

**NOAA RESTORE Act Science Program
Engagement Session at Gulf of Mexico Alliance All-Hands Meeting
June 24, 2013**

Summary

The NOAA RESTORE Act Science Program hosted an engagement session on June 24, 2013 to introduce the program and to give individuals the opportunity to provide input. Over 100 people participated. The participants included representatives from the academic community, State agencies, Federal agencies, and non-governmental organizations with an interest in Gulf of Mexico science. The engagement session provided an overview of the RESTORE Act as well as an introduction to the proposed goals, focus areas, and short-term priorities in the NOAA RESTORE Act Science Program's draft [Science Framework](#).

The event sought to engage the participants using a facilitated process where the attendees at the meeting broke into small groups to answer five questions about the Program's proposed goals, short-term priorities, management needs, engagement opportunities, and challenges. The participants were very active during the group discussions and provided valuable input in all areas. Their responses were captured by group facilitators and are presented in Appendix A.

Across the groups, four basic themes emerged: clarification, coordination, communication and accountability. The NOAA RESTORE Act Science Program appreciates all the valuable input and is taking these recommendations into consideration as plans move forward.

Clarification

Many of the participants felt they needed specific information about aspects of the NOAA RESTORE Act Science Program.

- Several individuals requested definitions of terms such as "sustainable ecosystem" and "offshore". Others stated that it was important to define terms so that everyone is speaking the same language.
- Participants sought a definition of the geographical extent of the Program. They wanted to understand if the Program will include estuaries and other coastal ecosystems. There was also interest as to how the Program is going to relate to Mexico.
- Participants also sought clarification on the time frame for the Program as well as the funding limits.
- Some participants did not understand the link between goals and focus areas and the short-term priorities contained in the NOAA RESTORE Act Science Program's draft Science Plan Framework. There were some requests to clarify the meaning, intent, and geographic extent of the proposed goals.

Coordination

A key theme for all the groups was the need for the NOAA RESTORE Act Science Program to act in coordination with other research and management initiatives in the Gulf of Mexico.

- Participants encouraged coordination of all relevant science activities. They expect the Program to coordinate with other parts of the RESTORE Act including the Gulf States, the Centers of Excellence and the [RESTORE Council](#).
- People stressed the need to avoid duplication. They do not want the NOAA RESTORE Act Science Program to repeat previous work already done either in the Gulf of Mexico or in other regions that can be applied to the Gulf.
- Many people expressed the opinion that they do not want a science initiative that starts from scratch. Several recommended setting up ecosystem-wide monitoring beginning with what is already in place.
- Individuals recommended leveraging other programs, partnerships and funding as much as possible.
- Participants recommended using already available data. They pointed out that good data management techniques can be applied to make data useable and accessible.

Communication

The participants want to be kept informed about the NOAA RESTORE Act Science Program.

- People expect the NOAA RESTORE Act Science Program to communicate its actions. They especially want to be informed when major announcements are made or actions are required such as when requests for proposals are issued.
- Individuals expressed a desire to have control over how they receive information from the NOAA RESTORE Act Science Program. They would like the Program to use both active communication, such as emails and social media, and passive communication, such as websites.
- Participants suggested the Program provide both engagement and education, especially to the groups who have not been participating thus far including the private sector and all levels of government. A couple of people brought up the need to translate materials into Spanish and Vietnamese.

Accountability

Many of the people expressed the desire that the NOAA RESTORE Act Science Program assist in monitoring the progress of the Gulf of Mexico restoration efforts.

- Several people suggested setting up ecosystem-wide monitoring to evaluate the success of restoration efforts.
- Participants requested some type of annual report on the state of the Gulf in an easily understood format. One suggestion for this report was an annual, seminal State-of-the-Gulf conference that produces a report in plain language. Another proposal was a report card with a letter grade. Another idea was a color-coded report card with red (bad), yellow (not good), green (good).

- Individuals also proposed an annual report on the RESTORE Act’s progress against the goals established by the RESTORE Council, the NOAA RESTORE Act Science Program, and any funded projects.
- Some people pointed out that projects, metrics and tools should be scalable so that they could be used for more than one application and be more cost-effective.

