Initial Results
from the 2013 Gulf of Mexico Research Plan Survey

A customized report prepared for the:

Gulf of Mexico Alliance
Ecosystems Integration and Assessment
Priority Issue Team

By Stephen H. Sempier

MASGP-14-016-02

This publication was partially funded by the National Sea Grant College Program of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration under NOAA Grant NA06OAR4170078 and NOAA Grant NA11OAR4170177 and the Florida Sea Grant College Program, Louisiana Sea Grant College Program, Mississippi-Alabama Sea Grant Consortium and Texas Sea Grant College Program. The views expressed herein do not necessarily reflect the views of those organizations.

Introduction

The four Sea Grant College Programs in the Gulf of Mexico region released surveys in 2007, 2010 and 2013 that asked about regional research and related needs. This was part of an effort to develop and update the Gulf of Mexico Research Plan (GMRP). For the 2013 GMRP survey, **1,668 people** answered at least a portion of the survey. Hundreds of people from each of the Gulf of Mexico states and beyond completed the survey, and they represented a broad cross section of people from government, universities, business/industry, NGOs and other groups. Charts that illustrate demographic information about the people who completed the survey are included in the Appendix. This is one of six separate reports created for each of the GOMA Priority Issue Teams (PITs).

The report

This report contains two sections that were developed based on the open-ended questions from the 2013 GMRP survey. The questions asked respondents to describe Gulf of Mexico research priorities, stressors and barriers to implementing a regional research plan.

Section I: Word Trees

The first section contains word trees that were developed using keywords related to each PIT. Word trees provide a quick way to provide some context on the keywords people used answering the questions. Most of the word trees only contain the first four or five words before and after the keyword in order to be readable in this document.

Section II: Research Priorities by subcategory

The second section is an analysis of open-ended research priorities through the lens of the PIT. The 2013 GMRP survey presented a standardized list of research priorities. It also asked people to identify up to three additional research priorities in open-ended text boxes. There were a total of **1,003 research priorities described**. These research priorities were linked to PITs. In some cases the same research priority could connect to a topic that is covered by more than one PIT. In addition, subcategories were created to better organize similar or related research priorities within a PIT and in many cases subcategories were based on PIT focus areas. The priorities were alphabetized within each subcategory. Table 1 in the Appendix summarizes the number of research priorities linked to each PIT and subcategory.

The research priorities are listed as bullets that are organized by PIT and subcategory. In many cases people's response to the question was not a true research priority. However, these bullets were retained so that readers can see the scope and breadth of input that was provided. Finally, the bullets are **unedited, actual responses** that survey respondents provided.

Next steps

Significant survey analysis and reporting still needs to be completed for the 2013 GMRP survey, which closed in November 2013. Additional details will be shared in the coming months along with a comparison between responses in the 2007, 2010 and 2013 GMRP surveys. For more information, please contact Steve Sempier, Mississippi-Alabama Sea Grant, at stephen.sempier@usm.edu.

Cover: The 50 most frequently used words by people who completed the 2013 GMRP survey. Word size reflects the frequency the word was used with larger words being used more frequently.

