

# GULF OF MEXICO RESEARCH PLAN



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**TABLE OF CONTENTS**

Executive Summary..... 1

Acknowledgments ..... 2

Introduction..... 3

Methods ..... 4

Results ..... 5

Additional Needs..... 10

Implementation ..... 11

More Information..... 12



## EXECUTIVE SUMMARY

The depth and breadth of research needs in the Gulf of Mexico are too great for the limited financial and human resources that are available. In order to use these limited resources efficiently, the research community needs a prioritization process. In 2006, the National Oceanic and Atmospheric Administration (NOAA) National Sea Grant College Program provided funding to the four Gulf of Mexico Sea Grant College Programs to develop a research plan for the Gulf of Mexico.

The mission of the Gulf of Mexico Research Plan (GMRP) is to identify priority research needs for the Gulf of Mexico through broad constituent input and to implement strategies to address those needs. The goal is to assist the Gulf of Mexico research community, including those who conduct or administer research or use research findings.

More than 1,500 people from 233 organizations, universities, and federal and state departments completed a survey to identify regional research priorities. Nearly 300 people from 77 organizations, universities, and federal and state departments participated in regional workshops. The research priorities outlined in this document were distilled from the survey and workshop results.

The general framework for the GMRP is based on the Joint Subcommittee on Ocean Science and Technology's report, "Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy." The report, also referred to as Ocean Research Priorities Plan (ORPP), defines national priorities and identifies six societal themes and 20 equally weighted research priorities. Information in the GMRP prioritization process was analyzed both within the ORPP framework and independent of the ORPP categories. People who completed the survey or participated in the workshops identified most priorities within two of the ORPP societal themes: Improving Ecosystem Health and Stewardship of Natural and Cultural Ocean Resources. Despite the 20 ORPP-defined research priorities being equally weighted on a national level, the survey and workshops revealed that this is not the case for the Gulf of Mexico.

The highest-rated Gulf of Mexico research priorities are framed within five themes that are independent of the ORPP. These themes, presented alphabetically, are:

- Ecosystem Health Indicators
- Freshwater Input and Hydrology
- Habitats and Living Resources
- Sea Level Change, Subsidence, and Storm Surge
- Water Quality and Nutrients

The five Gulf of Mexico themes include 17 top-tier research priorities, and there are 35 second-tier research priorities that were not captured in the five themes but were ranked highly at workshops or in the survey\*.

The next step to effectively address the regional research needs is to develop an implementation plan. The region is well prepared to address these issues because of recently established frameworks, the formation of a new regional governance structure in the Gulf of Mexico Alliance, and the continuity provided by well-established research cooperatives throughout the Gulf of Mexico. To implement a regional research plan, it is essential that the research community recognize opportunities in funding partnerships to optimize the use of expertise and limited resources throughout the region. The success of this effort also hinges on applying the regional research findings through robust extension, outreach, and education programs.

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\* A listing of all research priorities is available in the supplemental document online at [masgc.org/gmrp/report.htm](http://masgc.org/gmrp/report.htm).

## ACKNOWLEDGMENTS

The GMRP principal investigators and coordinator would like to thank the following groups and individuals:

Members of the Planning and Review Council served as liaisons to stakeholder groups, provided feedback on the planning process, participated in planning events, and commented on planning documents.

The NOAA Gulf Coast Services Center provided substantial support and suggestions throughout the process of collecting constituent input. Heidi Recksiek provided valuable contributions during the development of the survey instrument and workshop agenda. She was the lead facilitator at all five workshops and supported this project in numerous other ways. Tina Sanchez and Ann Weaver provided their facilitation skills at the majority of the workshops.

Kay Bruening provided support throughout this process and assistance in organizing the five GMRP workshops.

Melissa Schneider provided support by writing and distributing press releases and designing and editing several publications related to this effort, including this document.

The GMRP principal investigators and coordinator look forward to continuing work with all individuals who supported the prioritization process.

**Planning and Review Council:** Becky Allee, Gloria Car, Jean Cowan, Deborah Epperson, Jorge Euan-Avila, Carl Ferraro, Doug Frugé, Kola Garber, Callie Hall, Phillip Hinesley, Ann Jochens, Jack Kindinger, Richard Leard, Larry Massey, Bruce Moulton, Worth Nowlin, Mark Peters, Susan Rees, David Ruple, David Shaw, Tina Shumate, Larry Simpson, Gary Springer, Kerry St. Pé, Buck Sutter, Wayne Swingle, Wes Tunnell, Bill Walker, Steven Wolfe, Alejandro Yáñez-Arancibia, and David Yeager.

