

Gulf of Mexico Research Planning Workshop Report

For the workshop held in
Spanish Fort, Alabama
on
January 15, 2008

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National Sea Grant College Program to:
Mississippi-Alabama Sea Grant Consortium
Florida Sea Grant College Program
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Background

The purpose of the Gulf of Mexico Research Plan (GMRP) is to identify regional research and information needs and develop a strategy to address these needs through collaboration with agencies and organizations that conduct and use Gulf of Mexico-related research. The project is sponsored by the National Sea Grant College Program and Gulf of Mexico Sea Grant College Programs. The GMRP is rooted in stakeholder input, and workshops were one of the primary methods used to collect this input. Workshops were held in each Gulf of Mexico state and supported by numerous individuals (see acknowledgements section). This report provides the results from the workshop at the **5 Rivers Delta Resource Center in Spanish Fort, Alabama**.

The workshop agenda (appendix A) was designed to identify high-priority research topics related to the six societal themes described in the Joint Subcommittee on Ocean Science and Technology's 2007 document "Charting the Course for Ocean Science in the United States for the Next Decade—An Ocean Research Priorities Plan and Implementation Strategy." The themes included:

- stewardship of natural and cultural ocean resources,
- increasing resilience to natural hazards,
- enabling marine operations,
- the ocean's role in climate,
- improving ecosystem health, and
- enhancing human health.

A process (appendix B) was developed to allow workshop participants (appendix C) to efficiently develop a list of research priorities in a limited amount of time. Participants were divided into breakout groups by theme area to discuss specific research topics, information needs, and other topics that related to their theme area. Individuals in the breakout group then voted for the research topics discussed in their session that they believed were most important. The eight to ten topics with the highest votes were then presented to all workshop participants. All workshop participants then voted for these top research topics across all theme areas.

This report presents 1) the results of the breakout group voting for each theme area, 2) the non-research topics discussed in each breakout group, and 3) the results of the large group voting session across all theme areas.

If you will be using the information provided in this report for planning or other purposes we would like to hear from you. For more information about the Gulf of Mexico Research Planning effort or to share how you will be using the results of the GMRP workshop(s) please contact Steve Sempier, Gulf of Mexico Research Planning Coordinator, at stephen.sempier@usm.edu.

You can also learn more about the GMRP at the project's web site at: masgc.org/gmrp.

Breakout Group Results

Participants in each themed breakout group identified research needs and voted for the research topics they believed were most important. Each participant was provided eight votes and they could place up to two votes on an individual research topic.

Prior to the voting session some breakout groups combined multiple ideas that were mentioned during the brainstorming session, and therefore crossed out similar ideas so that they would not be available during the voting session. The tables below include all comments written on the flip chart paper, and those topics that were crossed out on the flip chart paper are indicated with a strike through in the table.

Information needs and policy, management, and education related topics were also captured in the breakout group sessions but were not voted on for the prioritization process. The results of these discussions are also included under each themed heading.

Stewardship of Natural and Cultural Ocean Resources

Research Needs

Table 1. Research topics identified by the “Stewardship of Natural and Cultural Ocean Resources” breakout group and voting results from the breakout group voting session.

Research Topic	Votes
Understanding of interspecies relationships -Accurate assessment of biodiversity (ADCNE is doing?)	8
Economic evaluation of (hunting and fishing) outdoor activities -(Gulf of Mexico/Coastal) Comprehensive economic analysis of maritime related activities	6
Research of delivery methods and messages to get people to change behavior related to stewardship - evaluation of existing programs	6
Assessment of which biological/environmental factors impact status and trends -Pristine environment -Fisheries -Water quality -Tourism -Land use/development impacts	5
How do current cultural practices impact the environment? -Identification of cultural practices that exist now that are sustainable	5
Identification of changing land use patterns and creating models to predict areas most heavily impacted	4
Status and trends of biological species	4
Analysis of changing patterns of resource use (fishing, hunting, commercial)	2
Valuation of natural resources (biological, social, economic, ecosystem)	2
Identification of tourist expectations, knowledge of environment (human dimension surveys)	1
Analysis of human use patterns related to the resources and development	0
Confirmative evaluation of outreach activities/programs -Effectiveness -Research of how to conduct effective outreach/ education programs"	0

Stewardship of Natural and Cultural Ocean Resources

Information Needs

- Inventory of natural resources
- Website portal for available technology
- Information directory

Policy, Management or Education Topics

- Communicating results of research
- Branding of stewardship message
- How to address loss of revenue related to outdoor license activities
- Development of a naturalist program
- Education of scientists about available technology
- Develop awareness about technology available--specific interface to direct

Increasing Resilience to Natural Hazards

Research Needs

Table 2. Research topics identified by the “Increasing Resilience to Natural Hazards” breakout group and voting results from the breakout group voting session.