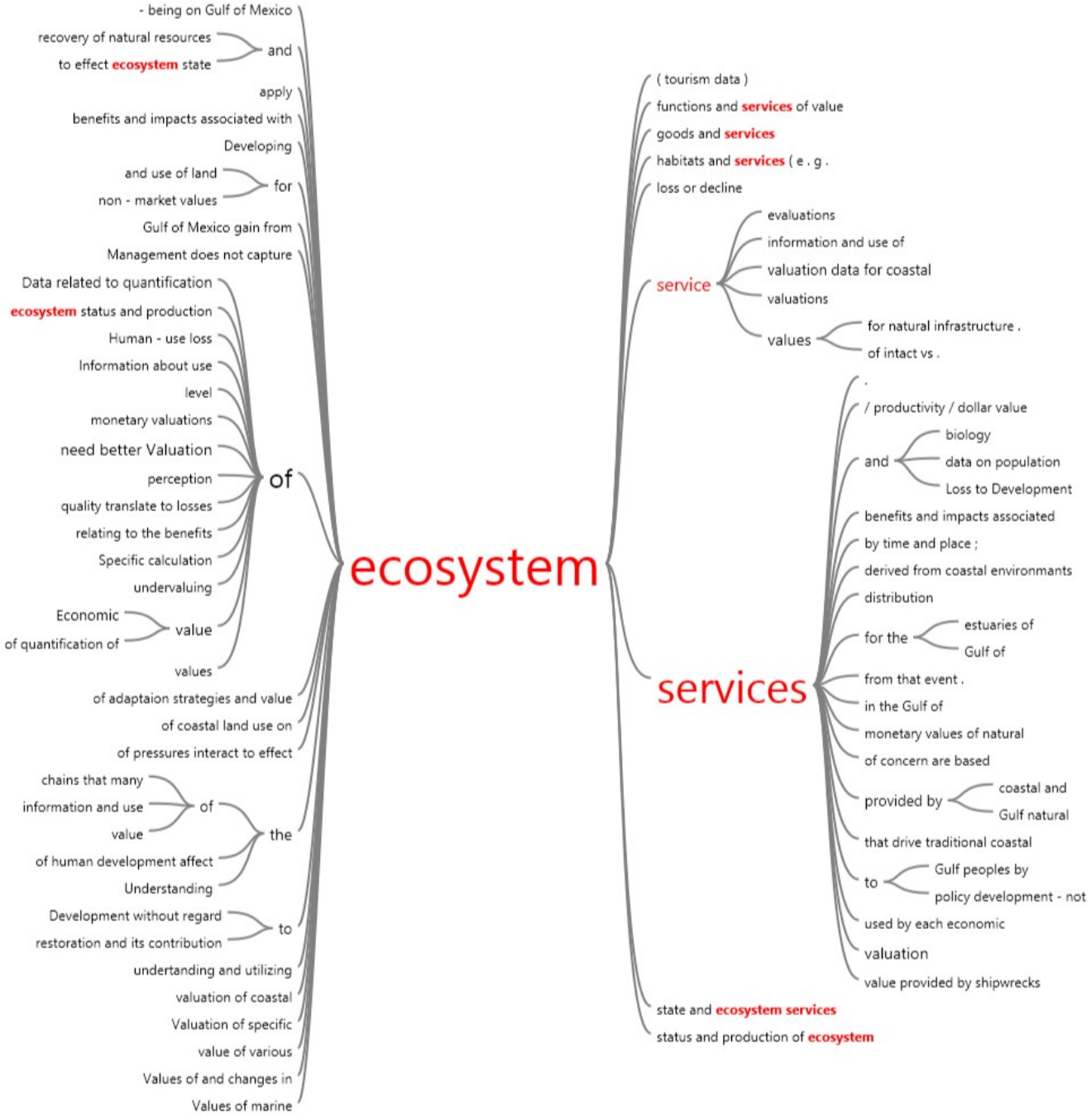
Section I: Word Trees

Word trees were created for several keywords related to the **GOMA Ecosystems Integration and Assessment Priority Issue Team**. The keywords used in the diagrams below are:

- Ecosystem service
- Freshwater

Note: The keyword “Ecosystem” generated too many responses to include in this document.

While analyzing the open-ended survey responses “freshwater” and similar concepts were mentioned numerous times. Often this related to freshwater input. This may be an area that is not explicitly addressed by the GOMA PITs so the word tree was included here. Additional details can be provided upon request.


