Legal Program through its Advisory Service.
7. 2,000 coastal residents will increase their knowledge about the ecological and economic dangers posed by aquatic nuisance species (ANS).
- a. Educational materials (displays and fact sheets) regarding introduction pathways and prevention will be disseminated through: visits to schools, presentations to groups, and organizations, newspaper columns, direct mailings to businesses and meetings with agencies and shipping interests.
  - b. Legal staff will provide reviews of state statutes during the development of ANS plans in Alabama and Mississippi.

### Expected Outcomes and Performance Measures

1. Return on investment from the discovery and application of new sustainable coastal and ocean products.
  - a. Improved restoration strategies achieved through improved technologies for use by managers, non-profit organizations, and environmental consulting firms.
  - b. Increased resiliency of estuarine habitats through adoption of improved restoration technologies.
  - c. Cumulative number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management.
  - d. Number of tools developed to achieve a better understanding of interactions between estuarine habitats and nonpoint source pollution.
  - e. Number of tools developed to predict the effects of land-use planning on estuarine habitats.
  - f. Number of tools developed to evaluate effectiveness of restoration strategies.
  - g. Number of predictors of environmental stress on coastal ecosystems.
2. Percentage/number of tools, technologies, and information services that are used by NOAA Sea Grant partners/customers to improve ecosystem-based management.
  - a. Graduation, placement and recognition of undergraduate and graduate students and their contribution of theses and dissertations.
  - b. Number of top-ranked publications and citation frequency.
  - c. Patents and licensed technologies.
  - d. Number of needs-based outreach events/publications.
  - e. Partnerships developed in support of priority areas.
  - f. Number of print articles and television segments that mention MASGC or discuss MASGC-supported research, education, or outreach.

## **Coastal Community Resiliency and Resource Management**

The goal of Coastal Community Resiliency and Resource Management is to provide economic leadership in maintaining a balance between coastal development and historical activities in coastal communities.

### Objectives and Milestones

1. Two coastal communities will develop long-range plans for community resiliency.
  - a. R/CCD-10-PD: Facilitation of a Long Term Strategic Plan for the Town of Dauphin Island, Mayor Jeff Collier, Town of Dauphin Island.
  - b. Outreach specialist will work with the Institute of Compatible Design in Moss Point to expand the Scruggs Center's teaching opportunities in compatible design.
  - c. Water Log, published quarterly, will provide an analysis of state and federal court decisions and legislation that affects coastal communities and resource management.
2. Support formative and economic assessments of two nature-based tourism programs in Alabama and Mississippi.
  - a. Program development funds will be used to support a formative evaluation and an economic assessment of the Winged Migration Festival in Mississippi and the Alabama Birding Festival.
  - b. Program development funds will be used to support an economic assessment of the Alabama and Mississippi Birding Trails.
3. Working waterfronts will be preserved in two coastal communities.
  - a. Outreach specialists will work with the Bayou La Batre, Dauphin Island, and other Alabama coastal communities to create an Alabama Working Waterfront Coalition.
  - b. MASGC will support and coordinate an inventory and economic analysis of water-dependent businesses in Bayou La Batre, Coden, Dauphin Island, and the unincorporated community of Fowl River.
  - c. MASGC will support and coordinate a review of local, state and federal tax codes to identify existing or potential codes to benefit working waterfronts.
  - d. Coastal management officials in Mississippi will be educated about the legal methods available for securing public rights to beaches and water for recreational and water-dependent uses.
  - e. The local zoning boards of two coastal counties (one in Mississippi and one in Alabama) will receive an evaluation of their zoning ordinances to identify barriers to smart growth and hazard resistant development. The existing local ordinances will be evaluated by comparison to model ordinances developed by the American Planning Association or the EPA.
  - f. The MASGC Communications Program will develop web pages to highlight working waterfronts issues and track efforts made by the Alabama Working Waterfront Coalition.
  - g. Five communities will receive timely legal research and information on legal questions related to working waterfronts, submitted to the Legal Program through its Advisory Service.

4. Annual workshops in coastal counties targeting coastal city officials, safety workers and hotel/condominium managers will inform key people about rip currents. Topics will include education on what rip currents are, why and how they form, how to recognize and avoid them, and the legalities and responsibilities of posting rip current information.
  - a. Bulk educational material will be made available to participants to pass out at their respective businesses including signage, brochures, and refrigerator magnets.
  - b. Newspaper articles will be written during peak swimming seasons to inform the general public of potential swimming dangers and how to avoid them.