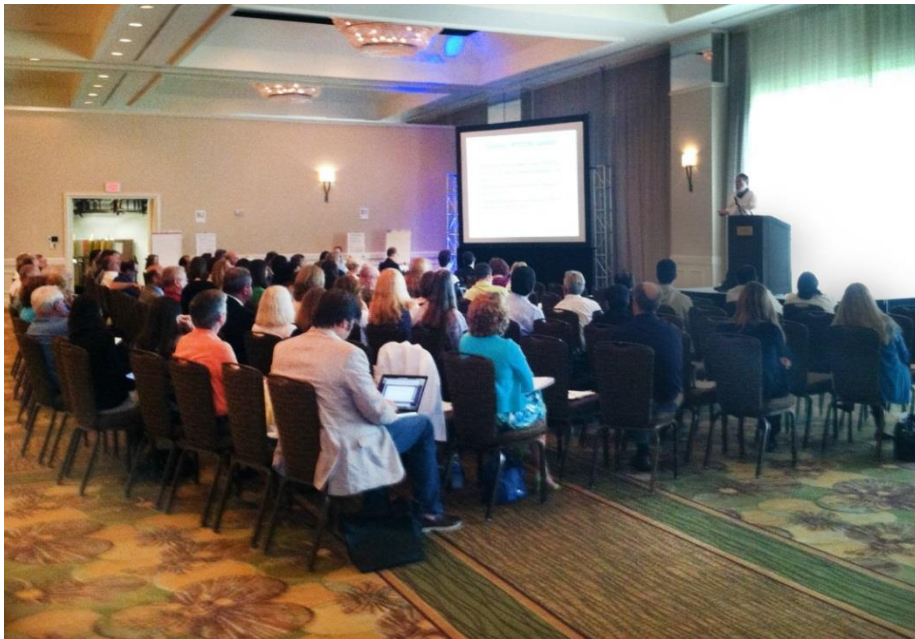
The NOAA RESTORE Act Science Program plans to hold additional engagement sessions in the near future to keep people informed about the program and to gather further input as the program continues to evolve.

Background

In July 2012, the [Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies \(RESTORE\) of the Gulf Coast States Act of 2012](#) (RESTORE Act; Section 16 of Public Law 112-141) was signed into law. Section 1604 of the RESTORE Act authorizes the National Oceanic and Atmospheric Administration, in consultation with the U.S. Fish and Wildlife Service, to establish and administer the Gulf Coast Ecosystem Restoration Science, Observation, Monitoring, and Technology Program. The program is commonly known as the NOAA RESTORE Act Science Program.

The purpose of the NOAA RESTORE Act Science Program is to increase understanding of the Gulf of Mexico ecosystem and support its long-term sustainability, including its fish stocks, habitats, wildlife, and fishing industries.

Engagement Session



To raise awareness of the program and to provide an opportunity for researchers, resource managers, and others to offer input on the direction of the NOAA RESTORE Act Science Program, [NOAA](#) hosted a meeting on Monday, June 24, 2013 from 4:00-6:00 p.m. in conjunction with the [Gulf of Mexico Alliance](#) All-hands Meeting at the Grand Hyatt Tampa Bay in

Tampa, Florida. The meeting was open to anyone interested in learning more about the NOAA RESTORE Act Science Program.

The objectives of the engagement session were to give participants the opportunity to:

- Know how the NOAA RESTORE Act Science Program (the Program) was established
- Gain an understanding of how the NOAA RESTORE Act Science Program differs from other science initiatives in the Gulf
- Gain an understanding of how the NOAA RESTORE Act Science Program differs from other RESTORE Act initiatives
- Learn about how previous science assessments have been used by the Program
- Understand that the Science Framework for the Program is currently being developed
- Provide input to the Science Framework
- Provide input on future engagement activities

Overview of Engagement Program Activities

Dr. Richard Merrick welcomed the group and thanked them for their participation. Dr. Merrick is the Chief Science Advisor and Director of Scientific Programs for [NOAA's National Marine Fisheries Service](#) and also serves as the Chair of the NOAA RESTORE Act Science Program's Executive Oversight Board. Dr. Merrick provided an overview of the RESTORE Act and explained the difference between NOAA's Program, the State Centers of Excellence, the RESTORE Council Activities, and the State allocations.

