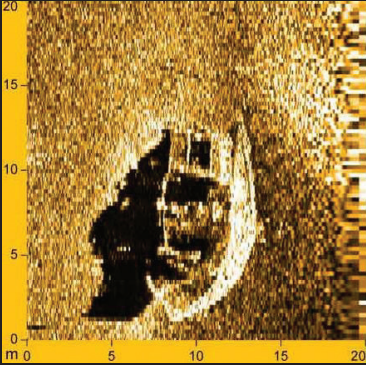


Gulf of Mexico Marine Debris Project

Workshop Proceedings
September 2, 2009
Baton Rouge, Louisiana



Acknowledgements

These workshop proceedings are a direct outcome of the thoughtful presentations, discussion, and suggestions provided by the staff of the following agencies:

Alabama Department of Conservation and Natural Resources
Mississippi Department of Marine Resources
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources
Louisiana Governor's Office of Homeland Security and Emergency Preparedness
U.S. Coast Guard, New Orleans, Louisiana
Federal Emergency Management Agency, Louisiana
Louisiana Sea Grant College Program
Mississippi-Alabama Sea Grant Consortium
NOAA Office of Response and Restoration
NOAA Office of Coast Survey

Marty Bourgeois, Harry Blanchet, Jim Hanifen, Irving Jackson, Sarah Morison and Jeff Ferguson reviewed earlier drafts, and their comments greatly improved the document.

These workshop proceedings were prepared by Nir Barnea, Neal Parry and Peter Murphy of NOAA's Marine Debris Program and Paula Ouder and Jessica Schexnayder of Louisiana Sea Grant. They compiled the notes, drafted the narrative, and edited the final document.

We welcome any comments or suggestions you may have to improve the current version of this document. Please send your comments to:

Marine Debris ERP
NOAA OR&R
7600 Sand Point Way N.E.
Seattle, WA 98115
Fax: (206) 526-6329
Email: mderp@noaa.gov



Acronyms

ADCNR	Alabama Department of Conservation and Natural Resources
DIDSON	Dual-Frequency Identification Sonar
DTON	Danger to Navigation
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GOMMDP	NOAA Gulf of Mexico Marine Debris Project
GPS	Global Positioning System
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LNM	Local Notice to Mariners
MASGC	Mississippi-Alabama Sea Grant Consortium
NMFS	NOAA National Marine Fisheries Service
NOAA	U.S. National Oceanic and Atmospheric Administration
OCS	NOAA Office of Coast Survey
ORR	NOAA Office of Response and Restoration
USCG	U.S. Coast Guard

Table of Contents

Acknowledgements.....	i
Acronyms.....	ii
Introduction.....	1
Background.....	1
Workshop Notes.....	2
Planning.....	2
Technology.....	5
Funding.....	8
Inshore Debris.....	10
Information Management.....	12
Communication.....	16
Interagency Cooperation.....	17
Removal and Eligibility.....	19
State Perspectives.....	22
Recommendations.....	26
Appendices	
Workshop Agenda.....	A1
Workshop Attendees.....	A3

Gulf of Mexico Marine Debris Project

Workshop Proceedings

Introduction

The Gulf of Mexico Marine Debris Project (GOMMDP) was launched in August 2006 and ran over three years. Funded by two Congressional supplemental appropriations, the project surveyed more than 1,500 square nautical miles of nearshore waters along the coast of Alabama, Mississippi, and Louisiana; identified and mapped potential marine debris objects; and disseminated debris locations and other information on the project Web site. The project team cooperated with a number of federal and state agencies as well as Sea Grant and industry, and as the project neared completion, it became apparent that this highly collaborative effort could benefit from open and free feedback from all who participated. Project coordinators determined that input on what went well, what could have been done better, and recommendations for addressing future such events could best be captured in a workshop where all key partners would come together to discuss the project and provide their honest assessment of its progress and impact. A workshop was convened on Sept. 2, 2009, at the Louisiana Department of Wildlife and Fisheries headquarters in Baton Rouge, Louisiana.

In the workshop, short presentations by the project team, state managers, U.S. Coast Guard, and Sea Grant served to provide a brief review of the project work and stimulate discussion. Presentations were followed by three periods of free-flowing and interactive discussion. Participants discussed not only the project, but also their experiences with marine debris in general; the state, federal, and local response to marine debris; the impact of funding source on marine debris survey and removal; and a host of other topics.

The National Oceanic and Atmospheric Administration (NOAA) and Louisiana Sea Grant, which cooperated closely to set up the workshop, took notes of the discussion and used them as the basis for these proceedings. To make this document most useful to readers not familiar with the project, NOAA and Sea Grant added narrative to the comments provided by participants – narrative that closely follows the spirit and intention of the original comments. Additionally, for each topic discussed, focus questions were provided to highlight issues that need to be addressed in the planning and preparation for a potential repeat of the devastating impacts of the 2005 hurricane season.

Background

In 2005, Hurricanes Katrina and Rita inflicted severe damage on the Gulf of Mexico coast, and the resulting storm surges deposited huge amounts of debris over large areas of the region. Such submerged marine debris poses a persistent hazard to vessel traffic and can adversely affect the fishing industry. In an effort to restore commercially viable fishing grounds and improve navigational safety, Congress provided supplemental funding in 2006 and 2007 and directed the NOAA Office of Coast Survey (OCS) and Office of Response and Restoration (ORR) to survey and map the impacted Gulf coast offshore areas. Survey work began in September 2006 in Alabama, Mississippi, and eastern Louisiana. By the end of the first phase, more than 5,000 submerged potential debris items – referred to as contacts – were identified, mapped, and posted on the project Web site to advise boaters and assist with marine debris removal.

In 2008, these efforts continued in Louisiana. NOAA cooperated closely with the United States Coast Guard (USCG), Federal Emergency Management Agency (FEMA), and Louisiana Department of Natural Resources (LDNR) to survey the majority of offshore areas of Louisiana's coastline, map the new sonar contacts, and post them online. Contacts requiring additional investigation were re-surveyed with multi-beam sonar, which provides more accurate contact depth as well as a multi-dimensional visualization of the debris items found. Contacts considered a danger to navigation (DTON) were listed as such and promptly reported to the USCG for inclusion in a Local Notice to Mariners (LNM).

Information gathered throughout the project was publicized through the project's Web site (<http://gulfofmexico.marinedebris.noaa.gov/>), supported by NOAA's National Coastal Data Development Center in Stennis, Mississippi. The Web site will be online through 2011 and provides both static maps and Global Positioning System (GPS) coordinates that easily can be downloaded and printed, as well as an interactive mapping option allowing users to zoom in to a specific area and select a contact icon to access more information. The data analysis Web page provides a summary of contacts found, displaying their density and a graph of contact size for each map tile. In addition, the project team, in close cooperation with the Louisiana Sea Grant College Program and the Mississippi-Alabama Sea Grant Consortium, undertook an outreach effort to make local stakeholders in the three states aware of the survey and mapping efforts and contacts found.

In Louisiana, the USCG, in cooperation with FEMA, NOAA, state agencies, and Louisiana parishes, conducted a large-scale survey and removal effort of Katrina- and Rita-related debris items within inshore waterways. After environmental review and consultation and evaluation by federal and state agencies, debris was removed using best practices to minimize harm to habitat. Maps and photographs generated by this effort also have been posted on the project's Web site.

Recording the experience of this effort and gleaned lessons learned has been a high priority for this project. In June 2009, NOAA drafted and distributed *Marine Debris Emergency Response Planning in the North-Central Gulf of Mexico* (<http://gulfofmexico.marinedebris.noaa.gov/MDERP.pdf>), a document listing planning procedures, best practices, and lessons learned to best address large-scale marine debris dispersion in the Gulf of Mexico. It became apparent, however, that an interactive and free-flowing discussion with project partners could be very beneficial to capture additional experience and lessons learned. The workshop convened in Baton Rouge on Sept. 2, 2009, was intended to serve that purpose.