### Expected Outcomes and Performance Measures

1. Return on investment from the discovery and application of new sustainable coastal and ocean products.
  - a. Number of community partnerships developed with county and city governments to plan and implement resilient community technologies.
  - b. Number of environmentally sustainable low-impact tourism businesses.
2. Cumulative number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management.
  - a. Number of predictors of gentrification on working waterfront communities.
  - b. Number of tools developed to estimate the value of coastal resources.
3. Percentage/number of tools, technologies, and information services that are used by NOAA Sea Grant partners/customers to improve ecosystem-based management.
  - a. Graduation, placement and recognition of undergraduate and graduate students and their contribution of theses and dissertations.
  - b. Number of top-ranked publications and citation frequency.
  - c. Patents and licensed technologies.
  - d. Number of needs-based outreach events/publications.
  - g. Partnerships developed in support of priority areas.
  - h. Number of print articles and television segments that mention MASGC or discuss MASGC-supported research, education, or outreach.

### **Seafood Safety and Processing Technology**

The goal of the seafood safety and processing technology is to assist the seafood processing industries in providing safe and reliable supplies of products while minimizing the environmental impacts from processing facilities.

### Objectives and Milestones

1. At least 5,000 seafood consumers will become more knowledgeable of the risks associated with biological and chemical contaminants.
  - a. R/SP-13-GOIP: Gulf Oyster Industry Initiative: Rapid Chill Depuration as Post Harvest Treatment for the Reproduction of *Virbrio vulnificus* in Live

- Oysters. Linda Andrews, David Veal, and Ben Posadas, Mississippi State University.
- b. R/SP-10: Patterns of Seafood Consumption among Recreational Fishers of the Coastal Regions of Alabama and Mississippi. Steven J. Picou and Cecelia Formichella, University of South Alabama.
  - c. R/AT-6-GOIP: Analysis of Molecular Indicators of Oyster's Responses to Dermo Infection Using Microarray Technology. John Liu and Richard Wallace, Auburn University; Ximing Guo, David Bushek and Susan Elizabeth Ford, Rutgers University.
  - d. Seafood specialists will conduct two formal workshops and 12 informal meetings with processors in Alabama and Mississippi.
  - e. *Sea Harvest News* and *Gulf Coast Fisherman*, quarterly newsletters, will include articles on the results of seafood safety and processing technology.
2. One seafood waste-processing alternative will be evaluated.
    - a. Program development funds will be used to support applied research on processing technology.
    - b. Seafood processors will receive timely legal research and information on legal questions related to seafood safety and processing technology, submitted to the Legal Program through its Advisory Service.
    - c. Water Log, published quarterly, will provide an analysis of state and federal court decisions and legislation that affect seafood processing and best management practices.

### Expected Outcomes and Performance Measures

1. Return on investment from the discovery and application of new sustainable coastal and ocean products.
  - a. Improvements in safety and efficiencies of processing facilities through adoption of new techniques and technologies.
  - b. Decrease in fines and other regulatory actions imposed on processing facilities.
  - c. Development of value-added products derived from seafood-processing wastes.
2. Cumulative number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management.
  - a. Extent of use of rapid detection methods for shellfish by health agencies and industry.
  - b. Number of tools identified to predict oyster safety and potential for disease outbreak.
3. Percentage/number of tools, technologies, and information services that are used by NOAA Sea Grant partners/customers to improve ecosystem-based management.
  - a. Graduation, placement and recognition of undergraduate and graduate students and their contribution of theses and dissertations.
  - b. Number of top-ranked publications and citation frequency.

- c. Number of patents and licensed technologies.
- d. Number of needs-based outreach events/publications
- e. Number of partnerships developed in support of priority areas.
- f. Number of print articles and television segments that mention MASGC or discuss MASGC-supported research, education, or outreach.

## **Fisheries Ecology and Aquaculture**

The goal of fisheries ecology and aquaculture is to improve the sustainability of the commercial and recreational capture fisheries and aquaculture including stock enhancement through research and outreach programs.