ecosystem
- being on Gulf of Mexico
recovery of natural resources
to effect ecosystem state
and
apply
benefits and impacts associated with
Developing
and use of land
non - market values
for
Gulf of Mexico gain from
Management does not capture
Data related to quantification
ecosystem status and production
Human - use loss
Information about use
level
monetary valuations
need better Valuation
perception
quality translate to losses
relating to the benefits
Specific calculation
undervaluing
Economic
of quantification of
value
values
of
of adaptaion strategies and value
of coastal land use on
of pressures interact to effect
chains that many
information and use
value
of
of human development affect
Understanding
the
Development without regard
restoration and its contribution
to
undertanding and utilizing
valuation of coastal
Valuation of specific
value of various
Values of and changes in
Values of marine
(tourism data)
functions and services of value
goods and services
habitats and services (e . g .
loss or decline
service
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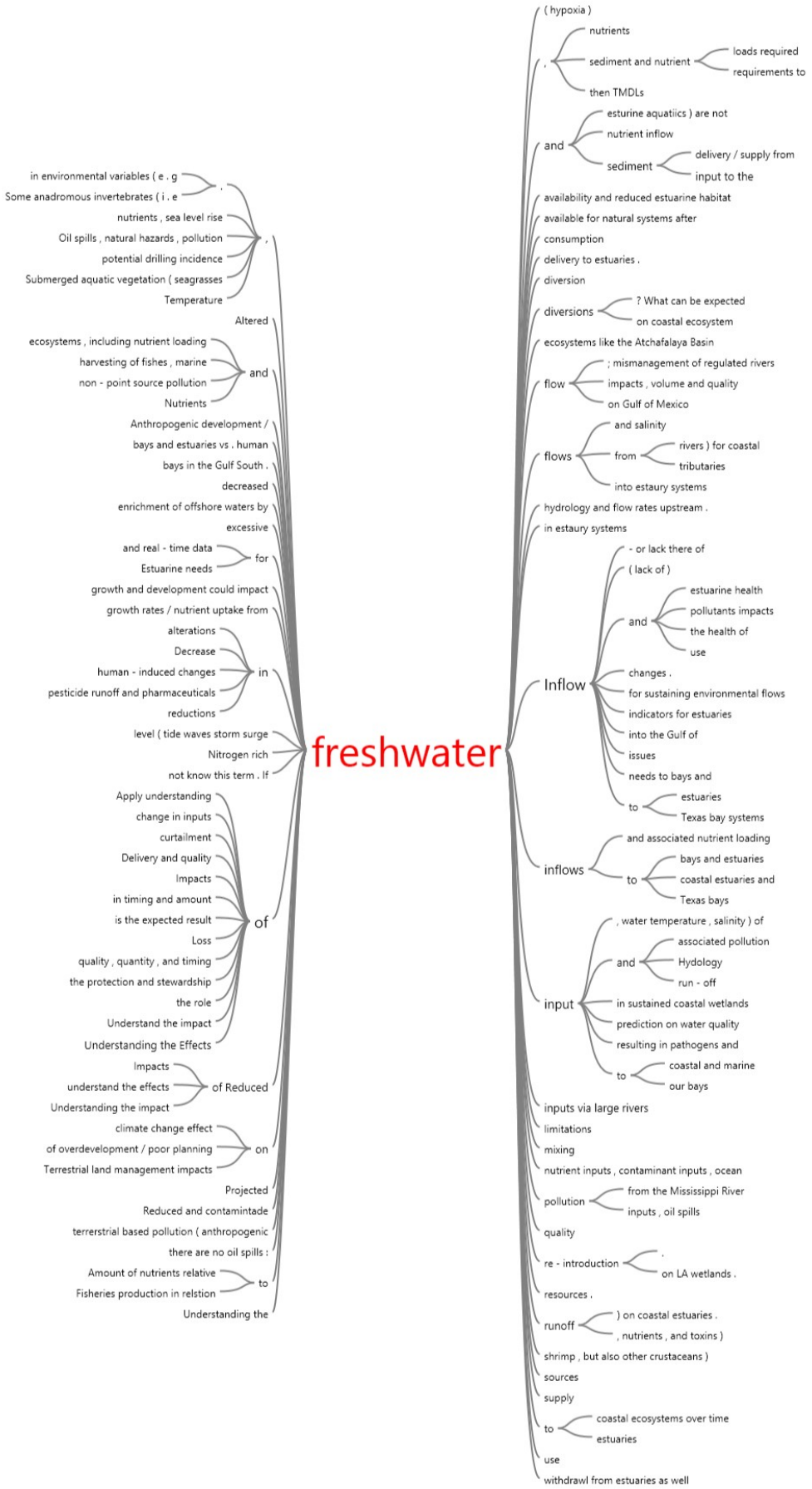
information and use of
valuation data for coastal
valuations
values
for natural infrastructure .
of intact vs .
services
.
/ productivity / dollar value
and
biology
data on population
Loss to Development
benefits and impacts associated
by time and place ;
derived from coastal environmants
distribution
for the
estuaries of
Gulf of
from that event .
in the Gulf of
monetary values of natural
of concern are based
provided by
coastal and
Gulf natural
that drive traditional coastal
to
Gulf peoples by
policy development - not
used by each economic
valuation
value provided by shipwrecks
state and ecosystem services
status and production of ecosystem