Workshop Notes

Planning

The devastation wrought by Hurricanes Katrina and Rita highlighted the need for planning in order to respond to the impacts of storm-generated marine debris. Development of a marine debris response plan requires stakeholder input and strong coordination, as well as flexibility based on different circumstances or legislation.

Given the intensity of the 2005 storms, there was no way to know exactly what the impacts would be. However, more and better coordinated planning prior to an event could expedite response activities when addressing marine debris in the future, including clearly identifying necessary stakeholders and improving communication across impacted communities.

Workshop participants made the following points:

1. *A response plan is needed that is appropriate for the entire Gulf region and could be scalable, depending upon event.*

Following the 2005 storms, it became clear that there was no comprehensive planning document to guide the mitigation of marine debris in areas outside of ports and navigation channels. Alabama, Mississippi, and Louisiana were impacted differently and responded differently to their respective marine debris issues in these areas. At the start of the GOMMDP in August 2006, all three states were in different phases of recovery, ranging from active removal to limited action. A coordinated plan should be developed to facilitate collaboration among the states and between the state and the federal government while allowing for individual differences.

Workshop participants suggested the following:

It would be beneficial to have debris survey plans in place in advance of an incident, with the ability to change survey areas based on the specific event.

Gulf states have large differences that affect debris response. Bottom types, shoreline type, involved industry, and legal differences all make planning very different from state to state.

It would be ideal to have a merged approach from state to state across the Gulf of Mexico, with elements in place to allow for differences.

Focus Questions:

- How do we best develop a robust, yet adaptable, marine debris response plan to apply across the entire Gulf coast?
- What steps should be taken to facilitate collaboration for all involved parties?
- What existing groups in the Gulf of Mexico (e.g. Gulf States Marine Fisheries Commission) could serve as a coordinating body for development and coordination?

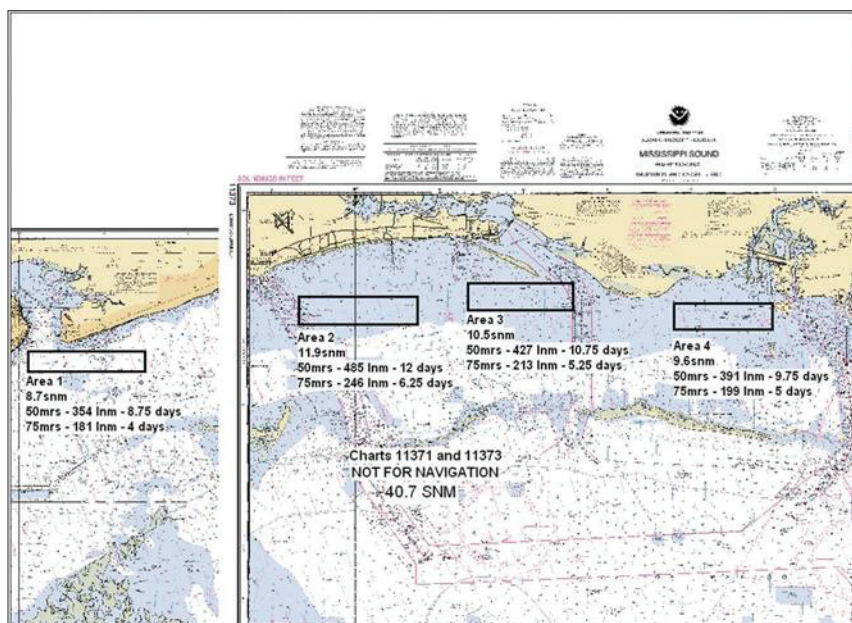


Figure 1: Survey test areas, Mississippi. Chart: NOAA

2. *Offshore survey areas need to be strategically planned and coordinated to maximize resource use.*

Given the differences in both response activities and geographic considerations across the states impacted by these storms, it is important to coordinate survey efforts. Employing mapping tools and models can aid stakeholders in determining areas most likely to accumulate marine debris. There were many differences in the survey planning and execution across the states, such as the distance from shore that was surveyed. Rapid survey of offshore waters to identify debris locations remains important, and any preliminary assessments of debris size can aid in the preparations for removal.

Workshop participants suggested the following:

Offshore survey is needed, but not necessarily in the magnitude it was conducted. In areas where not much debris is expected, survey is not needed, in others where more debris is expected, do survey.

Survey is needed. If it is not done, you rely only on information from fishers and boaters. With no survey, we don't know where to go.

If we had to do the entire response over again, we likely wouldn't choose to survey the entire coastline of Louisiana, as we now know they are unlikely to have a significant debris problem.

Focus Questions:

- Are there ways to acquire information from fishers and boaters that can rapidly be used to make assessments on debris locations?
- Who decides what areas to survey and which to avoid?
- Is there consensus as to the definition of “offshore” regarding barrier islands in the Gulf coast?



Figure 2: Project launching workshop in Biloxi, Mississippi, November 2006. Photo: NOAA

3. *Pre-event/planning communications need to be strengthened between the federal government and the most appropriate state agency.*

Marine debris impact after Katrina and Rita highlighted the need to identify a state agency responsible for debris issues well in advance of an event. Each state can alleviate potential confusion by clearly identifying its own lead agency, despite the fact that numerous agencies address marine debris in varying contexts. Identifying a lead agency may improve the communication, and ultimately coordination, with NOAA and other federal agencies when responding to a natural event in the Gulf coast. Becoming familiar with state agencies, processes, and personnel is invaluable to developing a coordinated plan.

Workshop participants suggested the following:

One of the things we had to deal with when NOAA was trying to survey was that we were not set up appropriately to deal with it. The state needs some agency that can give input on what is best for the state.

It appeared that we were consulted afterwards. I guess if each state has a tremendous need, it (funding) can only go so far. The three states should have been consulted together.

Focus Questions:

- How can states identify a single lead agency responsible for coordinating marine debris efforts following an event?
- What are some ways for federal and state personnel to communicate with one another?
- Who can best coordinate communication and planning across the states?

Technology

Utilizing technology to address marine debris concerns following the two hurricanes provided numerous benefits, including the generation of specific location information for debris targets, the opportunity to review targets with stakeholders, and the updating of some nautical charts for areas that had not been surveyed in decades. NOAA's Office of Coast Survey contracted survey operations as quickly as possible to respond to the identified need. There were, however, some significant differences in the survey methodologies utilized in each state. More specifically, there were differences in the sonar frequency used during survey operations, as well as the percentage of coverage. Differences in frequency often resulted in distinct differences in sonar image quality, and differences in coverage meant that only data in certain areas surveyed could be used to update nautical charts. There must be a balance in determining what exactly is needed to best support recovery in affected communities.

Workshop participants suggested the following areas for consideration:

1. *The need for and benefits of conducting chart-quality surveys should be considered before surveying begins.*

One of the serious considerations, particularly highlighted between the first and second phases of the project, was the percentage of sonar coverage for each survey area. Conducting chart-quality surveys requires 200 percent coverage (meaning an entire area is surveyed two separate times for greater accuracy),

which requires more time and cost than simply 100 percent coverage (meaning an area is surveyed only once). Additionally, working in shallow coastal areas, of which the Gulf coast is largely comprised, poses more survey challenges.

Workshop participants suggested the following:

Maybe you don't need survey-quality data because it's so shallow. We might think of different ways to work shallow areas.

We can only feed off the survey information. If we have to beef up the budget for shallow survey, then we have to just do it.

Sonar gives an idea where to look, where you need to be careful.

Focus Questions:

- How do we determine the need for chart-quality survey operations, particularly considering other factors such as time and funds required?
- Is it necessary to survey at 200 percent in shallow areas?
- Do the benefits of chart-quality survey outweigh the costs and time required in a response situation?