Research Topic	Votes
Identify offshore sand resources for use in beach nourishment/delineation	7
Ecosystem, living and habitat, beaches rate/ability to recover from natural and man-made hazards (comprehensive profile and vegetative)	6
Rates of shoreline change due to human impact (combined with "Do long-term shoreline change rates vary between natural and engineered beaches" for large group ranking session)	6
Explore geology/topography of shoreline vulnerability/potential to breach	5
Update surge modeling and products	5
Assess economic and social vulnerability of coastal community	4
Improve capability and coordinate evacuation procedures for emergencies	4
Quantify impacts of winter storm events on coastal regions	4
Develop understanding of wetland process and change along Mississippi Sound	2
Catalog resilience best practices, evaluate what factors make a city/town resilient	1
Determine best method (including natural alternatives) of shoreline stabilization	1
Hurricane probability, frequency, and growth modeling, looking at future development	1
Collect shallow water bathy data and lidar to assess dunes/beaches	0
Detect long-term shoreline/beach morphodynamics	0
Develop sand prioritization	0
Do long-term shoreline change rates vary between natural and engineered beaches	0
Investigate historical topography bathy vulnerability to shoreline breach	0
Societal perception of hurricane impacts – people understanding Saffir-Simpson scale, surge predictions, and perception of uniform damage	0
What are subsidence rates	0

Increasing Resilience to Natural Hazards

Information Needs

- See Steve Junes for bathy data
- Accurate near-shore wave data
- Expand bi-annual shoreline data orthophotography collection to include Mississippi Sound and wetlands shoreline
- High accuracy reference network
- Centralized shoreline/topography data location to facilitate research

Policy, Management or Education Topics

- Improve land use planning, floodplain management, development of high risk areas
- Have sand resources pre-identified
- Investigate access to Florida sand
- Educating citizens on reducing vulnerability/understanding of barrier island
- Evaluate evacuation policies and emergency operating plans
- Educate media on responsible storm/hazard reporting

Enabling Marine Operations

Research Needs

Table 3. Research topics identified by the “Enabling Marine Operations” breakout group and voting results from the breakout group voting session.

Research Topic	Votes
Define establish value of working waterfront businesses competing waterfront development on a regional/national scale (e.g., three boat repair facilities nationally for Coast Guard) to assist waterfront development decision-making	9
Economic, social, environmental/cost-benefit analysis of working waterfront versus residential/tourism other types of development - how much waterfront needed to sustain?	6
Understand systems involved and develop better management practices in maintaining navigation channels	6
Develop data to assist waterfront business decisions (locations, business expansion, etc.)	5
Open ocean aquaculture impacts	5
Water quality impacts on Gulf of Mexico systems, including estuaries	5
Economic and environmental impacts of short-water commodity trips vs. land-based transport (i.e., from state docks to Hyundai plant)	4
Evaluate economic impact of dredging on "nontraditional" (smaller) channel and of innovative methods of dredging	4
Impact of human development on water quality - understanding water quality change based on land use/land cover - utilize observation systems to determine preventative strategies	4
Impacts and better prediction of global warming /sea-level rise change on commerce and inland businesses and coastal communities	4
Impacts of super Panamex vessels on ports, transportation, and environmental quality	4
Develop detection methods for new non-native species	3
Predictions on hurricanes, strength, location of strike, storm surge - accuracy and lead time	3
White paper definitions of "working waterfronts" across US	3
Understanding of capacity of Gulf to meet commercial and recreational fishing needs	2

Table 3 (continued). Research topics identified by the “Enabling Marine Operations” breakout group and voting results from the breakout group voting session.