freshwater
in environmental variables (e . g
Some anadromous invertebrates (i . e
,
nutrients , sea level rise
Oil spills , natural hazards , pollution
potential drilling incidence
Submerged aquatic vegetation (seagrasses
Temperature
,
Altered
ecosystems , including nutrient loading
harvesting of fishes , marine
non - point source pollution
Nutrients
and
Anthropogenic development /
bays and estuaries vs . human
bays in the Gulf South .
decreased
enrichment of offshore waters by
excessive
and real - time data
Estuarine needs
for
growth and development could impact
growth rates / nutrient uptake from
alterations
Decrease
human - induced changes
pesticide runoff and pharmaceuticals
reductions
in
level (tide waves storm surge
Nitrogen rich
not know this term . If
Apply understanding
change in inputs
curtailment
Delivery and quality
Impacts
in timing and amount
is the expected result
Loss
quality , quantity , and timing
the protection and stewardship
the role
Understand the impact
Understanding the Effects
of
Impacts
understand the effects
Understanding the impact
of Reduced
climate change effect
of overdevelopment / poor planning
Terrestrial land management impacts
on
Projected
Reduced and contamintade
terrerstrial based pollution (anthropogenic
there are no oil spills :
Amount of nutrients relative
Fisheries production in relstion
to
Understanding the
(hypoxia)
,
nutrients
sediment and nutrient
loads required
requirements to
then TMDLs
and
esturine aquatiics) are not
nutrient inflow
sediment
delivery / supply from
input to the
availability and reduced estuarine habitat
available for natural systems after
consumption
delivery to estuaries .
diversion
diversions
? What can be expected
on coastal ecosystem
ecosystems like the Atchafalaya Basin
flow
; mismanagement of regulated rivers
impacts , volume and quality
on Gulf of Mexico
flows
and salinity
from
rivers) for coastal
tributaries
into estaury systems
hydrology and flow rates upstream .
in estaury systems
Inflow
- or lack there of
(lack of)
and
estuarine health
pollutants impacts
the health of
use
changes .
for sustaining environmental flows
indicators for estuaries
into the Gulf of
issues
needs to bays and
to
estuaries
Texas bay systems
inflows
and associated nutrient loading
to
bays and estuaries
coastal estuaries and
Texas bays
input
, water temperature , salinity) of
and
associated pollution
Hydology
run - off
in sustained coastal wetlands
prediction on water quality
resulting in pathogens and
to
coastal and marine
our bays
inputs via large rivers
limitations
mixing
nutrient inputs , contaminant inputs , ocean
pollution
from the Mississippi River
inputs , oil spills
quality
re - introduction
.
on LA wetlands .
resources .
runoff
) on coastal estuaries .
, nutrients , and toxins)
shrimp , but also other crustaceans)
sources
supply
to
coastal ecosystems over time
estuaries
use
withdrawl from estuaries as well

Section II: Research Priorities by subcategory

Open-ended Research Priorities arranged by subcategory

The bullets below are **unedited responses** to the 2013 GMRP Survey questions that asked people to identify their top three research priorities for the Gulf of Mexico over the next 5-15 years.