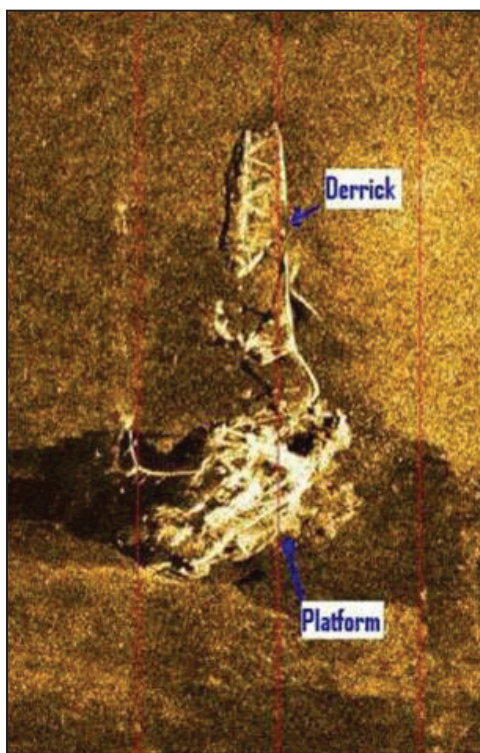


Figure 3: Side-scan sonar image.
Image: NOAA

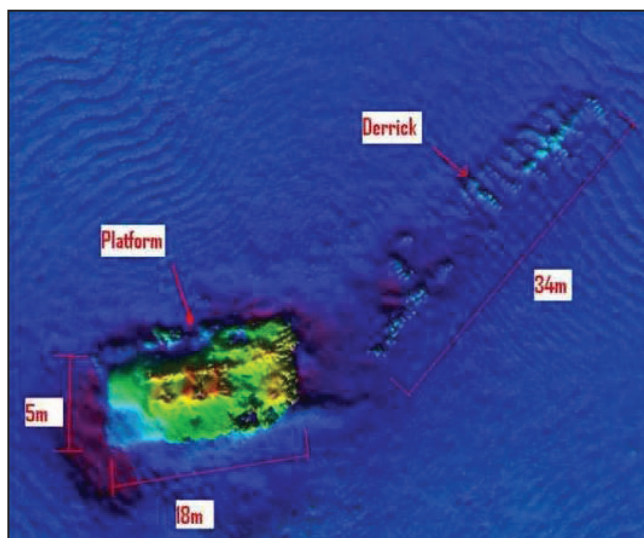


Figure 4: Multi-beam sonar image.
Image: NOAA

2. *Different survey technologies will have different benefits and costs, including resulting image quality, which should be weighed in light of environmental and usage conditions.*

The tradeoff between coverage and sonar frequency resulted in different image qualities from the different contractors. A lower frequency survey, such as 100 kHz, allows for a wider area of coverage but produces less detailed images, while a higher frequency scan, such as 500 kHz, limited the survey area of coverage, but produced higher resolution imagery. In addition to side-scan sonar, survey operations acquired bathymetric data for all survey areas.

Workshop participants suggested the following:

The higher resolution sonar gives a better picture, but less range. It winds up being a cost tradeoff. Dual-frequency sonar can be useful. Higher frequency could be used for investigations (of targets).

The DIDSON will not give any bathymetric relief. It would be a good tool in an area where you don't want the diver getting into the wreckage.

Focus Questions:

- Is high-frequency survey necessary when attempting to identify debris fields?
- What impact on time and cost does surveying with different frequencies have?
- How can marine debris surveys be rapid enough to aid impacted communities and also deliver co-benefits such as updated bathymetric data?

3. *The survey target review processes should be improved across the states.*

During the second phase of the project, the GOMMDP team initiated and coordinated a thorough review process of the targets acquired through survey operations. This contrasted significantly from the first phase of the project, where survey data was simply posted on the project Web site.

A formal process for target reviews involving state and FEMA representatives was created to facilitate targets' eligibility for removal. The process involved producing an additional visual tool in Google Earth where (with attributes such as estimated length, width, height, and estimated least depth clearance) FEMA was able to review targets to establish which met the agency's eligibility requirements for federally funded removal. After that initial review, the results of the determinations were shared with state representatives who then had the opportunity to request an explanation from FEMA on eligibility determination. Next, multi-beam images of selected targets were reviewed with the survey contractor so that FEMA and state representatives could benefit from a 3-D image of the targets and make the next determination. Even though the process required significant coordination, it improved communication and transparency among stakeholders.

Workshop participants suggested the following:

The hydro survey teams need to provide standardized survey data in order to enable efficient and effective use of this data for mapping and storage in a database.

Target image quality was an issue during Supplemental I (phase 1) and needs to be improved.

Images improved in Supplemental II (phase 2) to allow for effective target review.

Focus questions:

- Is the utility of a thorough target review process worth the additional effort and time?
- How much do stakeholders benefit from having a coordinating body to shepherd the process?
- Does the existing review process include enough stakeholders?

Funding

Funding specifically identified for conducting marine debris surveys and the coordination of information sharing came to NOAA in the form of two Congressional appropriations – one for \$20 million and a second for \$24 million. States had access to additional sources of funding, such as the Gulf States Marine Fisheries Commission.

While many of the participants' comments during the workshop referenced the need for strategic planning to maximize available funding, many comments also referenced other sources of funding made available to the states. Those comments are recorded below in an effort to capture them for future consideration.

1. *Funding sources other than FEMA (Stafford Act funding) need to be identified.*

Stafford Act funding required FEMA to develop guidelines used to determine if a target identified by survey operations was eligible for removal. Generally, the target must have been created by the storm event. Several workshop participants felt that funding streams associated with the Stafford Act do not effectively apply to marine debris, but should. Some targets located through offshore survey operations will not be eligible for removal based upon FEMA's guidelines, and states may not have enough resources to remove those targets deemed ineligible. Therefore, some targets – although specifically located and mapped – will not be removed and could pose a hazard in the long term.

Workshop participants suggested the following:

FEMA, through the Stafford Act should, provide funding for side scan as well as removal of marine debris. The need to side scan is a direct cause of the event and should, therefore, be eligible under the Stafford Act.

Stafford Act money works for debris you can see on the road, not under water.

For offshore work, do not use FEMA (Stafford Act) funding. It is not suitable for (submerged) items you can't see.

It would have been helpful to use some other source of funding to do debris cleanup besides Stafford Act FEMA money, which comes with many restrictions on how it can be used.

Focus Questions:

- Are there ways to work with FEMA to make Stafford Act funding more appropriate for marine debris issues?
- What other sources of funding can support state response to the impacts of marine debris?
- Can states have input into eligibility determinations and guidelines?



Figure 5: FEMA-funded removal, Mississippi. Photo: USCG

2. *Consideration should be made to provide funds directly to the states for debris survey and recovery.*

Many participants suggested that federal funds be provided directly to the states to address marine debris issues. There was considerable discussion as to whether Congressional funding needed to pass through a federal agency or if funding could be applied directly to the state.

Workshop participants suggested the following:

Instead of a supplemental, give funding to the states directly.

Give funding to states via a federal government agency. (Then the) agency has oversight of funding to verify that it goes to marine debris. There were cases where funds that were earmarked for one purpose were diverted to other needs.

Don't give it to the state. Money gets moved around. Just because it's intended for removal does not mean that is how funds will be used.

Focus Questions:

- How can Congressional funding best be used to conduct and fund marine debris survey and removal?
- How can states be held accountable to ensure that resources intended for debris mitigation are applied that way?

3. *There is a need to determine survey scope and evaluate funding options.*

Irrespective of the mechanism used to make funds available to identify and mitigate the impacts of marine debris, it remains crucial to maximize the value of available funding. States must carefully measure their requests for federal funding support, as well as the extent of their marine debris operations. One specific concern raised was instances where states are required to provide initial financial support for operations and then receive reimbursement from FEMA. If states do not have adequate resources or are concerned about reimbursement, this may not be a viable option.