**Workshop Facilitators and Support Staff:** Kay Bruening, Michael Carron, Devaney Cheramie, Lou D'Abramo, Todd Davison, Jean Ellis, Justin Farrell, Kola Garber, John Grigsby, John Jacob, Jack Kindinger, Kelly Knowlton, Loretta Leist, Dave Nieland, Ralph Rayburn, Heidi Recksiek, Logan Respass, Tina Sanchez, Melissa Schneider, Michael Shelton, Stephanie Showalter, Chris Simoniello, Betty Staugler, Roberta Swann, Glenn Thomas, Jody Thompson, Rick Wallace, Ann Weaver, and Valerie Winn.

**Workshop Hosts:** NOAA Fisheries Service, Galveston Laboratory, Texas (Roger Zimmerman and Ronnie O'Toole); Louisiana State University, Baton Rouge, La. (Versa Stickle and Dave Nieland); Mississippi State University Coastal Research and Extension Center, Biloxi, Miss. (Mary Dikes and Dave Burrage); Alabama Department of Conservation and Natural Resources, 5 Rivers - Alabama's Delta Resource Center, Spanish Fort, Ala. (Philip Hinesley, Shonda Borden, Hank Burch, and Carl Ferraro); and U.S. Geological Survey Florida Integrated Science Center, St. Petersburg, Fla. (Jack Kindinger, Sandy Coffman, and Chris Simoniello).

**External Reviewers:** George Crozier, Michael Donahue, Marco Giardino, Christina Simoniello, Jody Thompson, and Nancy Wallace.

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## INTRODUCTION

On January 26, 2007, the Joint Subcommittee on Ocean Science and Technology released “Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy,” also referred to as Ocean Research Priorities Plan or ORPP<sup>1</sup> in response to the U.S. Ocean Action Plan<sup>2</sup>. Twenty-four federal agencies used input from hundreds of individuals to develop the plan. The ORPP is now a guiding document for addressing national ocean research needs. It contains six societal themes and 20 equally weighted research priorities.

There also is value in identifying and prioritizing needs on a regional level. Coastal and marine issues are not easily framed within local, state, or international boundaries. In addition, interest in regional governance and ecosystem-based management of coastal and marine resources in the Gulf of Mexico continues to increase as the Gulf of Mexico Alliance, Gulf of Mexico Coastal Ocean Observing System Regional Association, Mississippi River/Gulf of Mexico Watershed Nutrient Task Force and other efforts examine and address regional needs.

Recognizing the need to prioritize research on a regional level as described by the Pew Oceans Commission<sup>3</sup>, U.S. Commission on Ocean Policy<sup>4</sup>, U.S. Ocean Action Plan, and ORPP, the National Sea Grant College Program provided funding in 2006 to acquire and analyze regional-based information. The effort also is incorporated into the Subcommittee on Integrated Management of Ocean Resources (SIMOR) Work Plan<sup>5</sup>. Broad constituent input from thousands of stakeholders was used to identify priority research needs for the Gulf of Mexico. Once identified, the research and information needs were linked to the societal themes and research priorities defined in the ORPP. This framework enabled regional research priorities to connect to national priorities while maintaining the necessary flexibility to address Gulf-specific needs. These linkages will be especially valuable during the implementation phase of the project. In addition, constituent input was examined independent of the ORPP to identify broad research topics that are high priorities in the Gulf of Mexico.

The GMRP Planning and Review Council (PRC) provided guidance on identifying regional priorities throughout the process and will continue to play a role in the implementation phase of the project. The PRC members serve as liaisons to stakeholder groups, provide feedback on the planning process, participate in planning events, and comment on planning documents.

The GMRP contains numerous appendices that are referenced throughout this document.

Supplemental information and appendices referenced in this document are available on the Web at [masgc.org/gmrp/report.htm](http://masgc.org/gmrp/report.htm).

### Details on the Web

To view almost 300 pages of supplemental information and appendices that support the GMRP, go to: [masgc.org/gmrp/report.htm](http://masgc.org/gmrp/report.htm)

<sup>1</sup> Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy is available at: [ocean.ceq.gov/about/sup\\_jsost\\_prioritiesplan.html](http://ocean.ceq.gov/about/sup_jsost_prioritiesplan.html).