### Objectives and Milestones

1. One commercially manufactured sea urchin feed will enter the marketplace.
  - a. R/SP-15: Sea Urchins are Improved Candidates for Aquaculture and Biomedical/Ecotoxicological Models. Stephen A. Watts, The University of Alabama at Birmingham.
2. One new predictive fishery model will be developed.
  - a. R/SP-16: Ecosystems and Fisheries Sustainability: Assessment of Estuarine Populations of Fishes and Invertebrates in Mississippi-Alabama Waters. Harriet M. Perry and Ralf Riedel, The University of Southern Mississippi.
  - b. MASGC will co-sponsor the 2006 Bays and Bayous Symposium
3. The ecological role of gray triggerfish on artificial reefs will be determined.
  - a. R/SP-14: Reproductive Behavior, Early Life History, and Interspecific Interactions of Gray Triggerfish, *Balistes caprisкус*, from the Northeastern Gulf of Mexico. Stephen T. Szedlmayer and Carrie A. MacKichan, Auburn University.
4. Bait production technologies, economics and marketing will be developed that leads to better economic return for four bait dealers and the creation of one new bait businesses.
  - a. R/SP-12-PDS Development of Bait Shrimp Farming Technologies in Alabama. D. Allen Davis, Auburn University.
  - b. R/SP-17-PD: Live Marine Baitfish Opportunities when Produced in Saline Waters of the Black Belt Region of Alabama. Ronald P. Phelps and Robert G. Nelson, Auburn University
5. At least 50 high school teachers and 250 students will participate in aquaculture training or classes.
  - a. Provide online K-12 education materials through the Aquaculture Network Information Center.
  - b. Conduct two aquaculture workshops for teachers.
6. Over 3,000 recreational and commercial fishermen, environmentalists and other interested parties will increase their understanding of natural resource issues such as essential fish habitat, marine reserves, the "precautionary approach" in fisheries management, limited entry, and individual transferable quotas.

- a. Information will be provided through monthly newsletters *Sea Harvest News* and *Gulf Coast Fisherman* to fishermen/policymakers and through regular Sea Grant newspaper columns
  - b. Meetings will be facilitated for fishing industry leaders and other groups to provide technical information on fisheries issues
  - c. The Asian population of the Mississippi-Alabama coastal region will be more fully engaged in fishery educational programming through the use of document translations, interpreters, and targeted meetings.
  - d. MASGC will co-sponsor the 2006 Alabama and Mississippi Bays and Bayous Symposium which includes a session of living resources.
  - e. MASGC will participate in NOAA's National Marine Fisheries Service MARFIN program and annual meeting.
  - f. The fishing and aquaculture industries will receive timely legal research and information on legal questions related to fisheries and aquaculture, submitted to the Legal Program through its Advisory Service.
  - g. Water Log, published quarterly, will provide an analysis of state and federal court decisions and legislation that affects fisheries and aquaculture practices.
7. Fisheries bycatch will be reduced in Mississippi-Alabama coastal and offshore fisheries. Fishermen will learn techniques to reduce fuel consumption and concomitant operating costs
- a. Outreach personnel will work with the fishing industry, NOAA fisheries and other interested parties in applying the most recent and effective solutions to bycatch reduction including gear modifications and fishing practices. Dockside demonstrations and offshore evaluations will be used to effect technology transfer
  - b. Recreational fishermen will be taught more effective catch-and-release techniques to facilitate the survival of regulatory and unwanted discards. Presentations will be made at meetings of recreational fishing organizations.
  - c. Demonstrations will be conducted by outreach personnel on working commercial vessels related to "cleaner" gear and more energy-efficient gear such as cambered steel trawl doors and new synthetic trawl webbings.
  - d. Fish-venting instructions and information will be developed and distributed to fishers. The program will increase discarded fishes' chance of survival.

### Expected Outcomes and Performance Measures

1. Return on investment from the discovery and application of new sustainable coastal and ocean products.
  - a. Number of new product lines for the aquaculture supply industry.
  - b. Number of new aquaculture businesses using new technologies or techniques (food and bait).
  - c. Increased return on investment by commercial and recreational fishing industries through adoption of new technologies or techniques.