Understanding of Gulf based on impacts of new technologies related to fishing, homeland security, and energy production (waves, nuclear)	2
Evaluate comparative impacts of shipbuilding and port operations on water quality, especially stormwater	1
Research the translation of research data/technology to applied uses (business/commerce community)	1
Air quality/air impact space impacts of maritime operations	0
Analyze definition of safe harbor info, how many exist, and how many are needed	0
Identify characteristics to determine where production centers (fishing, boat-building) should exist/expand	0
Identify emerging technologies for future commerce/impacts	0
Impact of ocean/sea breezes on ozone levels over land	0
Incoming vessels and their impacts of on aquatic nuisance non-invasive species	0
Long term coastal change detection	0
Meteorological impact of ocean on near-shore lands	0
Qualify study culturally diverse groups in Gulf of Mexico area	0
Research techniques to decrease response time to hazards/spills	0
Better prediction of sea level change and impacts on coastal communities	0
Economic studies (ecotourism)	0
Environmental impacts of competing waterfront land uses	0
How to mitigate impacts of sand movement on shipping channels – better management	0
Impacts/benefits of energy production methods	0
Social impacts of competing waterfront land uses	0
Study less impact industry	0

Enabling Marine Operations

Information Needs

- Modeling shipping channels
- Better tonnage reporting mechanism
- Map available safe harbors
- Low cost, real-time observation systems
- Predictive models of hurricane strike & surge
- Model (not pure economic) to assist business decisions
- Identify safe harbors, how many exist, and how many are needed
- White paper definitions of "working waterfronts" across US
- Long term coastal change detection

Policy, Management or Education Topics

- Regional dredging plan
- Utilize information in policy making
- Translate research into actions

The Ocean’s Role in Climate

Research Needs

Table 4. Research topics identified by the “Ocean’s Role in Climate” breakout group and voting results from the breakout group voting session.

Research Topic	Votes
How climate variability affects pollution sediment and nutrient/organic composites delivery	8
Impacts of climate change/precipitation/salt wedge hydrology on ocean/estuarine circulation	6
Historical reconstruction of ecosystem indicators	5
Impact of sea-level rise on native coastal habitat	5
Impact of temperature/salinity on expanding species range/invasive species/productivity (fisheries, etc.)	5
Research into generation of climate change scenarios	5
Has built environment effected rainfall and water penetration/seawater penetration into aquifer	4
Impact of sea temperature/salinity on harmful algal blooms, toxins, and pathogens	4
Impact of sea-level rise on coastal development (built environment)	3
Sea-level rise and nutrient release from eroding marshes	3
Socio-economic impact of climate change on coastal communities (insurance, codes, etc.)	3
Impact of built environment on atmospheric circulation (mesoclimate)	2
Positive impact of oceans on mitigating man-made climate changing factors	2
Predicted shifts in storm intensity/frequency and effects	2
How has/does development of coastal lands and associated waterways (?) impact relative sea-level rise, etc.	1
Impact of algal productivity or geochemistry on climate	1
Incorporate climate change into existing or new hydrological models	1
Human perceptions of “status” of coastal environment, land/sea interface, and change	0

Information Needs

- Historical baselines for comparison to climate change
 - Identify, enhance, and support
 - Current baseline data
 - Gathering for comparisons
- Accurate topography
- Accurate subsidence

Policy, Management or Education Topics

(none provided)

Improving Ecosystem Health

Research Needs

Table 5. Research topics identified by the “Improving Ecosystem Health” breakout group and voting results from the breakout group voting session.

Research Topic	Votes
Hydrological issues (bullets from detailed items)	8
Identify appropriate variables needed to develop good indicators of ecosystem health (variables for indices) -Can't measure everything, so what pick? -E.g., salinity? Indicator species?	7
Research most effective methods for encouraging public participation in protecting fisheries and other natural resources [water quality (ground and surface), habitat, fisheries, oil, also natural resources and recreation areas] (e.g. of methods = education, workshops, volunteer opportunities, public outreach, political lobbying, scholarships); also research types of info/methods for communicating with decision-makers/officials	7
Nutrient loading/non-point source	6
Better understand of success of different restoration techniques (comparative analysis) (e.g., planting sea oats) -How many variables play into success (which type plants, type sediment, type slope) -Research technologies to improve function	5
Fisheries natural science (non-economic)	5
Research into connectivity between different habitats (e.g., upstream/downstream, wildlife corridors, impacts of barriers, lateral connection between streams and adjacent woodland habitat)	5
Influence of invasive species on ecosystem health	4
Stormwater management (GIS and methods)	4
Compare effectiveness of different types of artificial reef material being deployed in the Gulf of Mexico (barges, chicken transfer cages, concrete mixing drums, concrete pyramids, bridge rubble)	3
Impact of human development on coastal systems, specifically habitat change	3
Research on methods of changing human behavior; re., environment	3
Better predictive models to show impacts of continued population growth on coastal ecosystems (where is the tipping point for different resources/systems/functions)	2

Table 5 (continued). Research topics identified by the “Improving Ecosystem Health” breakout group and voting results from the breakout group voting session.