Workshop participants suggested the following:

It's a finite amount of money. It's hard to determine how much money is necessary.

There is not enough funding to survey all areas. How can we determine what area to prioritize?

States (may be) required to front the funding prior to FEMA reimbursement, if the state can afford it.

Focus Questions:

- How do we determine the most effective areas to survey?
- Is it reasonable for states to be financially responsible for some portion of marine debris mitigation costs?
- What mechanisms are available for states that cannot provide financing for activities outside of those deemed eligible by FEMA?



Figure 6: State-funded removal, Louisiana. Photo: LDWF

Inshore Debris

With the magnitude of Hurricane Katrina or Rita, the debris generated by the storm surge was spread a significant distance from the nominal waterline. Practically, this meant that the resulting debris was to be found a considerable distance from the pre-storm coastline, both inshore and offshore. Given the wide range of the storms' impacts across the Gulf region, the discovery and removal actions taken for this debris varied greatly, along with the environment in which debris was located. These environments differed significantly from state to state and across counties and parishes within each state. Despite these differences, the benefit of and need for a debris survey were universally agreed upon by area representatives, with several common threads emerging in the discussion.

1. *The likely travel distance of debris should be evaluated prior to planning surveys.*

In general, GOMMDP survey operations had been conducted to a distance of three miles offshore for each of the three states, along more than 700 miles of coastline. Marine debris distribution offshore varied by location. In Mississippi, most of the items were found within one-half mile from shore. In Louisiana,

this was not the case. It is recommended that this distance be evaluated with test surveys in areas of high predicted debris density to confirm this assumption.

Workshop participants noted the following:

The majority of the debris will be in that first half-mile.

I'm astonished at the question of the impact beyond half-a-mile. The debris beyond that in Louisiana was significant.

The majority of debris in Mississippi was found one-half mile from shore – that is where the density of debris is highest.

Surveys were limited by depth. However, significant small boat traffic and fisheries utilize depths shallower than this, at least in Louisiana. There needs to be some method to more effectively identify and remove targets in shallow, nearshore areas.

The time between identification of the target – either by survey or by public report – and removal of that target needs to be minimized. Winter storms created significant movement of large debris, especially in shallow bays, so that earlier location efforts were not as effective as they could have been. This requires significant coordination between survey and removal efforts.



Figure 7: Construction debris, Port Manchac, Louisiana.

Photo: USCG

2. *Survey plans should be tailored to individual areas.*

In addition to the distance debris was likely to travel inshore or offshore from its original location, another key output was an increased knowledge of the areas where debris density was likely to be the highest. Factors influencing this include infrastructure density, wind damage, and storm surge. Following the response, with data from the survey in-hand and available, it became clear that the survey benefit varied greatly based on the density of debris it discovered. A key output from the workshop, as identified by participants, was that survey efforts should be focused on areas where debris density reliably can be

expected to be high. This would allow for the maximum benefit of survey to be realized in the most cost effective manner.

Specific inputs from participants were:

Offshore in Louisiana was very different from Mississippi and Alabama, making it a mistake to base the Louisiana planning on what had happened in Mississippi and Alabama.

Perhaps another technique should be used in nearshore, shallow waters.

Environment and topography of the three states are very different.

Offshore survey is needed, but not necessarily in the magnitude it was conducted. In areas where not much debris is expected, survey not needed, in others where more debris is expected, do survey.

Do not need to survey the entire coastline after every major storm event.

Focus Questions:

- What should be considered when identifying likely debris-laden areas?
- Where can previous survey and underwater hazard data be found?
- Who should be “at the table” for survey planning?



Figure 8: Sunken vessel, Bayou Terrebonne, Louisiana.
Photo: USCG



Figure 9: Sunken vessel, Louisiana.
Photo: USCG

Information Management

From the GOMMDP surveys, more than 6,000 objects were discovered in an area covering more than 1,500 square nautical miles. For each target, a minimum of eight attributes were collected and made available to the public. Taken together, this represents more than 48,000 individual pieces of data that needed to be analyzed, collected, formatted, and distributed to the target audiences. Additionally, the target audiences in this case were both diverse and dynamic. Each state had specific needs, and these were not always static over time. This presented a unique information management challenge to the team.

To meet this, the project adopted a mixed approach, using conventional media and hardcopy outreach to drive traffic to a custom Web site. This Web site also was designed to be a key resource for project tracking by state and local partners. Web visitors could view target information in multiple formats, including interactive and static maps, as well as GPS exportable files available for download.

This site, the first of its kind, was designed for the Supplemental 1 efforts and then redesigned and augmented for Supplemental 2. These augmentations included the creation of a separate secure Web site, called a Situation Board, nested within the publicly accessible site that gave partners access to internal project status documentation.

With so many different elements of information management working together, there was a large number of lessons learned. Many of these were captured and implemented over the course of the project, but others remain as good opportunities for improvement in future responses.

1. *The Web site should be designed for maximum flexibility and functionality.*

During the two phases of the GOMMDP, the project Web site underwent one major redesign, but it was reorganized and edited continuously. These modifications were the result of new content types becoming available, or in many cases, new content types being created in response to a partner need.

While making the site as flexible as possible, it remained critical to keep the site functional and intuitive. This included both an intuitive layout for classifying and organizing content and also the “nuts and bolts” function of the site. This functional measure includes elements such as page load and search speeds, password authentication, and site discovery. In development, these two needs can be in competition, as the addition of new content can slow a site down measurably. Participants suggested that these functional points be a priority in any future sites of this kind.

Specific input from workshop participants reinforced these needs:

Make the search functionality easier and faster.

Need to exercise caution when creating data products, (so as) not to create a product that is too burdensome to maintain.

Web site provided good information. Overall, the Web site is good.

Web site helped in addressing requests by public officials who wanted to know what was found so far.

Some Web site points could have been improved:

URL was long and at times difficult to remember or communicate.

Password entrance for Situation Board posed problems.

2. *Better specify the level of data available and the means of accessing them.*

A key element of the entire Web presence of the GOMMDP was the display of project progress and results posted as near to real time as possible. This meant that many internal documents and data were used as the source of a product assembled by the GOMMDP for public display. Later, in the second phase of the project, many of these internal documents were posted for limited viewing by credentialed users.

However, throughout the project there were documents that were kept unavailable for reasons of security or practicality.

Participants recommended greater awareness of the existence of a “next level” of data, even if it was not available through the Web site. Combined with a more explicit route for follow-up, this would have allowed users to pursue information they could have benefited from that was not immediately available. While many classes of documents would have remained unavailable, this also could have allowed the information management team to identify potential derivative products that could fill the needs of users without compromising security or making the site impractical.

Specific input from workshop participants was:

You could not get to the items that were identified unless you had a password. ... The length of the description of the Web site was awkward. There should be a third feature – to be able to manipulate the data for our own purpose. In some cases, public officials wanted to know what we found.

Downloadable; ability to manipulate; state officials – what is there? What are you finding?

Web site helped in addressing requests by public officials who wanted to know what was found so far. (USCG clarified that this decision was made purposefully based on concerns of excessive questions from the public on individual debris points and actions.)

It would be good to have the data on the Situation Board not only in PDF, but in a format that would allow manipulation by the user.

Considering the enormous amount of data within one parish (in Louisiana), the ability to be able to connect a debris point to a waterway would be helpful.