Several subcategories were created for the **GOMA Reducing Nutrient Impacts to Coastal Ecosystems Priority Issue Team**. Some of these were organized around the GOMA PIT focus areas of:

- Ecosystem health
- Ecosystem service valuation
- Ecosystem connectivity
- Ecosystem change over time

Ecological health

- A complete assessment of the distribution of sensitive species/communities in the deep sea.
- Application of advanced technologies to rapid health assessment of ecosystems.
- Assessing suitability of keystone species as monitors of ecosystem health
- Assessments of marine species
- Critique the quantification and 'indicator-ization' of ecological and socio-economic processes in the Gulf of Mexico which reduce complex and qualitative processes into model inputs that silence and marginalize coastal communities, turn all our common property resources into money, and frustrate any semblance of the democratic process as the spirit of NEPA, NRDA, OPA 90, and other processes intended.
- Current status of Gulf and coastal species, including microbial components of the ecosystems.
- Define the baselines parameters of the coastal ecosystems and define seasonal and temporal variations.
- develop a report card or scorecard to determine the status and on-going health of the ecosystem
- Ecosystem Health
- Ecosystem health - specifically establishment of baseline understanding of wildlife species that are impacted by human activity (including oil spill, agricultural runoff, wildlife movement).
- Ecosystem health indicators
- Ecosystem health indicators
- Ecosystem health indicators
- Ecosystem Sentinel Approaches
- ecosystem variability over time, from perceived historic baseline through the future
- Greater effort needs to be spent on cataloging and analyzing the vast array of species interactions that make the Gulf ecosystems what they are. These data have huge implications for fisheries modeling and network research.
- How does changing levels of human development affect the ecosystem status and production of ecosystem services
- Regional health assessment across northern Gulf seafood species (baseline data sufficient to include anomalies; 5-10 year intervals).
- Sustainability, related to population density and economic impact. What are the indicators that the ecosystem is being adversely impacted.

Ecosystem services and valuation

- Critique the quantification and 'indicator-ization' of ecological and socio-economic processes in the Gulf of Mexico which reduce complex and qualitative processes into model inputs that silence and marginalize coastal communities, turn all our common property resources into money, and frustrate any semblance of the democratic process as the spirit of NEPA, NRDA, OPA 90, and other processes intended.
- Environmental baselines and benthic habitat
- Identify and valuing ecological services in the GoM
- initiating a conversation about reducing use of resources such as oil in addition to educating public about maximizing efficiency and valuing environmental services appropriately
- Produce alternative approaches to measuring and managing Gulf of Mexico natural resources and their human uses that do not rely on the quantitative modeling, contingent valuation, and dollarization approaches that have shown themselves to be so empirically lacking in other contexts and yield grossly unequal socio-economic outcomes.
- Quantative measurements of the benefit of the ecosystem
- Quantifying service benefits of ecological restoration activities
- Social and Economic Well-being Indicators
- Socio-economic
- Specific calculation of ecosystem services for the estuaries of the Gulf of Mexico
- Understand the socioecological systems in the Gulf of México
- Understanding the ecosystem services value provided by shipwrecks as sites frequented by the recreational scuba diving and recreational fishing industries in relation to the tourism economy.
- Value of ecosystem resources

Ecological connectivity

- Connectivity of ecosystems (coastal, pelagic, deep)
- Develop GoM (basin-wide) model to better understand and quantify the interactions between physical, chemical, biological and socioeconomic inputs/threats and their impact on ecological services and sustainability
- Difference in the ecosystem along the coast and at various depths in the GoM since the Macondo spil.
- Ecosystem Connection throughout the Gulf of Mexico
- Ecosystem-based management of coastal zone in the continuum scale (fluvial basin/coastal lagoons/estuaries,deltas, estuarine plume).
- understand relationships between ecosystem components
- Understand the connectivity among terrestrial and coastal ecosystems
- Understand the ecosystem, fisheries and socio-economic implications of large-scale Mississippi River Diversions for the Gulf of Mexico
- understanding all of the benefits people living in the Gulf of Mexico gain from ecosystem services
- Understanding connectivity between terrestrial, coastal and deep sea ecosystems.
- understanding the benefit (in dollars) that these natural ecosystems provide to ensure greater respect toward the natural ecosystems' value

Ecological change over time

- Biodiversity shifts in marine ecosystems. Baseline biodiversity studies should provide valuable information for future understanding of climate change and disaster recovery. Higher diversity indexes could be a bioindicator of habitat recovery (early succession recovery, etc.)