Research alternative institutional frameworks and management actions (e.g., incentives/disincentives) for influencing human behaviors that affect the environment	2
Research mechanisms that aid in organizing, recording, and analyzing measurements/field results – how connect measurements from different states	2
Alternative to shoreline armoring -Research efficacy, economics, habitat impacts, sediment -Types: Bulk heading, breakwaters, living shorelines alternatives -Use of living shoreline alternatives to armoring (marsh, oyster)	1
Effects of human behavior on the coastal environment (ecological impacts)	1
Identify metrics that can be used on a regional basis	1
Alternative costs of stormwater management – what are right methods for doing county-wide stormwater management	0
Better understanding of mercury loading and bioaccumulation	0
Determining the non-use value of ecosystems (e.g., aesthetics) (wilderness value)	0
Develop models to predict impacts of nutrient non-point source pollution on coastal resources	0
Economic impacts resulting from changes in fish/shellfish populations	0
Economic value of coastal habitat/delta, e.g., ecotour value	0
Economic value of restored habitats	0
Ecosystem function of restored habitats, and research on techniques to improve function	0
Effect of stormwater management on the coastal environment	0
Efficacy of/cost-benefit of different types of marine protected areas	0
How does filling one wetland impact adjacent ecosystems?	0

Table 5 (continued). Research topics identified by the “Improving Ecosystem Health” breakout group and voting results from the breakout group voting session.

Impact of altered sediment circulation -Impacts of causeways/other structures on sediment transport -How does restoration/engineering impact sediment circulation -How does that impact oysters	0
Impacts of sea-level rise on ecosystem health	0
Implications of sea-level rise for restoration decisions	0
Lack of understanding of relationship between estuary and bay	0
Cumulative impacts of human activities on fisheries -Investigating whether top-down or bottom-up has greater impacts on fish populations	0
Develop predictive models of fish populations that incorporate physical environment	0
Identify key "underpinning" issues that are priorities for communicating to public officials — e.g., survey scientists to identify top issues	0
Impacts of drought on biota -Impacts reduced freshwater to estuaries	0
Reduced inflows due to upstream impoundments (impacts) -Changes in amount and timing of flows -Changes in type of flow (surface vs. groundwater)	0
Role of causeways to ecological, hydrological	0
Saltwater intrusion effects on biota and resulting shift in ecosystem	0
Understanding impacts nutrient loading on: -harmful algal blooms -loss of seagrass communities	0
What GIS information/layers do you need for stormwater management — is there an optimal way? Evaluate/study different methods so can choose cost effective one	0

Information Needs

- Key underpinning issues that need to communicate to decision-makers

Policy, Management or Education Topics

- Awareness of how human waste management impacts the environment
- Government awareness/acknowledgement of importance of freshwater inflow (need for freshwater inflow to coastal area) — issue even when isn't a drought

Enhancing Human Health

Research Needs

Table 6. Research topics identified by the “Enhancing Human Health” breakout group and voting results from the breakout group voting session.

Research Topic	Votes
Nutrient criteria development; identify threshold levels impact health	8
Rapid, field-deployable standardized tests/technology/hardware for detection of contaminants/toxins and organisms	7
Cultivating/extract beneficial drug treatments from ocean resources	5
Develop epidemiological tests screen pointing to trigger public health response syndrome surveillance	5
Atmospheric deposits of contaminants like pathogens -Ballast water; people; recreational equipment	4
Contaminant (mercury, metals, organics/pathogens) sources fate transport	4
Habitat alteration/nutrient transport and harmful algal bloom impacts/occurrence at Gulf/estuary interface	4
Human-made structures, contributions, and alterations	4
Identify sentinel species below human toxicity levels for harmful agents	4
Impacts of iron fertilization of microalgae	4
Predictive modeling on of near-shore waters on movement of harmful algal blooms/pathogens	4
Surface water temperatures/salinity/pH on pathogenicity	4
Indicators for post-harvest effects on seafood safety	2
Long-term exposure studies on ion-level biotoxins (below management levels)	2
Growth conditions for maximum toxicity	0
Socioeconomic and cultural influences on risk communication	0
Agricultural/human runoff impacts on human health	0
Develop field deployable tests for under processing of cooked/prepared local/imported ocean products	0
Habitat alteration/nutrient transport at human made structures: Canals, dead end canals, and reefs	0

Table 6 (continued). Research topics identified by the “Enhancing Human Health” breakout group and voting results from the breakout group voting session.