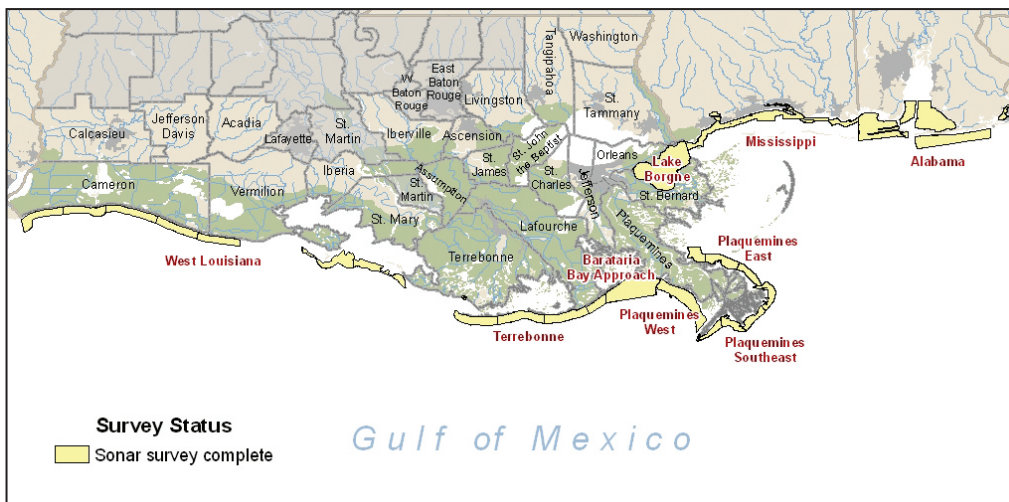


Figure 10: Survey extent. Image: NOAA

3. Ensure data ownership and handoffs are clear.

During Supplemental 2, the sources of data posted to the Web site expanded to include multiple partners, which was an initial challenge. With multiple content streams providing data for updates and the general public depending on the site for accurate information, quality control and version tracking became both increasingly critical and increasingly difficult. Workshop participants noted that creating clear handoffs and points of contact greatly clarified the data management of each partner organization. A given class of product (map, chart, or picture) could only be sent by a limited group of people previously agreed upon. This allowed for most products to be live online within 48 hours of receipt.

Specific input from participants was:

NOAA managed info tools at the discretion of the Unified Command.

First of all, it was invaluable to me, since we fed most of the data in. We were able to say “just go to the Web site,” but we wanted Genwest (Information Management Contractor to NOAA ORR) to control the quality of the data, and you did a good job.

Focus Questions:

- Who is the primary audience for data coming out of the response?
- What are the data needs of the audience?
- What is the best format for the data?
- Is there a significant amount of secure data that requires protection?

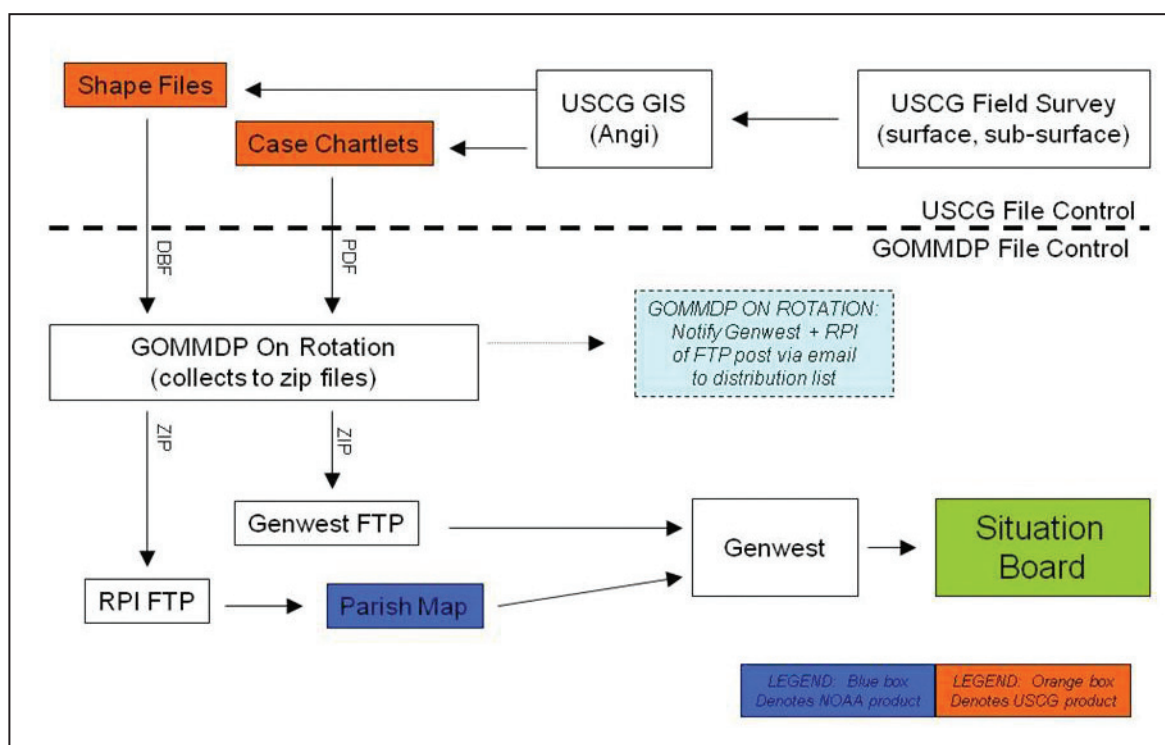


Figure 11: Inshore survey data information flow. Diagram: NOAA

Communication

With an effort involving agencies at multiple levels spread across three states, communication is obviously a critical contributing factor to success or failure. In this project, communication was emphasized throughout and was generally successful, but was not without opportunities for improvement.

1. *Increase interstate communication.*

Communication among response agencies in each state is critical (as also noted in this report's Planning section). Workshop participants have suggested that communications start as early in each state's planning process as possible, well before the onset of a response. However, participants noted that communication should not end there, but be maintained during inactive periods preceding and following an event, as well as during active responses. Many workshop participants noted that it is difficult to take time to communicate with counterparts in different states during the response, as each state is dealing with internal critical issues, and making the call to another state to cross-reference approaches can be difficult. Despite this, such communication can be extremely beneficial and is made much easier if a relationship already exists among the agencies at a formal level and among the people involved.

Specific workshop inputs included:

We need to look at options and resources under each scenario. That kind of approach brings in a more cohesive response. Each goes home with more understanding of the program.

We needed more communication. We had to just go do the work before us.

Focus Questions:

- How should coordination take place during inactive periods?
- Are there specific topics that should consistently be discussed and updated among states?



Figure 12: Collaborative offshore target review, Louisiana.
Photo: NOAA

Interagency Cooperation

As identified throughout this document, numerous agencies participated in the GOMMDP. This list included primary groups that were integral to the process on a day-to-day basis but extended far beyond that list to many assisting agencies that provided support on individual issues or problems. With such a diverse set of partners, maintaining cooperation and a collaborative approach was critical.

Many lessons were learned through this project by all the partners:

1. *Communicate early; communicate often.*

While this message may seem overly simplified, it is one that participants identified throughout the project. Field personnel found it much easier to solve the problems that over-communication can bring rather than those posed by under-communication. Communicating proactively also can reduce the possibility of later conflict within the partner group, as issues can be identified and solved at lower levels and with greater speed than if they escalate to management levels.

Workshop input from participants noted both the initial difficulties and later improvement that higher communication levels can bring:

Federal and state offices didn't work together. Next time, more collaboration is needed.

We proposed to hire to clean by grid. We had to go to NOAA and the Corp (U.S. Army Corp of Engineers) for permits. We had hurdles. It took eight to 16 weeks to get the consultation done. The environmentalists complained about the net dragging. You will have a difficult time if you do anything other than site pickup.

Gulf States Marine Fisheries Commission has many resources and should be consulted early in the process.

We could not have asked for better partners than NOAA and FEMA.

(The combined) FEMA-state-NOAA target review was a process developed over time and is now working well. The state has input.