<sup>2</sup> U.S. Ocean Action Plan is available at: [ocean.ceq.gov/actionplan.pdf](http://ocean.ceq.gov/actionplan.pdf).

<sup>3</sup> Information about the Pew Oceans Commission is available at: [pewtrusts.org/our\\_work\\_detail.aspx?id=130](http://pewtrusts.org/our_work_detail.aspx?id=130).

<sup>4</sup> The U.S. Commission on Ocean Policy report, “An Ocean Blueprint for the 21st Century” is available at: [oceancommission.gov](http://oceancommission.gov).

<sup>5</sup> Subcommittee on Integrated Management of Ocean Resources Work Plan is available at: [ocean.ceq.gov/about/sup\\_simor\\_workplan.html](http://ocean.ceq.gov/about/sup_simor_workplan.html).



## METHODS

### Data Collection

The GMRP used a three-pronged approach to collect constituent input. The approach included an analysis of existing research and management strategic plans, a Web-based survey, and five workshops.

In the spring of 2007, 117 strategic plans from local, state, federal, university-based, and other programs that conduct or use Gulf of Mexico research were analyzed. Research-oriented goals, themes, and priorities described in each strategic plan were linked to the ORPP research priorities. This analysis placed equal weight on each goal, theme, or priority within and between strategic plans and revealed where recent research emphasis has been in the Gulf of Mexico.

In the fall of 2007, a Web-based survey was sent to at least 7,571 listserv and e-mail contacts, 68 media outlets and seven Web sites. Participants at five or more conferences and workshops also were informed of the survey. Those completing the survey were asked to rate the ORPP-defined research priorities within the context of Gulf of Mexico research needs.

In January and February 2008, one workshop was held in each U.S. Gulf of Mexico state. At each workshop, participants were divided into six groups. Each group addressed one of the ORPP themes and identified research priorities and non-research needs related to the assigned theme. Groups shared their lists of research priorities with all workshop participants, and the participants ranked their most important research priorities across all themes.

### Data Analysis

#### Part I: Analysis Independent of the ORPP Framework

To identify high-priority Gulf of Mexico themes, the top 10 research priorities from each of the five workshops were examined together, and related priorities were combined under a broad Gulf of Mexico theme. A theme was considered high priority if the research priorities associated with it were 1) ranked in the top 10 at two or more workshops, 2) had an average workshop rank in the top five, and 3) was linked to one of the top five ORPP research priorities reported in the Web survey and/or was in the top five most mentioned comments in the survey. The underlying research priorities that support the Gulf of Mexico high-priority themes were considered “top-tier” research priorities. Gulf of Mexico research priorities that were ranked from 11 to 20 at the five workshops and in the comments of the Web survey that provided supplemental information that supported these highly ranked priorities were added to the description of research priorities.

#### Part II: Analysis Using the ORPP Framework

After Part I was complete, each of the top 10 workshop priorities from the five workshops were linked to specific ORPP research priorities. Short statements describing research priorities were organized by the ORPP framework and categorized as “top tier” if they fell within a Gulf of Mexico high-priority theme. The remaining top 10 research priorities were designated “second tier.” Because the second-tier research priorities were ranked in the top 10 at one or more workshops, they could be considered priorities for the region.



## RESULTS

### Survey and Workshop Results

More than 1,500 people from 233 organizations, universities, and federal and state departments in the United States and Mexico with more than 20,000 years of experience completed at least a portion of the survey. In addition, there were 571 survey comments about regional research priorities.

People who completed the survey were from universities (34 percent), government agencies (30 percent), business and industry (17 percent), and non-government organizations (NGOs) and other organizations (19 percent). More information and survey results are included in the appendix.

Approximately 300 people from 77 organizations, universities, and federal and state agencies in the United States and Mexico participated in the regional workshops. Workshop participants identified 261 high-priority research topics and 251 non-research topics for the Gulf of Mexico. The reports from the five workshops are in the appendix.