Identify other contaminants natural/anthropological (non-mercury) -Identify likely sources	0
Identify potentially toxic microalgae and toxicity tests: Field deployable	0
Identify rapid tests for contaminants/toxins	0
Mercury introduction/impacts –Pathogen microorganism mediated mercury processing	0
Mercury sources and transport	0
Stormwater management and alteration of fresh water entry amount/frequency change on harmful algal blooms/pathology/contaminants	0
Toxins/chemical/pathogen impacts inputs from active/inactive oil/gas rigs	0

Information Needs

(none provided)

Policy, Management or Education Topics

- Design educational materials programs for cross-cultural groups
- Developing education for post-marketing processors/shipper/retailers
- Incorporation of newly developed field deployable testing into management
- Standards and protocols for data management
- Identify manuals on toxic microalgae and digital library

Overall Results—Research Priorities Determined in Large Group Voting Session

The research topics presented in Table 7 were derived from the highest rated topics from each of the themed breakout groups. The column titled, “Theme,” in Table 7 corresponds to the breakout group from which the research topic originated. The following codes were used: stewardship of natural and cultural ocean resources (Stewardship), increasing resilience to natural hazards (Resilience), improving ecosystem health (Ecosystem), enabling marine operations (Operations), enhancing human health (Human), and the ocean’s role in climate (Climate).

Each participant had 12 votes for the large group voting session and could place up to two votes for any one research topic.

Note that in some cases research topics presented by different breakout groups were very similar. An in-depth analysis of similar topics identified within and between workshops will be discussed in a later report.

Table 7. Results of the large voting session for high-priority research topics across all theme areas.

Research Topic	Votes	Theme
Nutrient Loading/Non-Point Source Research -Effects of storm water & waste water management on environment -Developing models to predict impacts non-point source pollution on coastal resources -Understand nutrient loading impacts on harmful algal blooms and on sea grass	23	Ecosystem
Identify appropriate variables needed to develop good indicators of ecosystem health (variables for indices)	22	Ecosystem
Impact of human development on water quality, understanding water quality change based on land-use/land cover – utilize observation systems to determine preventative strategies	22	Operations
Predictive modeling of near-shore waters for transport of harmful algal blooms/pathogens	22	Human
Assessment of which biological and environmental factors impact status and trends of resources -Fisheries, water quality, tourism, development/land use impacts	21	Stewardship
Develop rapid field-based standardized tests for detection of contaminants, toxin, and organisms	19	Human

Table 7 (continued). Results of the large voting session for high-priority research topics across all theme areas.

Hydrological Issues -Reduced inflows due to upstream impoundments -Drought impacts -Impacts & changes in timing, amount, and type of water (ground water vs. surface) -Salt-water intrusion effects on biota & resulting shifts in ecosystems -Role of causeways in changing hydrology	18	Ecosystem
Accurate assessment of biodiversity -Population, genetics, molecular ecology	17	Stewardship
Rates of shoreline change from human and natural impacts	16	Resilience
Impacts of temperature/salinity on expanding species range/invasive species/productivity (fisheries)	15	Climate
Update storm surge modeling and products	15	Resilience
Impact of sea-level rise on native coastal habitat	14	Climate
Ecosystem resiliency to natural and man-made hazards	13	Resilience
Research of delivery methods and messages that promote stewardship behavior change -Evaluation of existing programs	13	Stewardship
Cultivating/extracting beneficial drugs/treatments from ocean resources	11	Human
Historical reconstruction of ecosystem health indicators	11	Climate
Impact of sea temperature/salinity on harmful algal blooms, toxins, and pathogens	11	Climate
Research connectivity between different habitats (e.g. upstream and downstream; wildlife corridors; impacts of barriers, streams, and adjacent habitat)	11	Ecosystem
Economic, social, and environmental/cost benefit analysis of working waterfronts vs. other types of development (how much waterfront needed to sustain business)	10	Operations
Fisheries Research -Cumulative impacts of human activities on fisheries -Develop predictive models of fish populations that incorporate physical environment information (i.e., not just information on fishing effort, population data and harvest)	10	Ecosystem
Research into (generation of) climate change scenarios	10	Climate
Research most effective methods for encouraging public participation in protecting fisheries and other natural resources – informing decision-makers/officials (e.g., education, outreach workshops, volunteer opportunities, scholarships, lobbying)	10	Ecosystem
Impacts of climate change on precipitation and ocean/estuarine circulation	9	Climate