Russ Beard provided a short overview of the Program's administrative structure and explained what is known about potential funding. Mr. Beard is the Acting Director of the NOAA RESTORE Act Science Program as well as the Director of [NOAA's National Coastal Data Development Center](#) and the Team Lead of [NOAA's Gulf of Mexico Regional Collaboration Team](#). He also talked about the [Science Framework](#) that is being developed and how it will be used, giving a brief summary of the Framework's proposed goals, focus areas, and short-term priorities.

Breakout

The participatory portion of the meeting was facilitated by Dr. Julien Lartigue of [NOAA's Coastal Services Center and the Cooperative Institute Program Office in NOAA's Office of Oceanic and Atmospheric Research](#). Participants rotated in small groups to answer five questions. Every participant had the opportunity to answer each question if they wished. A group facilitator recorded the answers from each group and asked follow-up questions where appropriate. An additional flip chart was set up by the sign-in table along with a suggestion box for any additional input that may not have fit into the categories set up by the five questions.

The five questions posed to the group were:

1. **Should any of the proposed goals be dropped? Are there other goals that should be added?**

Proposed goals are:

- *Support Healthy, Diverse and Resilient Coastal Habitats*

- *Support Healthy, Diverse and Sustainable Living Coastal and Marine Resources*
- *Support Sustainably Managed Fisheries*
- *Support Healthy and Well-managed Offshore Environments*
- *Support Healthy, Sustainable, and Resilient Coastal Communities able to adapt to a changing environment*

Selected summary of comments:

- *Several questions to clarify the meaning, intent, and geographic extent of the proposed goals*
- *Reinforce the connections between ecosystem components*
- *Connections between science and restoration*

2. Should any of the current short-term priorities be dropped? Are there other short-term priorities that need to be added?

Current short-term priorities are:

- *Synthesis of current scientific understanding and management needs, such as*
 - *Identification of currently available indicators of health/condition to Gulf of Mexico ecosystem components, including humans, followed by comparative analysis of strengths and weaknesses and design/testing of additional indicators;*
 - *Development of a plan for initial State of Health Assessment for the Gulf of Mexico;*
- *Conceptual models of the Gulf of Mexico ecosystem showing linkages among the system components, such as*
 - *Identification and characterization of the most important available ecosystem and component models for the Gulf of Mexico, assessing the strengths and weaknesses of these models;*
- *Initial needs/requirements assessment for a robust Gulf of Mexico observing system, building upon currently available observing assets and requirements in the Gulf, such as*
 - *Observation and modeling requirements to predict the transport of HABs, pollutants, larvae, etc.*

Selected summary of comments:

- *Discussion of models, indicators, observing systems, database design, and connection to other data sources*
- *Ensuring reasonable priorities considering the 2.5% investment, and scalability of projects*
- *Coordination of all relevant science efforts*

3. What are the pressing management needs in the region and what science is needed to address them?

Selected summary of comments:

- *Data collection, observing systems, data comparability*
- *Water quality and management*
- *Long-term vs. short-term projects*
- *Discussion of funding options*

- *International research*
 - *Habitat changes*
 - *Fisheries research, assessments, monitoring, and observations*
 - *Ecosystem based management*
 - *Communicate connection between science and management, also general communication and engagement*
 - *Impact of episodic and/or emergency events*
- 4. How should NOAA engage with you throughout this process? Who is not in the room, but needs to be?**
- Selected summary of comments:*
- *Digital and non-digital media – find ways to reach all interested audiences*
 - *Continued in-person outreach with various groups and levels of government, geared by topic area*
 - *Discussions of groups to engage with*
 - *Translate materials*
 - *Active engagement versus information delivery*
 - *Private sector connections*
 - *Transparency*
- 5. What are the challenges this Program faces? What are strategies for overcoming these challenges?**
- Selected summary of comments:*
- *Prioritizing what to do first – cannot do everything*
 - *Finding synergies and connections*
 - *Data management , integration, and availability*
 - *Communication and coordination with many other RESTORE-related activities*
 - *Adaptive management*
 - *Defining the time frame*
 - *International dialog and research*

Closing Remarks

After participants answered all five questions, the entire group came back together. Mary Erickson, Acting Director of [NOAA's National Centers for Coastal Ocean Science](http://restoreactscienceprogram.noaa.gov/), thanked everyone for their time and summarized some of the comments she heard while listening to the different small groups. Russ Beard also thanked everyone for their participation. He displayed the NOAA RESTORE Act Science Program's website address (<http://restoreactscienceprogram.noaa.gov/>) and encouraged the participants to use it to keep in touch.