2. Cumulative number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management.
  - a. Number of predictors developed to estimate long-term health of fisheries.
  - b. Number of predictors developed to aid in locating marine aquaculture enterprises.
3. Percentage/number of tools, technologies, and information services that are used by NOAA Sea Grant partners/customers to improve ecosystem-based management.
  - a. Graduation, placement and recognition of undergraduate and graduate students and their contribution of theses and dissertations.
  - b. Number of top-ranked publications and citation frequency.
  - c. Number of patents and licensed technologies.
  - d. Number of needs-based outreach events/publications.
  - e. Number of partnerships developed in support of priority areas.
  - f. Number of K-12 aquaculture programs developed.
  - g. Number of print articles and television segments that mention MASGC or discuss MASGC-supported research, education, or outreach.

## **Marine Education**

The goal of marine education is to provide citizens, coastal managers, teachers, and the nation's youth the training and experiences that will help them make connections between ocean science information and decisions about coastal and ocean resources.

### K-12 and Informal Education

Educating the 21<sup>st</sup> century workforce in marine and aquatic sciences is integral to both the educational and scientific missions of Sea Grant. Sea Grant's educational efforts contribute to improving marine and aquatic science literacy through efforts that facilitate the effective delivery of science-based information, programming, and resources via formal and informal educational activities.

### Graduate and Undergraduate Education

Undergraduate, graduate, and post-doctoral education is a significant element of MASGC funded research. Every two-year MASGC-funded research project will involve one or more undergraduate, graduate, or post-doctoral students who will participate in the research activities outlined for the project. Upon graduation these students become the backbone of a highly-trained workforce entering into the coastal and ocean resources job market.

### Objectives and Milestones

1. Annually, a minimum of 5,000 citizens will receive new and updated information through face-to-face, inquiry-based outreach programs.
  - a. Involve public aquariums, museums, environmental education centers, and other similar facilities in precollege education in ocean sciences and coastal processes.



- b. Enhance the “literacy” of coastal and inland precollege teachers and their students concerning marine and aquatic environments.
    - c. Expand and promote marine and aquatic science education to/for underrepresented and underserved populations.
  2. At least four million people annually will be provided research, education, and outreach information through MASGC-sponsored Web sites.
    - a. Three million people worldwide will retrieve information from the Aquaculture Network Information Center
    - b. At least 100,000 people retrieve technical and outreach publications from the MASGC supported web site. Since 2000, an additional 106,000 page requests and 518,000 “hits” per month are received at the Consortium for Oceanographic Activities for Students and Teachers (COAST), <http://www.coast-nopp.org> and linked to the Centers for Ocean Sciences Education Excellence: Central Gulf of Mexico (COSEE: CGOM), [www.cosee-central-gom.org](http://www.cosee-central-gom.org) website.
  3. At least 200 teachers will receive specialized education and training to enhance their ability to successfully improve ocean literacy of their students through the following mechanisms:
    - a. Implement a minimum of nine Professional Development Workshops and/or Institutes for precollege teachers (pre- and inservice) and informal educators annually on a variety of topics, e.g., but not limited to: aquatic nuisance species, biotechnology, essential fish habitats, water quality (to include point- and nonpoint source pollution), oceans and human health, fisheries and fisheries management, health and restoration of coastal habitats, coastal hazards, coastal community resiliency and resource management, seafood safety and nutrition, aquaculture, ecosystem-based management, reduction in nutrient-loading, reduction in wetlands loss, marine and aquatic habitats, and science education standards (state, national, and ocean literacy). Incorporate use of real-time or near, real time data will also be incorporated in these Professional
    - b. Development Programs for informal and formal educators/teachers to increase pre-college students’ existing knowledge through inquiry-based, hands-on educational programs offered at the University of Southern Mississippi’s (USM) Marine Education Center (MEC), the Dauphin Island Sea Lab’s (DISL) Estuarium, and the Mobile County Public School System’s Environmental Studies Center (ESC) and through the enhanced content knowledge and augmented instructional strategies provided to these students’ teachers on the MASGC strategic theme areas.
  4. At least 5,000 students and/or members of the general public will increase their ocean literacy by using the Gulf of Mexico as an example ecosystem.
    - a. Participate in a minimum of five (of the approximate 12) meetings and/or conferences through MASGC’s partnerships and collaborations with improved collaboration and coordination, i.e., the Centers for Ocean Science Education Excellence:Central Gulf of Mexico (COSEE:CGOM), the Gulf of Mexico Alliance-Environmental Education Network (GOMA-EEN), and the Gulf Coast Ocean Observing System-Education and