#### Part I: Results from the Analysis Independent of the ORPP Framework

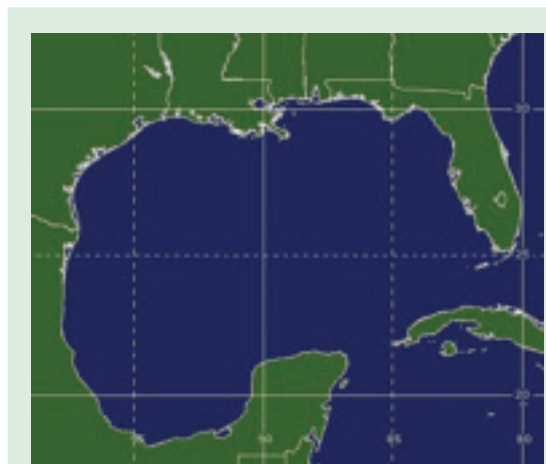
The five high-priority Gulf of Mexico themes in alphabetical order are Ecosystem Health Indicators; Freshwater Input and Hydrology; Habitats and Living Resources; Sea Level Change, Subsidence, and Storm Surge; and Water Quality and Nutrients. Detailed descriptions of the top-tier research priorities that support the five high-priority Gulf of Mexico themes are presented in the following pages.

#### Part II: Results from the Analysis Using the ORPP Framework

The survey ranking and number of links between top 10 workshop priorities and the 20 ORPP research priorities are presented in Table 1 on page 9. There were 54 top priorities that were identified as top 10 workshop priorities due to ties at some workshops. These 54 top priorities represented 21 percent of all research priorities identified and 45 percent of total votes from workshop participants. Sixty-nine percent of the 54 top workshop priorities linked to two of the six ORPP societal themes. The highest-priority Gulf of Mexico research needs are arranged by ORPP societal theme and research priority and presented in the supplemental document that is available online.

### Strategic Plan Results

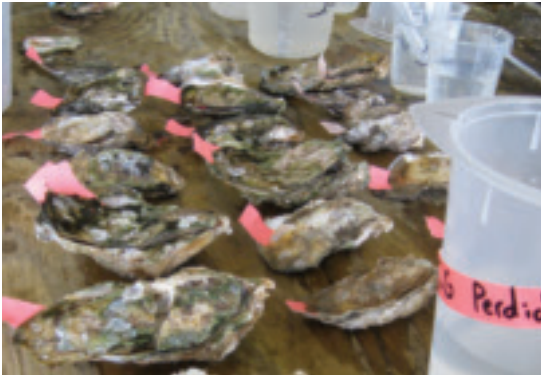
The strategic plans used in this synthesis are available at [masgc.org/gmrp/plans.htm](http://masgc.org/gmrp/plans.htm), and results of the synthesis effort are included in the appendix. Almost 68 percent of the goals, themes, or priorities from the strategic plans aligned with two of the six ORPP societal themes. The same two themes emerged as priorities in the workshop, survey, and strategic plan analyses and are Improving Ecosystem Health and Stewardship of Natural and Cultural Resources.



NOAA

### Economics and Gulf Research

Wise use of limited regional research resources is imperative due to the current economic climate at the regional, national, and international levels. Throughout the planning process, stakeholders identified the need to efficiently and effectively utilize research dollars and demonstrate the economic return on investment. This requires close examination of proposed and ongoing research and the ability to accurately determine and convey the economic benefits of this work at the local, state, regional, national, and international levels. Economic research and analysis is often needed to achieve this goal and was recommended as an important component of regional research.



B. Walton



Liam Gumley, Space Science and Engineering Center, University of Wisconsin-Madison and the Moderate Resolution Imaging Spectroradiometer Science Team



Mississippi Department of Marine Resources

Top: Oysters have been identified as possible indicators of ecosystem health.

Middle: The murky water of the Mississippi River mixes with the blue water of the Gulf after a rainstorm.

Bottom: A hydrological monitoring station collects data off the Mississippi Gulf Coast.

## HIGH-PRIORITY THEMES AND SUPPORTING TOP-TIER RESEARCH PRIORITIES

### Theme: Ecosystem Health Indicators

#### Research Priority:

- Determine the correct variables to use as indicators of ecosystem health, identify the optimal methods to measure the indicators, and design better-defined indices with more indicators to evaluate the status of ecosystems