Conclusion

The facilitated, small group model in which participants focused on specific questions was a useful forum that gave everyone a chance to give ideas and voice their concerns. The participants were very

engaged and provided valuable input in all areas. The NOAA RESTORE Act Science Program plans to use this type of forum again.

Across the groups, four basic themes emerged: coordination, accountability, communication and clarification. See Appendix A for all the comments. The NOAA RESTORE Act Science Program is reviewing all the input received at the engagement session and is taking it into consideration as plans move forward.

Appendix A
NOAA RESTORE Act Science Program Engagement Session at Gulf of Mexico Alliance All-Hands Meeting
June 24, 2013

Question 1: Should any of the proposed goals be dropped? Are there other goals that should be added?

- What do we mean by 'support'? 'Support' waters down the priorities; all five groups asked this question; need to better define or thoroughly explain the use of that word; several recommended we find a better word
- Define what a 'sustainable ecosystem' is; what would that look like? What is the target?
- How is 'healthy' defined? (same concept as last bullet)
- The goals address things we should already be doing; things we (the research community at large, not just NOAA) should have been doing all along; if we haven't been, why not?
- Goals are too vague/general; too much overlap
- Current goals are too bureaucratic; too many unnecessary words; makes the goals cover everything we could possibly do; need to be more specific; define objectives; what are the 'process' goals, i.e., the how we will get there
- Last one or two words of each goal is what matters; all the rest is just a bunch of hand waving
- The current goals break apart the ecosystem components too much; need to maintain connectivity of components, e.g., animals to their habitat, abiotic factors to environments, etc.
- Last goal should be deleted; not enough RESTORE Section 1604 funding to address this; there should be other buckets of money available for community resilience
- By 'offshore', do we mean the Gulf ecosystem as a whole? Need to put more emphasis on Gulf wide integrated ecosystem sustainability
- Goals intended to provide science or research for the thing they address (e.g., habitat, living resources, etc.) but what about the human use (or abuse) of the ecosystem? That is missing → need to understand the carrying capacity of the Gulf
- Wording of the 4th bullet implies either 1) the inshore is o.k.; or 2) we don't care about it
- Recommend combining 1st and 2nd bullets; '...coastal and marine flora and fauna...'; but then need a bullet to address non-living resources, e.g., sand, oil and gas, etc.
- In first bullet could change 'habitat' to 'ecosystem' and add 'marine'
- Need to define the geography; current goals are clearly in the Gulf but how do they line up with the watershed piece of the equation?
- Restoration science is not in current goals
- Science for this program should be determining if restoration works; need long-term, consistent monitoring to quality check restoration implementation and outcomes → need a goal built around this concept
- Building on last bullet: program should provide the science to support all other RESTORE pieces to ensure the best, most cost effective projects are selected

- Would like to see a habitat assessment of past changes so that we know which habitats need to be restored; the science in this program should provide that knowledge
- Proposed goal: ‘Develop the research foundation that enhances sustainable management of estuarine, near coastal, and marine ecosystems of the Gulf of Mexico’
- Questions regarding fish stock assessments and the RESTORE Science Program-may need to follow up with RESTORE Council about assumptions
- Suggestions for goals
 - Replace offshore “environments” with offshore “habitats
 - Recommend that the goals be about “support and understand” [at least one other person supported this]
 - Suggestion to combined goal 1 and 4 - “healthy and well-managed Gulf-wide habitats” [two other people supported this]
 - Could also change “habitats” to “resources” and would combined 1, 2, 4
 - In general, have three goals
 - Human dimension
 - Environment and habitats
 - Resources
 - What’s the difference between “managed” and “well-managed”?
 - Support for Goals #5
- Lots of discussion on what the program can do to support diversification-evaluation, opportunity cost. What will it require/cost if fundamental practices shift in the Gulf (e.g., shifting away from fisheries or other)?