- Outreach (GCOOS-E&O) Committee. These groups have all collaborated in aligning and focusing their goals and objectives to complement those of the U.S. Commission on Ocean Policy Report, *An Ocean Blueprint for the 21<sup>st</sup> Century*, Part III, "Ocean Stewardship: The Importance of Education and Public Awareness, Chapter 8, "Promoting Lifelong Ocean Education" and those outlined within the *U.S. Ocean Action Plan*, as well as NOAA's and Sea Grant's *Education Strategic Plans*.
- b. Make available, online and in hard-copy, publications such as: 1) ED-17-PD: *Publication for Sharks, Skates, and Rays of the Gulf of Mexico: A Field Guide*. Glenn R. Parsons, The University of Mississippi; 2) "*The Path to Ocean Literacy: Essential Steps Along the Way*," Sharon H. Walker and Paula Keener-Chavis, *Marine Technology Society Journal*, Winter 2005/2006 Vol. 39, No. 4, pages 20-32; 3) "The Centers for Ocean Sciences Education Excellence (COSEE): A National Success Story," Sharon H. Walker, Craig Strang, and Susan Cook, *Marine Technology Society Journal*, Winter 2005/w006, Vol. 39, No. 4, pages 33-40.
  - c. Participate in the Alabama Department of Conservation and Natural Resources Marine Resources Division calendar contest for fourth-graders by sponsoring winning entries at local art galleries in Mobile, Ala.
5. A minimum of six undergraduate or graduate students will participate in marine research projects.
    - a. MASGC will support research for three graduate degrees per year through sponsored research programs.
    - b. MASGC will support three undergraduate internships through sponsored research programs.
  6. A minimum of four students per year will participate in fellowships or competitive awards in international organizations.
    - a. Submit at least two nominations each year to the John D. Knauss Fellowship Program.
    - b. Provide a Sea Grant best paper award at the annual Aquaculture America meetings.
    - c. Partner with the Gulf of Mexico Sea Grant Network to support one Gulf and Caribbean Fisheries meeting award per year.
  7. A minimum of four regional and four national meetings will encompass involvement and proactive leadership by MASGC management team and/or Co-PIs, to include but not limited to the following:
    - a. Participate in the GOMA-EEN Annual Meetings.
    - b. Attend the GCOOS-E&O Committee Meetings.
    - c. Develop grants, as appropriate, with organizations and agencies with similar missions, e.g., the successful two-year grant co-authored by the MASGC Director of Education and the DISL Assistant Director/ Director of the Discovery Hall Program for the GOMA-Environmental Education Coordinator position. The incumbent began this position in July 2006 and has an office at the DISL.
    - d. Participate in COSEE:CGOM Management Team and Advisory Board Meetings.

- e. Host and/or attend the Southern Association of Marine Educators (SAME) Annual Meeting, hosted in FL, AL, MS, or LA. It should be noted SAME is one of 17 chapters of the National Marine Educators Association (NMEA).
- f. Serve as an officer or committee member of the NMEA, 33-member Board of Directors and attend and present at its Annual Conference.
- g. Participate in the GCOOS Biannual Meetings or serve on its Board of Directors.
- h. Serve in a leadership role in benchmark events such as the Conference on Ocean Literacy (CoOL) this past June 7-8, 2006.
- i. Attend and/or present at the following Annual Conferences if time and resources allow: the American Geophysical Union, the Marine Technology Society, the American Meteorological Society, and The Oceanographic Society, the National Science Teachers Association.

### Expected Outcomes and Performance Measures

1. Return on investment through the discovery and application of new sustainable coastal and ocean products, i.e, "bridging the gap" between researchers' data and the interpretation of those findings concerning their relevance to all peoples' daily lives.
2. Cumulative number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management.
3. Percentage/number of tools, technologies, and information services that are used by NOAA Sea Grant partners/customers to improve ecosystem-based management.
  - a. Number of undergraduate and graduate students, their recognition and their contributions realized through theses and dissertations.
  - b. Number of top-ranked publications and citation frequency.
  - c. Number of patents and licensed technologies.
  - d. Number of educational queries requested from the MASGC website.
  - e. Number of needs-based outreach events conducted by priority theme area.
  - f. Number of education and outreach publications and curricula developed.
  - g. Number of partnerships developed in support of priority areas.
  - h. Number of K-12 programs developed and teachers educated and trained.
  - i. Number of underrepresented and/or underserved rather than minority students who participated in education and outreach programs.
  - j. Longitudinal evaluations of job placement and career choices by MASGC-supported university graduates.
  - k. Number (as related to statistical analyses) for pre- and posttests and Likert-scale evaluations administered to precollege students and teachers.
  - l. Number of regional and/or national initiatives in which MASGC personnel and/or Co-PIs, representing the Marine Education priority area have been involved.
  - m. Number of print articles and radio/television segments that mention MASGC or discuss MASGC-supported research, education, or outreach.