Related ORPP Theme: Improving Ecosystem Health

### Theme: Freshwater Input and Hydrology

#### Research Priorities:

- Predict the impacts of current building and permitting practices on freshwater inflow and examine the effects of human manipulation (e.g. upstream impoundments, causeways, placing processed water into confined areas) on the amount, timing, and type of freshwater inflows and their impacts on natural resources and the environment
- Analyze the role of freshwater input on coastal wetlands and habitat change over time to determine the hydrologic requirements of healthy marsh systems and quantify effects of sediment discharge reduction on erosion rates and habitat loss
- Examine how river diversions and the placement of sediment impact water quality, sediment processes, shoaling, coastal processes, fisheries, habitat utilization by organisms, and marshes and other habitats
- Examine the impacts of reduced freshwater input and temperature change on water stratification, biodiversity, species composition and production, benthic communities, trophic interactions, fisheries, the range of native and non-native species, emergent coastal habitats, sediment transport, and shoreline erosion
- Determine changes in freshwater, nutrient, pollution, groundwater and sediment input due to changes in pattern and quantity of precipitation and predict the subsequent impact of these inputs on geochemical and physical coastal processes and biological (including benthic and epibenthic) communities

Related ORPP Themes: Improving Ecosystem Health, The Ocean's Role in Climate, Enabling Marine Operations

### Theme: Habitats and Living Resources

#### Research Priorities:

- Identify connections among habitats and connections between habitats and living marine resources
- Model resource stability and sustainability and include interactions between fisheries, habitat, threatened and endangered species, ecosystem processes, and stressors to assist with making ecosystem-based management decisions
- Examine changes in habitat quality and quantity over time and identify the effects of changes on marine organisms including the threshold level of habitat quality and quantity required to support sustainable populations of living resources

Related ORPP Theme: Stewardship of Natural and Cultural Resources

### Theme: Sea Level Change, Subsidence, and Storm Surge

#### Research Priorities:

- Determine and predict the physical impacts of climate change on coastal and upland areas in terms of sea level change, rate of elevation change, shoreline change, loss of barrier islands, role of coastal development in preventing migration of marshes and other habitats, and change in inland, coastal, and ocean hydrology and apply this knowledge in habitat restoration efforts
- Examine the public's perception of sea level change; evaluate hazard-related communications and people's change in behavior in relation to hazard mitigation; and identify approaches that local governments are employing to adapt to sea level change
- Identify the optimal use and allocation of sediment and evaluate the rates of shoreline change from anthropogenic and natural impacts including sediment mobilization, transport, and deposition from major storm events
- Determine how storm surge, subsidence and sea level change affects ecosystems, native coastal habitat, wetland composition, saltwater intrusion, coastal flooding, cultures, agriculture, and human health
- Predict socioeconomic impacts of climate and sea level change on population dynamics, community infrastructure, short- and long-term community demographic shifts, social capital, and commerce and shipping centers

Related ORPP Themes: Increase Resilience to Natural Hazards, The Ocean's Role in Climate



Mississippi-Alabama Sea Grant Consortium



John Dindo/Dauphin Island Sea Lab



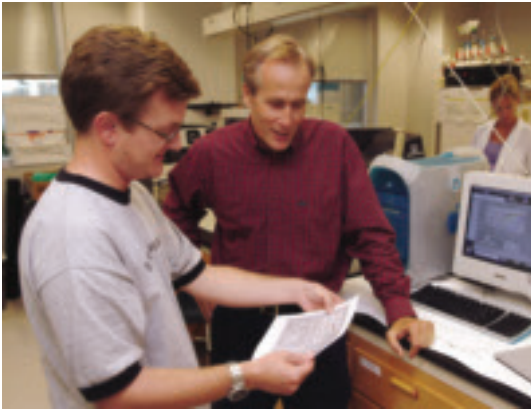
Dauphin Island Sea Lab

Top: Scientists conduct research in a black needlerush marsh.

Middle: A tree lies on the sand after Hurricane Ivan.

Bottom: Flooding remains in Hurricane Katrina's wake on Dauphin Island, Ala.





Tom Wright/Florida Sea Grant



Mississippi Wildlife, Fisheries and Parks



Jamie Tidwell/Texas Sea Grant

Top: Researchers work to improve sensor technology for rapid detection of fecal bacteria in coastal waters.

Middle: A fish kill leaves fish dead in Mississippi.

Bottom: Trash litters Bastrop Bayou in Bastrop, Texas.