Table 7 (continued). Results of the large voting session for high-priority research topics across all theme areas.

Quantify impacts of winter storm events on coastal regions	9	Resilience
Understand capacity of Gulf to meet commercial (including open ocean aquaculture) and recreational fishing needs and requirements	9	Operations
Establish value of competing waterfront development on a regional/national scale to assist waterfront development decision-making	8	Operations
Identify characteristics and develop data to assist waterfront business decisions, including determination of production centers and needs to expand	8	Operations
Influence of invasive species on ecosystem health	8	Ecosystem
Contaminant sources, fate, and transport	7	Human
Storm water management – investigate different methods for county-wide storm water management, and identify GIS information/layers needed to support storm water management	7	Ecosystem
Economic evaluation of maritime and recreational activities	6	Stewardship
Evaluate economic impact of dredging on “non-traditional” (smaller) channels and innovative methods of dredging	6	Operations
How does climate variability affect pollution, sediments, organic compounds, and nutrient delivery	6	Climate
How has built environment affected rainfall, water penetration, and seawater penetration into aquifer	6	Climate
Deposition from atmospheric, ballast water, people and equipment	5	Human
Identification of changing land-use patterns and creating predictive models	5	Stewardship
Identification of how current cultural practices impact the environment -Sustainability of existing cultural practices	5	Stewardship
Impacts of super panamax vessels on ports, transport, and environmental quality	5	Operations
Syndromic surveillance to trigger public health response	5	Human
Economic and environmental impacts of short-water commodity trips vs. land-based transport (i.e. state docks Hyundai)	4	Operations
Impacts of human-made structures (on harmful algae blooms, pathogens, and other human health concerns)	4	Human
Improve capability and coordination of emergency evacuation procedures for emergency management	4	Resilience

Table 7 (continued). Results of the large voting session for high-priority research topics across all theme areas.

Better Understanding of Different Restoration Techniques (Comparative Analysis) -Investigate variables that impact success (sediment type, plant type, slope, etc.) -Research techniques to improve function	3	Ecosystem
Identify nutrient threshold levels that impact health	3	Human
Identify offshore sand resources for use in beach nourishment	3	Resilience
Status and trends of biological species	3	Stewardship
Water quality and quantity impacts on Gulf of Mexico systems (including estuaries)	3	Operations
Assess economic and social vulnerabilities of coastal communities	2	Resilience
Impact of sea-level rise on coastal development (built environment)	2	Climate
Impacts and better prediction of sea level change on commerce and inland businesses and coastal communities	2	Operations
Understand systems involved and develop best management practices in maintaining navigational channels	2	Operations
Identify sentinel species for harmful agents	1	Human
Investigate historical, topographical, and bathymetric vulnerability to shoreline breach	1	Resilience
Socioeconomic impacts of climate change on coastal communities	1	Climate
Understanding ecosystem coupling of inland and coastal/near-shore environments	1	Stewardship
Effects of water temperature, salinity and pH on pathogenicity/virulence	0	Human

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See appendix C.

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Appendix A:

Gulf of Mexico Research Planning Workshop Agenda

5 Rivers—Alabama’s Delta Resource Center

Spanish Fort, Alabama

January 15, 2008

10:00 a.m. – 2:45 p.m.