Figure 13: Phase II kickoff meeting, February 2008, Baton Rouge, Louisiana. Photo: NOAA

2. *The planning, review and response processes should have a plan for handoff from federal lead to state lead as states build capacity.*

The hurricanes of 2005 presented a unique challenge in that the duration of the response was far longer than those typically run by an Incident Command System in what is now the National Response Framework. Normally, responding agencies are on scene for a more limited period of time, utilizing their expertise to mitigate the immediate impacts of the incident and leave the site after appropriate actions have been taken.

For a future response to an incident of this size and response duration, workshop participants across federal and state levels suggested that it would be ideal to have the capacity for a gradual handoff of responsibility from federal agencies to state or local agencies, if agreed by all parties. The practicalities of this type of arrangement would require discussion, but it was suggested that such an approach offers a significant potential benefit in terms of integrating local expertise and resources, while at the same time leveraging the expertise of the federal agencies that would continue to work in the response but with a reduced field responsibility.

Specific input from workshop participants included:

Ideally, the response approach should change to a greater partnership between state and federal partners.

The goal would be for states to develop capacity over the course of the response to take more responsibility from federal partners, allowing transition in the later years of long-term response.

My recommendation is that next time around, the state should do it itself. We now know where to draw expertise from.

Focus Questions:

- Who should facilitate initial meetings between involved state and federal agencies?
- What capabilities are necessary and available among participating agencies?
- How long will the response take and how often should activities, leadership, and involvement be evaluated if the response will take a significant length of time?



Figure 14: Review of survey areas. Photo: NOAA

Removal and Eligibility

Eligibility for removal of marine debris under the Stafford Act for both offshore and inshore debris was not a main topic on the agenda, but was a major topic on attendees' minds, as only targets identified as linked to the hurricanes were removed by USCG with funding from FEMA under this Act's jurisdiction and guidelines. For targets found but not linked to the hurricanes, removal could not be funded under the Stafford Act, and other options needed to be considered.

Several themes dominated this discussion:

1. *Eligibility criteria need to be consistent, clear, and uniform across the impacted area.*

Several workshop participants stated that determination of marine debris eligibility can be challenging. A comment was made that in some cases potentially hazardous debris was left in place. Several participants commented that eligibility criteria and their application varied from state to state. In Louisiana, the eligibility criteria were applied more strictly, and debris items were initially left in place. Eventually, the criteria changed and debris that was previously not eligible later was deemed eligible, necessitating multiple survey and removal efforts of the same waterway.

Workshop participants stated the following:

How do you determine what is storm debris?

Too many things are not eligible, but a threat is a threat.

In Mississippi, removal used a common sense approach. If an item needed to be picked up, then we removed it.

We couldn't pick some debris up because it was ineligible.

Focus Questions:

- What is the best process for generating eligibility criteria?
- How can eligibility criteria be applied uniformly across the entire impacted area?
- How can eligibility criteria address all significant storm-generated hazardous marine debris?

2. *Inshore survey and removal only should be conducted once.*

A recommendation was made that multiple survey and removal efforts in the same inshore waterway, as happened in Louisiana, should be avoided. Several attendees indicated that in Louisiana marine debris in the waterways was related to its impact on a specific activity, and its removal, while addressing a specific activity or concern, did not address all of them. An alternative was recommended in which the impact of marine debris would be considered for all users, and survey and removal would be done once, mitigating impacts to all users. Similarly, it was suggested that for eligibility and removal, all economic factors should be considered – commercial as well as recreational – to prevent surveying the same waterway twice.

Workshop participants stated the following:

Need to avoid the Louisiana situation where some waterways were surveyed four times because the requirements kept changing. Need to come up with prioritization that includes all elements and survey a waterway only once.

Ideal would be for debris of all types to be removed immediately after health and safety concerns had been addressed. Currently, debris of varying types is addressed at different stages for the same area, meaning that one waterway or body of water can be visited three or four times by people searching for different debris.

If it's a threat, it's a threat. If an object is present and presents a threat, it should be removed, regardless of which phase the response is in.

Focus Questions:

- What process should be used to establish a survey and removal process that is as efficient and cost effective as possible?
- What entities should be at the table for developing such a process?
- What changes are needed to the existing mechanism of marine debris response?

3. *Offshore survey and removal needs pose unique challenges that must be planned for.*

Offshore survey and removal presents unique challenges. Unlike debris on land, it is difficult to ascertain what is under water. Survey should be judicious and done in areas where it is most needed. Information on the location of marine debris can potentially come from reporting fishermen and boaters, but this process is both slow and dangerous.

Survey has its own set of challenges, especially if it needs to meet eligibility criteria. Side-scan sonar provides an image of the marine debris, but does not produce information on its age or type. Diving may have to be conducted in order to confirm target eligibility if an item's removal is funded by the Stafford Act.

Submerged marine debris poses a hazard to boaters and fishers that, in some cases, can be deadly. Several comments were made on the hazards of unmarked marine debris and the greater hazard it poses to smaller boats.

The type of removal conducted presents its own challenges. For example, permits and consultation are needed for trawling or grappling for debris, a process that, while required and beneficial, is time consuming.

Survey data in the First Supplemental were not always accurate, and oil platforms frequently were misidentified as submerged debris, causing confusion for the states and inaccurate estimates for removal contracting.

Workshop participants suggested the following:

Need to survey ASAP following a storm to know what's underneath the water to make assessments on removal.

Offshore survey is needed, but not necessarily in the magnitude it was conducted in Louisiana. In areas where not much debris is expected, survey is not needed; in others where more debris is expected, do survey.

If you don't survey it, you have to wait for a longer period of time until the debris is reported. In Louisiana, we have to wait for incidental and accidental contact before we can get it reported to FEMA. We either bite the bullet on the front end, or we find it four years down the road.

Side-scan sonar is not sufficient to completely identify objects by type or age. In the end, diving is needed to determine if targets are eligible for removal.

Focus Questions:

- How can survey of offshore marine debris be done expeditiously?
- What is the best process to determine what targets should be removed?
- What should be done to ensure timely consultation and permitting before removal is undertaken?

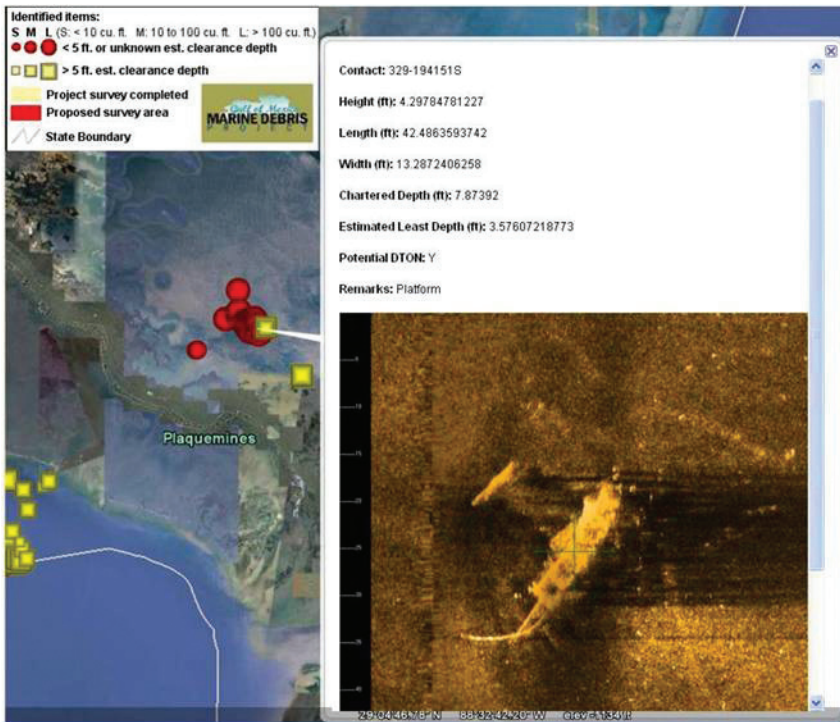


Figure 15: Platform, oil industry debris, ineligible for removal.
Image: NOAA

4. *There is a need to address marine debris in a manner that incorporates both the similarities and differences among states.*

Addressing marine debris in different states has many things in common, and yet there are significant differences. In Mississippi, for example, it seemed that most marine debris offshore was found within a half-mile of the shoreline. In Louisiana, the situation was different. Debris from oil infrastructure damaged by Katrina was found wherever that infrastructure existed. Some lost oil rigs sunken by the hurricanes were carried over large distances by currents and winter storms. How marine debris was addressed in each state also varied. Participants agreed that while federal agencies' eligibility and removal criteria should be fairly and uniformly applied across state lines in a multi-state hurricane response, a one-size-fits-all solution may not be the best option.