## Theme: Water Quality and Nutrients

### Research Priorities:

- Evaluate the impacts of coastal development, land use, land cover, stormwater management, and wastewater management on eutrophication, nutrient loading, water quality, and the environment
- Identify the relationships between nutrient loading, eutrophication, hypoxia, and harmful algal blooms; examine their impacts on ecosystem health, seagrasses, and higher trophic organisms; and determine the effects of freshwater diversion on hypoxia
- Model the impacts of non-point source pollution on coastal resources

### Related ORPP Theme: Improving Ecosystem Health

#### GMRP puts focus on constituent engagement

- More than 260 universities, government agencies, businesses, NGOs, and other organizations were represented in the planning process.
- More than 1,500 people completed at least a portion of the survey to identify the most important research needs.
- More than 20,000 years of professional experience was represented in the survey results.
- Constituents made 571 comments on the survey and rated 20 ORPP research priorities.
- Approximately 300 people participated in five regional research planning workshops.
- Constituents identified 261 research priorities at the workshops.



Mississippi-Alabama Sea Grant Consortium

People discuss research priorities during a workshop.

**Table 1. ORPP research priorities organized by average survey rank and number of links to the top 54 highest-rated priorities from the stakeholder workshops.**

ORPP Theme <sup>1</sup>	ORPP Research Priorities	Survey Rank	Workshop Links
Eco	Understand and predict the impact of natural and anthropogenic processes on ecosystems	1	11
Stw	Understand human-use patterns that may influence resource stability and sustainability	2	2
Stw	Understand interspecies and habitat/species relationships to support forecasting resource stability and sustainability	3	11
Eco	Apply understanding of marine ecosystems to develop appropriate indicators and metrics for sustainable use and effective management	3	3
Stw	Understand the status and trends of resource abundance and distribution through more accurate, timely and synoptic assessments	5	1
Res	Understand the response of coastal and marine systems to natural hazards and apply that understanding to assessments of future vulnerability to natural hazards	6	2
Clm	Understand the impact of climate variability and change on the biogeochemistry of the ocean and implications for its ecosystems	7	3
Eco	Apply understanding of natural and anthropogenic processes to develop socioeconomic assessments and models to evaluate the impact of multiple human uses on ecosystems	8	6
Clm	Understand ocean-climate interactions within and across regions	9	0 <sup>2</sup>
Clm	Apply understanding of the ocean to help project future climate changes and their impacts	10	0 <sup>2</sup>
Ops	Understand the interactions between marine operations and the environment	11	3
Res	Understand how hazard events initiate and evolve, and apply that understanding to improve forecasts of future hazard events	11	2
Res	Apply understanding to develop multi-hazard risk assessments and support development of models, policies, and strategies for hazard mitigation	13	4
Stw	Apply advanced understanding and technologies to enhance the benefits of various natural resources from the open ocean and coasts	14	2
Hth	Understand sources and processes contributing to ocean-related risks to human health	15	2
Hth	Understand human health risks associated with the ocean and the potential benefits of ocean resources to human health	16	1
Hth	Understand how human use and valuation of ocean resources can be affected by ocean-borne human health threats and how human activities can influence these threats	17	0
Ops	Apply understanding of environmental factors affecting marine operations to characterize and predict conditions in the maritime domain	18	0
Hth	Apply understanding of ocean ecosystems and biodiversity to develop products and biological models to enhance human well-being	19	1
Ops	Apply understanding of environmental impacts and marine operations to enhance the marine transportation system	20	0

Gulf of Mexico Priorities within the ORPP framework.

<sup>1</sup>The key for the ORPP theme codes:  
 Eco: Improving Ecosystem Health  
 Stw: Stewardship of Natural and Cultural Resources  
 Res: Increase Resilience to Natural Hazards  
 Hth: Enhancing Human Health  
 Ops: Enabling Marine Operations  
 Clm: The Ocean's Role in Climate

<sup>2</sup>A "0" indicates that there was no primary link between the 54 top workshop priorities and each ORPP research priority. Several climate-related workshop priorities were linked to ORPP research priorities that better fit themes other than the "The Ocean's Role in Climate" ORPP theme.

## ADDITIONAL NEEDS

### Information, Education, Management, and Other Needs for the Region

The primary focus of the Gulf of Mexico Research Plan was to identify research priorities for the Gulf of Mexico region. However, survey and workshop participants identified information that is needed to frame research questions or provide baseline information from which to conduct research. The continuum from research to application is wide, and Gulf of Mexico needs fall along the continuum. Some survey respondents and workshop participants considered a specific need to be a research need, while others classified the same need as an informational need. For the purposes of the GMRP, a research need is classified as a need that social scientists (e.g. economists, sociologists, anthropologists) or natural scientists (e.g. biologists, geologists, chemists, physicists) can address using scientific methods. The development of new models and predictive tools is also considered a research need.