## **Program Administration and Management**

The goal of program administration and management is to provide management leadership and fiscal accountability for MASGC.

### Short-term Objectives and Milestones

1. Recruit and sustain well-qualified administrative and programmatic staff.
  - a. MASGC will provide support to Sea Grant Extension for an applied ecologist specialist to develop outreach programs in the priority area of Health and Restoration of Coastal Habitats.
  - b. Expand the job responsibilities of the Program Officer's position to include the coordination of program evaluations.
2. Develop and implement assessment and evaluation procedures through outcome mapping using the LOGIC model.
  - a. Provide staff development through a 2-day seminar for administrative, education, and outreach staff by the NOAA Coastal Services Center on using the LOGIC model for program development.
3. Integrate research findings into education and outreach programs through formal processes and disseminate the results.
  - a. The importance of integration of research with education and outreach will be increased from 10 percent to 15 percent during the review process of 2008-2009 research reviews.
  - b. Every research proposal will have an education or outreach liaison that will assist in implementing the outreach component of the research project.
4. Provide regular and frequent updates on the status of MASGC programs to over 300,000 people per year through administrative fact sheets, press releases, and other communication tools.
  - a. A MASGC fact will be developed. The document will expand the current one-pager and include MASGC background information, current omnibus and PD projects, and outcomes/performance measures from the preceding annual progress report.
  - b. A minimum of 12 press releases covering MASGC priority theme areas will be produced each year and distributed to appropriate media, institutional, and scientific outlets.

### Long-term Objectives and Milestones

1. Increase the ratio of Sea Grant funds to non-Sea Grant funds by 25 percent.
  - a. MASGC staff will successfully compete for competitive grants to enhance their work in priority theme areas.
2. Develop seamless program planning and submission procedures.
  - a. Every education and outreach program will include an evaluation component, including three long-term (5 years) evaluations.

- b. The MASGC Web site will undergo a redesign to make the site user-friendlier. An online preproposal submission feature will be added, as well as a research database.
3. Increase the effectiveness of program integration through internal and external program evaluations.
  - a. The MASGC management team will conduct an internal analysis of program integration
  - b. MASGC will convene once yearly a joint meeting of the MASGC management team and the MASGC advisory council to evaluate the integration of research, education, outreach, and administration.
  - c. Implement short-term formative and long-term summative evaluations of all education and outreach programs
  - d. Implement long-term confirmative evaluations of two education and outreach programs per year.
4. Increase distribution of MASGC information by 20 percent per year.
  - a. Publish *Sea Briefs* four times a year. In each issue an article will feature MASGC-funded research addressing one of the MASGC's priority theme areas.
  - b. Add 100 new constituents to the MASGC mailing list, which includes *Sea Briefs* readers, each year.
  - c. Reorganize the MASGC web site by priority theme areas.
  - d. All MASGC education, outreach and administrative documents will be available online. All numbered publications will be submitted to the National Sea Grant Library.
5. Produce Gulf of Mexico research strategic an implementation plans
  - a. Compile and synthesize existing Gulf of Mexico Plans.
  - b. Conduct focus group meetings and constituent surveys.
  - c. Develop and vet plans.

### Expected Outcomes and Performance Measures

1. Level of funding
  - a. Programmatic funding levels.
  - b. National strategic investment, fellowship, and other NOAA grants received.
  - c. Non-NOAA grants in support of priority theme areas.
2. Number of new investigators who participate in MASGC-sponsored programs.
3. Recruiting talent
  - a. Total number of scientists who participate in MASGC-sponsored programs.
  - b. Percentage of research scientists who are assistant and associate level.
  - c. Percentage of research scientists who represent underserved or minority institutions.
  - d. Recognition and awards received by research scientists, educators and outreach staff.
4. Ability to develop outcome based outreach programs

- a. Number of education and outreach programs using the LOGIC model in program development.
- b. Percent of outcomes achieved after program implementation.