Workshop Agenda

10:00-10:15 **Check-in, coffee**

10:15-10:50 **Welcome and Purpose of the GMRP workshop** (all participants)

10:50-11:00 **Small Group Session Goals and Objectives** (all participants)

11:00-Noon **Identify Research Topics within Themes** (breakout group)

Noon-12:15 **Break and Pick-up Lunches**

12:15-1:30 **Refine and Prioritize Research Topics—working lunch** (breakout group)

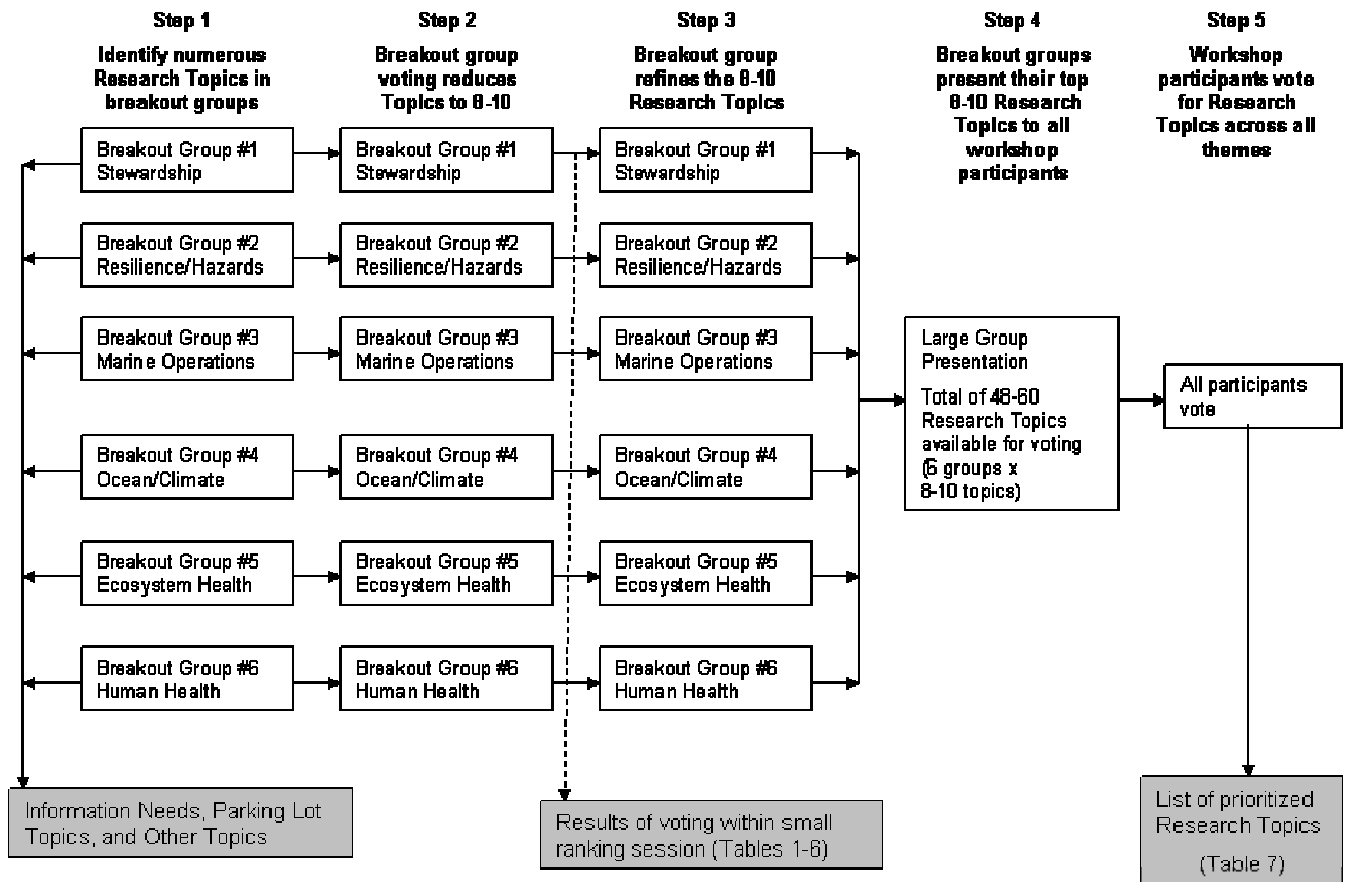
1:30-2:00 **Groups Present Top Research Topics for each Theme** (all participants)

2:00-2:30 **Voting Session of all Research Topics** (all participants)

2:30-2:45 **Wrap up** (all participants)

Appendix B:

Process diagram to identify and prioritize research topics at the GMRP workshop



Appendix C:

Workshop Participants and Facilitators

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