- Changes in ocean circulation and temperature due to climate change
- Collecting long-term, science-based time series of environmental and ecological data to provide a robust baseline for understanding natural variability and anthropogenic anomalies (e.g. oil spills)
- Monitoring of living marine resources to track trends in abundance and survival

Other research priorities related to EIA

- apply ecosystem services to policy development - not just study it
- Develop and Implement a Strategic (consistent, on-demand) Coastwide Coastal Resource Mapping and Monitoring System
- Hydrodynamic modeling efforts to better understand/predict oil spill resonse
- locating all natural seeps
- Location, recovery, digitization and analysis of historical (dark data) data. Much of this is unpublished raw data or theses and dissertations that are unpublished. This is a huge untapped resource that is usually talked about but rarely funded for exploitation.
- map wet land tracking to satellite imagery and look back in historical satellite data for correlation's in the change in wetland status.
- Sustainability for recreation, related to population. Over exploitation of species and the related ecosystem impacts.
- Understand how and where anthropogenic impacts to marine ecosystems spread from one system to another, i.e. from the deep sea to the continental shelf or vice versa, from coastal communities to the offshore, etc.
- Within natural resource assessments, priority should be given to groups of species and habitats that are historically understudied. For example, there is little known about marine mammal movements, relationships to nearshore and offshore food webs, and links to other populations, regionally or globally. The northern central Gulf of Mexico is a unique area in harboring animals at the edge of their range and that are subject to volatile environmental conditions, particularly related to salinity/discharge variation and extreme or severe storm events. These conditions make this region and its inhabitants (natural resources) important for study to understand and predict response to pulse and longer term environmental perturbations, yet this area of study is largely overlooked and many fringe species are considered ecologically insignificant without justification. Much needs to be done to collect baseline data and build datasets for understudied species and habitats (not just focusing on commercially important fisheries species and resources

Appendix—Demographic Statistics from the 2013 Gulf of Mexico Research Plan Survey

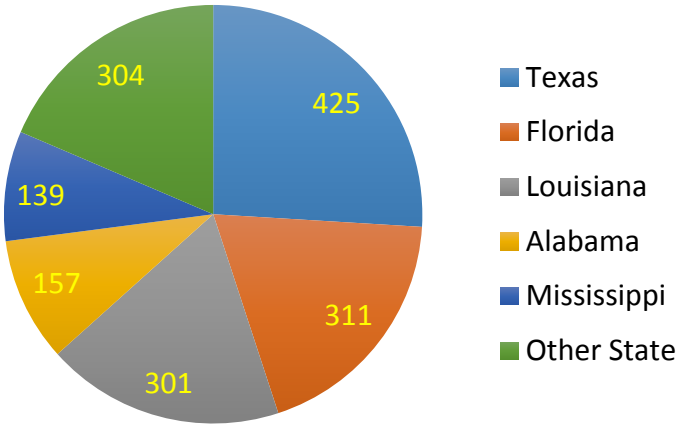


Figure 1. Number of respondents to the 2013 GMRP survey by state (N=1,637).