Survey respondents and workshop participants identified numerous non-research needs. This information is valuable and is included in this report. Non-research needs identified in the GMRP process fall into these categories:

- Adult and Youth Education and Communication
- Data, Monitoring, Mapping, and Modeling
- Coordination, Policy, and Management
- Habitat and Restoration Topics
- Non-research Socioeconomic Needs

These needs have been shared with groups working in the Gulf of Mexico, and the complete list of non-research needs identified by stakeholders is available online at [masgc.org/gmrp/report.htm](http://masgc.org/gmrp/report.htm).



Louisiana Sea Grant

A Louisiana State University graduate assistant explains storm surge maps to residents in Iberia Parish, Louisiana.



Mississippi-Alabama Sea Grant

Boy Scouts take part in a habitat restoration project on Dauphin Island, Ala.

## INITIAL PROGRESS TOWARD IMPLEMENTATION

The region is well prepared to address Gulf of Mexico research priorities. The next step is to develop an implementation plan to address the highest priority needs identified in the GMRP. There are well-established research entities throughout the Gulf of Mexico and new collaborative regional frameworks have been established over the last five years. These frameworks include co-operation with local, state, federal, academic, NGO, and private entities.

The GMRP provides an outline of regional priorities that can be used to bolster and support local, regional, national, and international research programs. To be successful, it is essential that members of the research community identify how their work can complement each others' work. This collaboration will optimize the use of expertise and limited resources. Partnerships between research programs and participation in collective efforts, such as the Gulf of Mexico Alliance, Gulf of Mexico Coastal Ocean Observing System Regional Association, and the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force are examples of this collaboration. Joint requests for proposals (RFPs) are another avenue to leverage resources.

There are numerous challenges to successfully implement the GMRP. Organizations follow strategic plans, which can provide flexibility in addressing regional needs in some cases but not in other cases. Due to differing funding cycles, RFP requirements, and scopes of work, there can be challenges to jointly funding research. However, these obstacles can be overcome through entities funding separate elements of a common research priority and coordinating the timing of RFP releases.

The research priorities identified in the GMRP provide a starting point for addressing priorities on a regional level. Several groups, such as the Florida Sea Grant College Program, Gulf of Mexico Alliance, Louisiana Sea Grant College Program, Mississippi-Alabama Sea Grant Consortium, Mississippi River/Gulf of Mexico Watershed Nutrient Task Force, NASA, NOAA Center for Sponsored Coastal Ocean Research, NOAA Gulf Coast Services Center, Northern Gulf Institute, Southeast Aquatic Resource Partnership, Southern Association of Marine Laboratories, Texas Coastal Coordination Council, and Texas Sea Grant College Program and others, have indicated that they have or will be incorporating the GMRP research priorities into their planning processes. Now that regional research priorities are identified, plans for implementation can begin. The implementation process will include identifying, implementing, and evaluating strategies to address the research priorities. The success of this effort also hinges on applying the regional research findings through robust extension, outreach, and education programs.

The GMRP PRC, principal investigators, and coordinator are developing the GMRP as a service to the region. The implementation phase will be most successful if the majority of research-based groups and organizations working in the Gulf of Mexico are actively involved in the effort. This involvement will start with input from the PRC and coordination with groups throughout the Gulf of Mexico, including colleagues in Mexico.

### Early success: Research initiative moves GMRP from planning to action

The Gulf of Mexico Research Initiative is an example of the GMRP transitioning from the planning phase to the implementation phase.

The U.S. Environmental Protection Agency's Gulf of Mexico Program, Florida Sea Grant College Program, Louisiana Sea Grant College Program, Mississippi-Alabama Sea Grant Consortium, Northern Gulf Institute, Texas Sea Grant College Program, and the U.S. Geological Survey are pooling resources to jointly sponsor research and outreach that address priorities identified by the GMRP and the Gulf of Mexico Alliance.

Successful projects will help Gulf of Mexico communities better understand and become more resilient to climate and natural hazards. Approximately \$1.4 million in research and outreach will be used for this regional initiative during 2010-11.



**FOR MORE INFORMATION**

For more information about this report or the Gulf of Mexico Research Plan process, contact GMRP Coordinator Steve Sempier or the director of the Sea Grant program in your state:

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View supplemental information and appendices at [masgc.org/gmrp/report.htm](http://masgc.org/gmrp/report.htm).