Question 2: Should any of the current short-term priorities be dropped? Are there other short-term priorities that need to be added?

- Models:
 - Ensure ties to state and academic modeling projects
 - Currently the link between the goals and the models is not clear to the outsider (the match is not intuitive)
 - Are the models meeting the overarching goals and targets?
 - visually mapping these linkages would help ensure the goals are met
 - When building off of existing models- match scale and age.
 - e.g. Louisiana models- which ones are updated and spatially relevant, and which ones may require upgrades and updates?
 - Set up a monitoring group to validate / assess / evaluate model predictions
 - Monitoring Assessment Team
- Indicators:
 - Ensure sampling comparability and compatibility, and define these terms explicitly
 - A well-funded synthesis study is important to success in guiding the program forward, especially with respect to measuring the state of health of the Gulf
 - The report card strategy may be helpful, especially in this case where there is a general lack of current monitoring, so groups’ determinations are unlikely to conflict

- IEP- integrated ecosystem portfolio
 - include economic impacts in the report card (or other indicator)
 - include nested assessments and time series in the report card (or other indicator)
- Observing systems:
 - Start by finding out what GCOOS has / what its current plans are / what it lacks to fit current needs, build from that
 - See inshore / offshore / estuarine / riverine sediment dynamics models
 - Initial needs and requirements for observing systems include:
 - Input from resource managers- what products (output from the observing system), what data (types and volume) are missing, and what gaps in data collection or processing do you see
 - Determine the lens this is being viewed from- are scientists, managers, or both groups using the products of observing systems? This will impact how the data are used.
- Comments applicable to more than one priority
 - Start by synthesizing previous work, don't repeat it
 - Ensure real-time information flow from scientists and the Program to management decisions; make sure information reaches decision makers in a timely manner.
 - see the SIMON application as an example of how to do this
 - Ecosystem based species management is more important than focusing on single species or sentinel species
 - retain a balance of inshore and offshore priorities
 - ensure ties to local and state restoration (economical and ecological) projects when monitoring- increase communication, coordination amongst sections of the RESTORE Act
 - Inform science and fill data gaps by mining other entities' programs (BOEM, BESEE, industry)
 - The energy industry has a wealth of knowledge about these systems it collects before, during and after drilling.
 - see OOCs (Offshore operator's committees) for more info
 - environmental groups
 - fisheries groups
 - environmental consulting firms
 - environmental assessments, environmental impact statements for commercial projects
 - ensure logical synthesis and reporting of these data
 - ensure inclusion of data from deep areas, impacted areas, and marshes
 - A database is required at the onset of this program,
 - The following considerations in mind to aid in setup:
 - Where will mined data go (what will they be used for)?
 - Who will manage the data?

- The database design must be driven at the onset by a data analysis plan (how will data be transformed from initial work to models to products?)
 - Data should be integrated at the beginning of the life of the Program into one single database
 - SIMON platform is an example, as is KEPLER
- 2.5% of the Trust Fund is nowhere near enough to accomplish all the goals set up by the Program. That being said, the goals, while lofty, represent science that is needed for the region.
- Measurement of valuation of ecosystem services would be helpful to ensure complete evaluation of the ecosystem and its impacts on the residents
 - see Sea Grant's methods for doing this
 - include economic impacts of events and how to measure these
 - include economic benefits of monitoring, *i.e.* job creation
- Incorporation of climate change into current priorities is needed to ensure we don't consider it too late in the game- start considering it now
- Avoid addition of climate change into our considerations to avoid spreading ourselves too thin- we're only 2.5%
- Cost / benefit analysis should be used at the onset to choose initial (and long-term) priorities
 - In the future, more long-term priorities are appropriate, but for now, starting with short term priorities is a good idea.
- All 3 have merit, but to do all three well seems overly ambitious
- One group offered that 50% of funds should go to synthesis, 30% to modeling, (especially if it's only a catalog of existing models, not model development), 20% to obs. Another group thought that the modeling priority should garner at least 50% of the short-term resources. A third group suggested that no funds should go toward synthesis--much or most of that work has already been done (e.g., Task Force, GoMRI) . Another person strongly disagreed--there is really no hard scientific analysis of large scale integrated ecosystems in the Gulf.
- Within the priorities the metrics and any tools that are develop should be scalable in both space and time--from large marine ecosystem to site specific restoration.
- Within the synthesis and integration of Indicators NOAA should develop a Red/Yellow/Green approach. Something like the MARES system currently used in S. FL. Wide variability across the indicators will muddy the synthesis and will make it hard to meaningfully synthesize the indicators. "so is it worth doing"? Yes, even though the outcomes may be complicated, it's still worth it.
- State of the Health should not just be a look at the past and assessment of current state. It should also provide a future vision for where we want the Gulf to be.
- Observation catalog is really needed. Need to understand ALL of the various observation initiatives and where the gaps are. Many, many, many efforts going on in the Gulf--there is really no one place to get collective info to fully understand all of the