Workshop participants stated the following:

The Gulf of Mexico states are different, and debris in Louisiana is not the same as in Mississippi. In Louisiana, offshore has a lot of oil industry-related debris; targets could be more than one-half mile from shore.

In Mississippi, FEMA had an eligibility team and used economic recovery measures to determine actions.

In Louisiana, there are fewer targets, and many will not be removed because they are not eligible.

Focus Questions:

- How should experience gained in one state be applied successfully in another?
- What forum could best serve the Gulf states to share their experiences and lessons learned?

State Perspectives

Louisiana, Mississippi, and Alabama had different experiences dealing with marine debris, and participants shared their individual perspectives. In addition, the more recent experience with Hurricane Ike in Texas was discussed to some degree. There was no representative from Texas in the workshop, so this input was provided by people who worked in Texas after Hurricane Ike.

1. Alabama perspectives

In Alabama, clean up of marine debris after Hurricane Ivan was still ongoing when Katrina hit. Alabama managed to shift resources from post-Ivan work to Katrina cleanup. Alabama had good experiences employing local shrimpers. A number of reasons were mentioned for employing the local fishers: cleanup is faster to initiate; the cost is lower; and local communities impacted economically by the storm, get the benefit of the income and jobs.

Alabama did not use the NOAA survey data to a large extent. Most of the post-Katrina cleanup in Alabama already was completed when NOAA survey data was becoming available, and additional funding (estimated at \$7 million) had not become available. The NOAA survey was useful to Alabama for removal verification and to gauge marine debris intensity in the areas not yet cleaned.

Workshop participants noted the following:

Alabama used shrimpers to remove small items. Large items were flagged and removed by heavy equipment. (This) worked well for Alabama and put shrimpers back to work.



Figure 16: Damaged vessels, Alabama. Photo: ADCNR

2. *Mississippi perspectives*

In Mississippi, marine debris cleanup after Katrina commenced shortly after the storm, starting with beach cleanup, moving on to shallow subtidal waters where debris could be removed by hand (people wading in), and progressed to offshore survey and cleanup. Input from shrimpers validated the need to address offshore debris. In Mississippi, the eligibility criteria allowed for removal of debris even if it couldn't be traced directly back to Katrina.

Similar to Alabama, Mississippi employed local shrimpers and fishers to remove marine debris by trawling and grappling. Both of these methods required consultation, and this posed a challenge. Consultations were conducted with NOAA, and the removal method was approved for some areas.

In Mississippi (as in Alabama and Louisiana), damaged boats were a big issue. Not all boats found were removed because some were considered historically significant.

A number of issues were identified for improvement and correction:

- There was a delay in approving side-scan sonar for detection of offshore debris.
- It took time for the NOAA survey to start, and in the meantime, USCG and state-led cleanup continued.
- There was a delay between side-scan survey and removal, and in the interim, targets moved and could not be easily found.

Workshop participants stated the following:

The shrimpers were continually calling in saying they're tearing their gear up.

The approach we took in Mississippi was one of common sense. It makes perfect sense to get rid of it (marine debris) and not argue where it came from.

In Mississippi, our first count of boats out of water or sunk was 2,100. Insurance companies addressed it first, then the Coast Guard. We were able to remove boats that were in the water or partially in the water.



Figure 17: Debris removal, Back Bay Biloxi, Mississippi.
Photo: NOAA

3. Louisiana perspectives

In Louisiana, the marine debris problem (especially in inland waterways) was huge, and the state needed assistance due to both the magnitude and the nature of the problem. Survey in Louisiana inland waterways was not always feasible because some waterways are very shallow. Differences between Louisiana and Mississippi were mentioned, most notably the topography (e.g. no sandy beaches in Louisiana), industry (debris related to oil industry), and a much higher number of bayous and waterways in Louisiana.

In some areas, Louisiana used federal grant funding to address marine debris. The state gridded the coastal environment into two-by-two-mile grids, overlaid targets from the NOAA Lake Borgne survey onto the grid, and hired a contractor to remove debris from 12 selected grids based upon the size and number of targets surveyed. This effort was successful and cost effective. Louisiana continued marine debris removal through its contractor, who surveyed and removed marine debris from an additional 98 grids. Overall, the state indicated that its experience with the NOAA project was positive and that the target review process went well.

There was concern about the number of targets found ineligible for removal, and one participant stated that more targets should have been eligible. Another participant stated that in Louisiana there is not enough state expertise to deal with the complex issue of marine debris dispersion, and there was a suggestion to increase state expertise to improve capacity to handle such events in the future.

Workshop participants stated the following:

Louisiana found it needed federal help because it did not have a mechanism to handle marine debris.

We (Louisiana) don't gain a lot from chart-quality side scan because the inland waters are too shallow.

Louisiana contracted with Crowder Gulf to survey for marine debris and remove it for only \$37,000 per 4 square nautical miles. It was very cost effective, but the contract did not include removal of large targets, so not all targets were removed.

Overall, the experience with the project was good, and the target review process worked well.

Too many targets were not eligible in Louisiana. More targets should be eligible for removal.

With regard to survey, the state of Louisiana should have the expertise in one or more agencies to determine what survey is best for the state.



Figure 18: Louisiana debris removal, Lake Pontchartrain.
Photo: LDWF

4. *Texas experience*

Several questions were asked about the way Texas addressed marine debris after Hurricane Ike. According to participants who worked with Texas on Ike-related marine debris, Texas made the decision to use state resources and then turn to the federal government to recover the cost. This is possible to some degree because of state laws.

The difference among the Gulf states was again emphasized. What may work well for one state may not be employable in another.

Workshop participants said the following:

Texas did cleanup with state funds and is looking to the federal government for reimbursement.

The laws are different in Texas. The Texas General Land Office has jurisdiction over state waters.

5. *Common experience*

There was an agreement on the importance of state involvement when addressing marine debris because it is the state's territory, people, and commerce that are most affected. The interaction between federal and state government may need further thinking and clarification, and yet, there was agreement on the importance of establishing and maintaining good working relationships among federal and state agencies.

In the Second Supplemental, NOAA worked closely with USCG, FEMA, and Louisiana on survey, mapping, and target review. This did not occur in the First Supplemental, and the better use of resources as a result of this change was noted by many. A target review would have focused removal efforts, as was the case in the Second Supplemental.

A comment was made that this workshop was a useful tool to bring people together and discuss marine debris issues. Such discussion took place in the past and should be done in the future. Such a meeting could be beneficial for a coordinated state response and to facilitate better planning. A venue like the Gulf States Marine Fisheries Commission was provided as an example of a forum in which such discussions can take place.

Workshop participants stated the following:

The state is the biggest stakeholder. It's their backyard.

It's important how well the state works with the federal agency.

The approach of Supplemental II would have been preferred by both Mississippi and Alabama to the approach taken in Supplemental I. Despite resulting in fewer total debris targets, the more accurate data would be beneficial, as pinpointed data is best wherever possible. This was especially true for Alabama, given the potential for targets arriving from rivers and pre-existing targets from the State Historical Preservation Office.

We need to bring all Gulf of Mexico states together on the same page on marine debris issues and to use an interstate forum like the Gulf States Marine Fisheries Commission. (We should) meet to do planning.