### Program Elements and Personnel

MASGC is composed of program elements in research, education and outreach. The role of management is to provide a clear vision and purpose through constituent guided strategic and implementation plans. MASGC currently supports an administrative staff and provides annual funding to support staff in our core program areas of education and outreach (communications, extension, and legal). Current staffing and funding support may be reviewed in Table 1.

Table 1. Full time employees (FTEs) working in the core program areas of administration, communications, extension, education, and legal. One FTE is equal to 12 months.

<b>Sea Grant Staffing</b>	<b>Individuals</b>	<b>FTEs funded by Sea Grant</b>	<b>Non-Sea Grant Supported FTEs</b>
Administrative	6	2.10	1.60
Communications	3	1.36	0.11
Extension	8	2.17	1.32
Education	7	1.81	2.09
Legal	3	1.45	0.24
<b>TOTAL</b>	<b>27</b>	<b>8.89</b>	<b>5.36</b>

MASGC education and outreach work collaboratively across priority theme areas. Additional outreach staffing in the areas of coastal building, business and tourism, and restoration would allow MASGC to better respond to issues associated with Coastal Community Resiliency and Resource Management and Health and Restoration of Coastal Habitats priority theme areas. Administratively, a half-time program evaluation and integration specialist would be helpful in coordinating all aspects of program evaluation.

Sea Grant funds distributed through our biennial Omnibus proposal submitted to NOAA fall into the three categories of research, education and outreach (Table 2). Approximately 10 percent of MASGC funds are used for program development projects to rapidly respond to new issues not identified as objectives in MASGC's strategic or implementation plans. The program development funds are used to fund projects in any of the three core program areas. MASGC administration provides program support for all projects plus conducts complimentary programs to accomplish the objectives of each biennial implementation plan and coordinates long-term program evaluations.

Table 2. Distribution of MASGC managed funds from 2002-2007. The core program area of outreach consists of communications, extension and legal. Goals, objectives, milestones, outcomes and performance measures of the National Law Center are

included in separate planning documents. The combined percentage of research and education meets the suggested 50% goal of the National Sea Grant Office.

<b>Program Area</b>	<b>Dollars</b>	<b>Percent</b>
Research	\$5,866,770	35
Education	2,468,747	15
Communications	789,346	5
Extension	2,381,435	14
Legal	964,074	6
National Law Center	2,123,595	13
Administration	1,978,371	12
<b>Grand Total</b>	<b>\$16,572,338</b>	<b>100</b>

## **Revision and Results**

### **Mechanisms for Revising the Program**

A draft plan was developed in October 2006 and reviewed by the MASGC Management Team, Board of Directors, and Advisory Council. The plan is submitted to the National Sea Grant Office for review. The MASGC strategic and implementation plans are reviewed annually. The 2006-2010 Strategic Plan has been modified twice. The first revision occurred shortly after Hurricane Katrina. The post-Katrina review allowed the MASGC Management Team to place greater focus on objectives better suited for post-Katrina issues. Additional reviews and modifications occurred after the 2005 Program Assessment Guidelines were released. The print-on-demand format of the MASGC 2006-2010 Strategic Plan provides a simple mechanism and a no-cost incentive to constantly monitor and update the plan.

All four Gulf Sea Grant program directors compose and serve on the leadership council of a grant funded by the NOAA Sea Grant's National Office to develop a comprehensive and inclusive regional research strategic plan and implementation process. The strategic plan is due to be completed in 2008. MASGC will review and update its 2006-2010 Strategic Plan at that time.

### **National and Regional Application**

The priority theme areas of the MASGC 2006-2010 Strategic Plan are grounded in the NSGCP 2003-2008 Strategic Plan. The MASGC will focus resources toward five priority theme areas during 2006-2010 to address specific priorities among the 11 theme areas of the NSGCP 2003-2008 Strategic Plan. These issues include: fisheries, aquaculture, seafood safety, coastal habitats and restoration science, coastal community resiliency, natural hazards, smart and sustainable growth, coastal communities and economies, marine invasive species, working waterfronts, and marine education.