ongoing observation and the gaps and needs. Some thought that we already had enough understanding of observations in the Gulf.

- Modeling catalog would really help identify the gaps. Need to be judicious is how much we spend toward this, but understanding where and what models exist would help.
- 4th Short-Term Priority should be development of an Uber Board to closely coordinate all of the various post-DWH Science efforts (i.e., GoMRI, NAS, NRDA, RESTORE Centers of Excellence, NOAA program. efforts in Mexico). Critical that all of these efforts be pulled together by someone. NOAA is that someone.
- A 5th short-term priority should be an assessment of existing restoration techniques and projects in the Gulf. What has worked and what has not? No one has done this--huge need

Question 3: What are the pressing management needs in the region and what science is needed to address them?

- Real time data collection (need consistency)
 - subsurface plume, deep ocean habitats
 - integrated ocean observations
 - movement of cetaceans and fish stocks
 - unknowns inhibit management
 - turtles
 - endangered species and invasive species
 - offshore
- Develop and deploy integrated ocean observing systems in the Gulf
 - physical, chemical, biological sensors
 - acoustic receivers
 - genetic sensors for harmful algal blooms
- Sampling
- Water quality
 - Minimum flow and more sensors
 - USGS having cuts
 - Water management districts
 - Out-of-state water availability
 - Dams
 - Change in flow patterns to estuaries
 - Freshwater hydrological science
 - Timing of freshwater flows
 - Withdrawals
- Data needs to be comparable
- Sustained funding to maintain consistency and keep integrated
- Long-term
 - Do less longer [NOTE: Not agreement on this point, some didn't want to miss opportunity and would rather see more observations]
 - Scale down for long term

- Less funds for research and development
 - More funds to deploy existing networks and structures
 - More funds to existing technology
 - Leverage programs
 - ensure integrating data
 - Find data - who has buoys, etc.?
 - Multiple databases
 - Data consolidation
 - Put in same place and same format
- Work with companion programs (e.g. water quality network)
 - Should link to fisheries
 - Leverage funding
 - Need observation system
 - Coordinate funding, outputs, and data from observations (especially sensors)
 - Across programs
- Manages causes of degradation
 - e.g. anoxia, overfishing, etc.
 - Manage center of the continent
 - Hypoxia to nutrients (link to Iowa, Kansas, etc.)
 - Manage nutrient input
 - Best management practice for farming
 - AgroScience
 - Economic costs
 - Little incentive to change
 - Social science/economics
 - Reserve program
 - Drain tile program
 - Non-farmland (farm conservation)
 - Ethanol disincentive
- Science need
 - Fertilizer application
 - No till
 - Technology advances (cost efficiency and effectiveness)
- How to spend the NOAA funding
 - Cost/benefit analysis
 - Greatest impact for the funding
 - Is focus beyond Gulf States
- Add non-NOAA advisory panel to NOAA science program
 - To identify appropriate metrics and prioritization
 - To identify science needs
 - Targeted applied science
 - Work on process