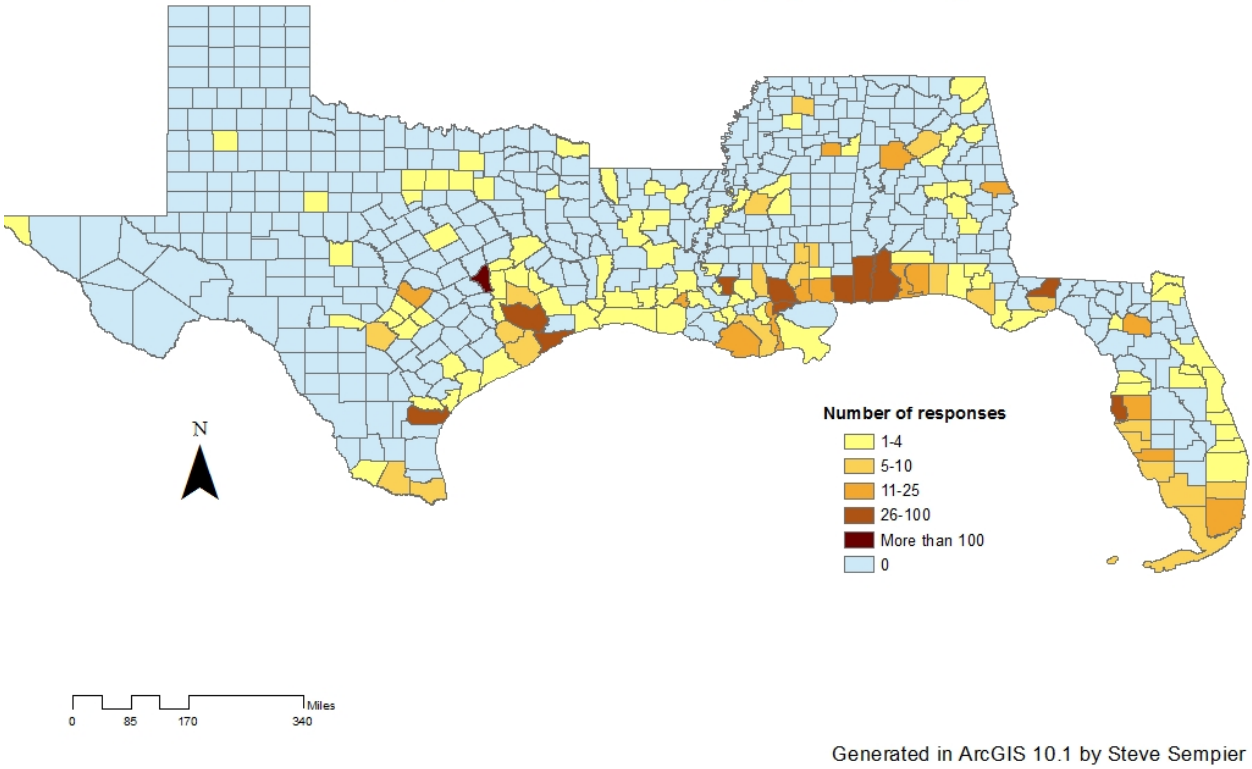


Figure 2. Number of responses to the 2013 GMRP survey by county for U.S. Gulf of Mexico states (N=1,315).

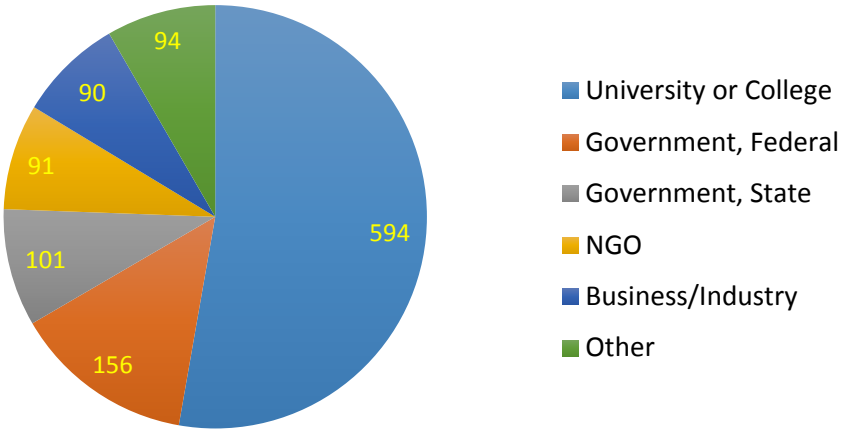


Figure 3. Number of 2013 GMRP survey respondents by affiliation (N=1,126).