The Gulf of Mexico Alliance released its 36-month action plan in March 2006. The action plan focuses on five priority areas:

1. Water quality for healthy beaches and shellfish beds
2. Wetland and coastal conservation and restoration
3. Environmental education
4. Identification and characterization of Gulf habitats
5. Reductions in nutrient inputs to coastal ecosystems

The MASGC has a long history in addressing each of these priority areas. The 2006-2010 MASGC Strategic Plan contains elements of each and provides added value to the Alliance plan by continuing to provide leadership in environmental education and initiating research and outreach programs in support of the four other action plan objectives.

The strategic plans of the four Gulf of Mexico Sea Grant programs have numerous reoccurring themes. Education and outreach programs have long histories of collaborative projects. Numerous unplanned collaborative research initiatives have also arisen including co-funding of research projects. In 2006 the Gulf of Mexico Sea Grant programs committed to cost-sharing \$200,000 per year to fund a coastal communities and resiliency regional research project. The regional research project would begin with the next biennial omnibus cycle in 2008.



## Appendix 1 2006-2010 Advisory Council

The purpose of the MASGC Advisory Council (2006) is to participate in long-range strategic planning and review biennial implementation plans. The Advisory Council meets annually to share information and to be updated on the impacts of the MASGC. The MASGC director and Management Team members interact on a regular and informal basis to develop new, collaborative opportunities and projects of direct benefit to coastal businesses and residents.

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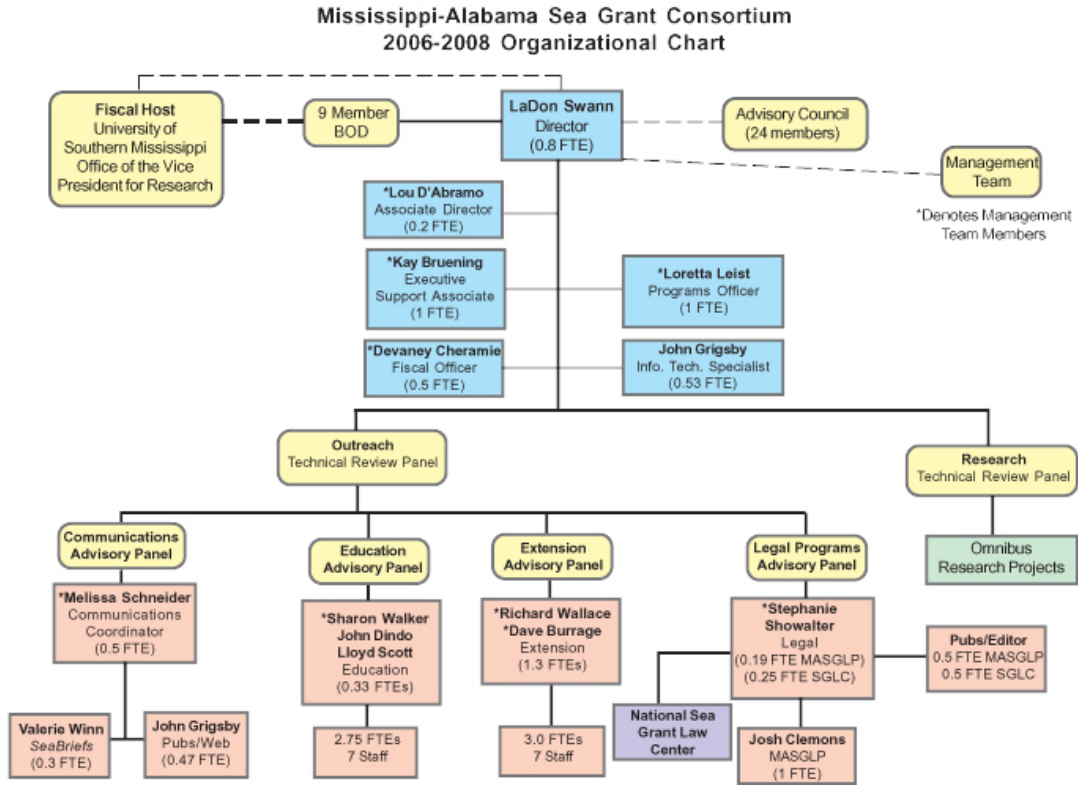
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## Appendix 2

### 2006 MASGC Organizational Chart.



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