Focus Questions:

- What lessons can be learned to optimize survey and mapping of marine debris?
- What is the best model for marine debris survey and removal?
- What processes and tools should be put in place to ensure optimum state-federal collaboration?

Recommendations

A number of recommendations were provided in the workshop, both within comments on specific issues and in general. Below are several general recommendations:

1. *The marine debris response to Hurricanes Katrina and Rita should be documented.*

The need to document this unique and massive response to marine debris dispersion the Gulf of Mexico was suggested a number of times and was the impetus for generating the document: *Marine Debris Emergency Response Planning in the North-Central Gulf of Mexico* (<http://gulfofmexico.marinedebris.noaa.gov/MDERP.pdf>). The same suggestion was made several times in this workshop.

2. Responding to marine debris incidents must be planned for.

There was a consensus that planning is critical and should be done for a number of elements, from funding to execution of response.

A multi-state marine debris response model should be developed. A collaborative multi-state effort should look at areas most impacted and determine appropriate roles, responsibilities, response actions, and ways to use limited funding efficiently.

3. Marine debris surveys should be integrated into the initial emergency response.

Surveying for marine debris should be part of an emergency response, not an add-on addressed much later. There was a feeling that a large-scale marine debris dispersion will occur again and could be best addressed by an effort that is part of the response from the very beginning.

Workshop participants suggested the following:

NOAA should write this down. It might be 30 years before this happens again, and we'll all be gone.

We need a clear public health assessment first, then to form a comprehensive plan.

When you had monies coming down, it was not specifically broken down to whom it should go to. The language from Congress had specific goals, but did not state how it should be broken down. It only said "to the states affected by the storms." I think we should do a better job of defining that.

There is a need to develop a marine debris response model and determine who does what. It should be developed by the states in a collaborative process. It needs to look at areas most impacted by surge and water movement.

Have survey operations be an ingrained contribution to hurricane response.

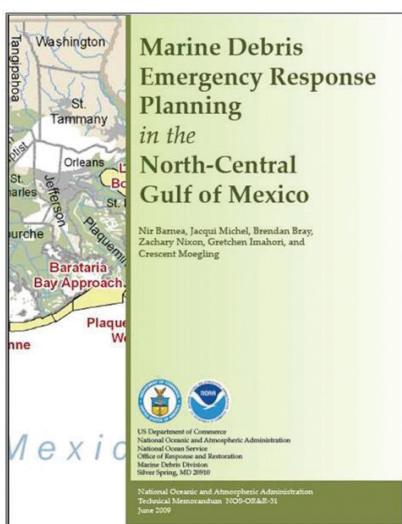


Figure 19: Marine Debris Emergency Response Planning.
Image: NOAA

Appendices

GOMMDP End of Project Workshop
September 2, 2009
2000 Quail Drive, LDWF Headquarters, Baton Rouge, Louisiana

AGENDA

- 8:00-8:30 Coffee, registration
- 8:30-8:40 Welcome and purpose of the workshop
- 8:40-10:30 **First Supplemental**
Short presentations (10 min. each)
- History and survey area selection: Charlie Henry
 - Survey in the First Supplemental: Crescent Moegling, C&C
 - Mapping and website: Nir Barnea
 - Outreach: Neal Parry, Melissa Schneider
 - State experience: Alabama - Chris Denson; Mississippi - Irving Jackson; Louisiana - Marty Bourgeois
- Discussion (40 min)
Questions to consider: What should be the best process for survey area selection? Was the survey effective? Were the maps useful? Was the project collaborative? Was the outreach effective? What should be done differently next time?
- 10:30-10:45 Break
- 10:45-12:00 **Second Supplemental**
Short presentations (10 min. each)
- Implementation of lessons learned from first supplemental: Nir Barnea
 - Survey in Second Supplemental: Crescent Moegling, C&C
 - Second Supplemental GIS: Bill Holton
 - Offshore and inshore Web sites: Al Hielscher
- Discussion (35 min)
Questions to consider: Did we miss lessons learned from the First Supplemental? Was the survey effective? Mapping useful? Websites informative? Inshore website (Situation Board) helpful? What could have been done better?
- 12:00-13:00 Lunch (provided)

13:00-2:40

Second Supplemental (cont.)

Short presentation (10 min each)

- Target review process: Peter Murphy
- USCG experience: Bob Travis
- FEMA experience: Mark Nickelson
- Louisiana's experience: Garrett Broussard
- Second Supplemental outreach: Neal Parry, Paula Ouder

Discussion (50 min)

Questions to consider: Was the target review process effective? Was the information provided by NOAA valuable and helpful for target removal? NOAA interaction with the USCG, FEMA, and State collaborative and productive? Was the outreach valuable and well targeted? What would you have done differently?

2:40-3:00

Break

3:00-4:30

Tying it all together

- Lessons learned from the project: + and Δ
- Recommendations for the future
- Acknowledgements

GOMMDP End of Project Workshop Attendees

First	Last	Affiliation	E-mail
Chris	Denson	Alabama Marine Resources	chris.denson@dcnr.alabama.gov
Scott	Croft	C & C Tech	scott.croft@cctechnol.com
Kerry	Demers	GOHSEP	kerry.demers@la.gov
Shann	Gallagher	GOHSEP	shawn.gallagher@la.gov
Leo	Richardson	GOHSEP	leo.richardson@la.gov
Garrett	Broussard	LA DNR	garrett.broussard@la.gov
Sam	Martin	LA DNR	sam.martin@iem.com
Denise	Moore	LA DNR	denise.moore@iem.com
Harry	Blanchet	LDWF	hblanchet@wlf.la.gov
Martin	Bourgeois	LDWF	mbourgeois@wlf.la.gov
Jim	Hanifen	LDWF	jhanifen@wlf.la.gov
Brian	Lezina	LDWF	blezina@wlf.louisiana.gov
Melissa	Castleberry	Louisiana Sea Grant	mdufou1@lsu.edu
Rusty	Gaude'	Louisiana Sea Grant	agaude@agcenter.lsu.edu
Roy	Kron	Louisiana Sea Grant	rkron@lsu.edu
Paula	Ouder	Louisiana Sea Grant	pouder@lsu.edu
Jessica	Schexnayder	Louisiana Sea Grant	jsche15@lsu.edu
Buffy	Ashton	LSU/NOAA Chem Support	bashton@lsu.edu
Melissa	Schneider	Mississippi-Alabama Sea Grant	melissa.schneider@usm.edu
Irvin	Jackson	MS DMR	irvin.jackson@dmr.ms.gov
Deborah	Darsey	MS FEMA	deborah.darsey@associate.dhs.gov
Mark	Reyes	MS FEMA	mar.a.reyes@dhr.gov
Nir	Barnea	NOAA – MDP	nir.barnea@noaa.gov
Sarah	Morison	NOAA – MDP	sarah.morison@noaa.gov
Peter	Murphy	NOAA – MDP	peter.murphy@noaa.gov
Neal	Parry	NOAA – MDP	neal.parry@noaa.gov
Zach	Nixon	NOAA – MDP/RPI	znixon@researchplanning.com
Ben	Evans	NOAA – OCS	benjamin.u.evans@noaa.gov
Jeff	Ferguson	NOAA – OCS	jeffrey.ferguson@noaa.gov
Mark	Lathrop	NOAA – OCS	mark.t.lathrop@noaa.gov
Rost	Parsons	NOAA NCDDC	rost.parsons@noaa.gov
Mary	Barber-Gill	NOAA ORR	mary.barber@noaa.gov
Charlie	Henry	NOAA ORR	charlie.henry@noaa.gov
Al	Hielscher	NOAA-MDP/Genwest	alh@genwest.com
George	Amon	USCG	george.e.amon@uscg.mil
Robert	Travis	USCG	robert.travis@uscg.mil