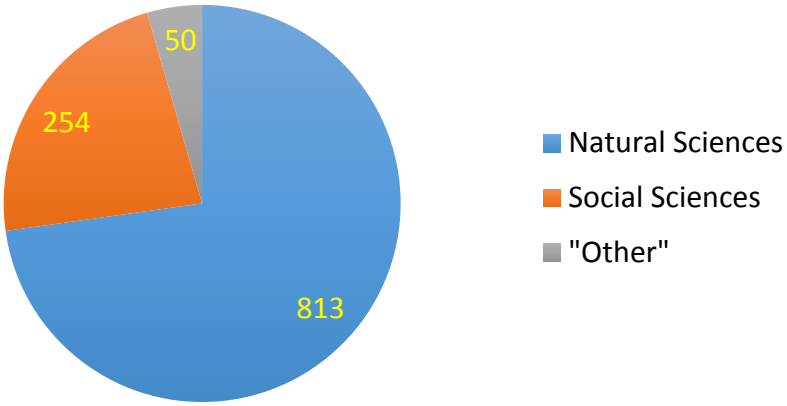


Figure 4. Number of 2013 GMRP survey respondents by area of expertise aggregated into “natural sciences,” “social sciences” and “other” (N=1,117).

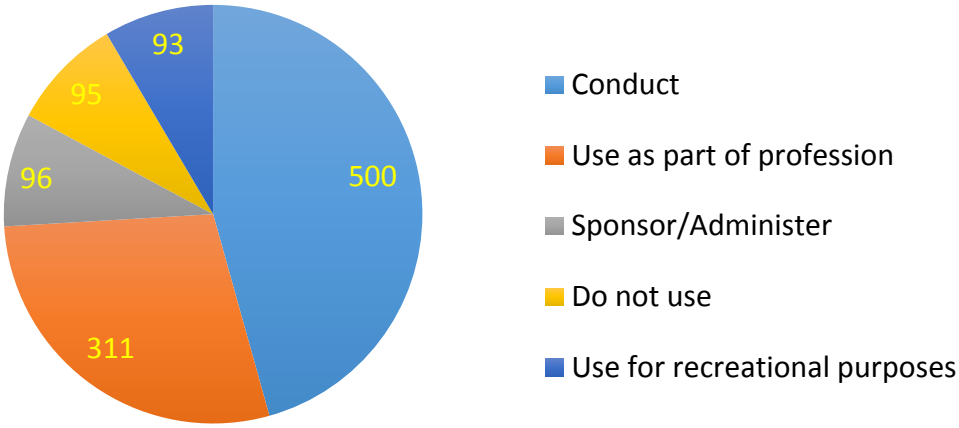


Figure 5. Number of 2013 GMRP survey respondents categorized by their primary relationship to Gulf of Mexico research (N=1,095).

Appendix—2013 GMRP Survey Demographic Statistics

Table 1. Number of research priorities identified in open-ended responses to the 2013 GMRP survey that related to GOMA PITs and subcategories. Note that the same research priority may have linked to multiple PITs and/or subcategories.

Priority Issue Team and Subcategories	Number of Research Priority References
Ecosystem Integration and Assessment	**55**
Ecosystem health	19
Ecosystem service valuation	15
Ecosystem connectivity	9
Ecosystem change over time	4
"Other" EIA	9
Education	**25**
Habitat Conservation and Restoration	**233**
Monitoring changes in habitat	68
Ecosystem services	32
Technological development	19
Regional sediment plan	17
Policy change	14
Expand partnerships	4
"Other" Habitat Conservation and Restoration	102
Nutrients	**48**
Hypoxia	13
Nutrient reduction	13
Nutrient characterization and criteria	11
"Other" Nutrients	12
Resilience	**144**
Climate or sea level-specific	52
Management	29
Assessment	26
Tropical Storm-specific	14
Communication	4
"Other" Resilience	37
Water Quality	**88**
Monitoring	13
Pathogens	5
Mercury	4
Harmful Algal Blooms	1
"Other" Water Quality	67
Other Topics	**583**

Appendix—2013 GMRP Survey Demographic Statistics