- Manage all funds from RESTORE
- Water quality
 - More monitoring data
 - Higher spatial and temporal density
 - Interpretation for management
 - Sensor technology
- Infrastructure
 - Need to understand how RESTORE groups work
 - How GOMA relates
 - Centers of Excellence/NOAA Council
- Linkages to Mexico
 - Transboundary issues
 - Link all the way to southern Mexico
- GOMA-Mexico Link (Large Marine Ecosystem)
 - Build consortium of universities link (Gulf of Mexico University Research Consortium)
- Data management
 - Access management
 - Data accessibility
 - Compatibility
 - Deliver data to resource managers
 - 'Simon' program
- What are changes in habitat
 - Status and trends - mangroves moving north
 - Will this have different effect on stability of shoreline
 - What if it hits structure, migration cannot occur
 - Coastal marsh morphology and how to monitor change from marsh to mangrove
 - More sampling long-term sea level rise
 - Monitoring
- Changes during/after restoration
 - Impacts to area (e.g. sediment diversions)
 - Post-restoration monitoring
 - Status and trends
- Effectively monitoring annual catch limits
 - Science to support annual catch limits
 - Relates to real-time data
 - More timely data
 - Fisheries independent data collection
- Ecosystem based management: full understanding of the ecosystem and impacts (broader goals for restoration)
 - Science plan - what are the questions and their data needs
 - Baseline, impacts, responses, population trends

- Integrated data - different disc., taxa, areas (meta-analysis) (local and traditional knowledge)
- Real-time observing network
- Data to support indicators and assessments of success
- Long-term data for modeling management options
- Assess future episodic events/gaps
- Assess monitoring programs' gaps
- Communicate science behind management decisions [e.g. snapper management, incorporating changing conditions (climate) (species changes)]
 - Data to document reasons behind decisions
 - Take long term view and justifying investments
- Management indicators
 - Science for socio-economics
- Impacts of episodic events and feedback to infrastructure and ecosystems
 - Models of events/impacts and data to verify models
 - Data to inform cost/benefits
 - Inform communities about resiliency, adaptation, new policies
- Translating science to lay-man terms to gain public support
- Provide engagement to determine science needed to improve the life of natural resource based economics
 - Processes and methods to get data to support decisions for communities and natural resource economies (e.g. boat ramp placement)
 - Data to understand impacts and involve decision makers in setting goals
- Front-end integration (not just sharing and translating); reduce duplication setting restoration goals
 - Determine thresholds, what ecosystem restoration is possible/set goals that incorporate resilience to future changes
 - What are we restoring
- Scale for management (spatial)
 - What are the ecological processes that maintain ecosystems and services
 - National, regional, local - how to provide for all the management needs/scales
- Stock assessments - should be eligible use of funds
- What are desired management outcomes and what actions achieve them; what are our assumptions about what we are getting from the system correct/justify the management investment
 - Define ecosystem services and how the ecosystem performs/delivers that service
 - What does management want and can you get to it and what isn't possible
- Need for emergency event response and assessment funding
- What are management tradeoffs

Question 4: How should NOAA engage with you throughout this process? Who is not in the room, but needs to be?

- Websites - clear contact information with someone who responds
- E-mails/LISTSERV
- Conferences
 - State of the Gulf Science/Outreach (merge with Gulf of Mexico Research Initiative and Harte Research Institute meetings)
 - Alternate States - one big conference with everyone - avoid conference fatigue
- Communicate with state and local governments and have them distribute information through their channels to public and staff
- Topic specific engagement for coordination and vetting among experts (e.g. NOAA scientists, other agencies)
- Topic specific engagement on coordination and outcomes from different pots of funding
- Mission statement with accountability against that clarity and specifics
- Engagement Sessions/status updates with comment period
- Social media--all forms
- Product from the expert reviews that are user-friendly/short/concise
- Groups with whom to engage
 - Tribes
 - University students
 - Other federal agencies
 - Oil companies
 - Vietnamese
 - Small regional non-governmental organizations
 - Northern Gulf Institute
 - National Estuary Programs/National Estuarine Research Reserves
- Quarterly newsletter - electronic for participating agencies doing the work
- Media outreach to show success benefits/accountability
- E-mails with early 'warnings' on upcoming request for proposals
- When significant change made to website, send e-mail blast with link to update
- E-mail about request for proposals development process - kept up to date through whole process so not surprised
- Be careful of e-mail fatigue
- Groups with whom to engage
 - Non-Gulf States, Mississippi basin, ACF
 - Local governments (e.g. city planners)
 - State governments
 - Tourism industry
- Use 'Simon' to refine e-mail bursts
- People can check types of e-mails they want to receive
- Groups with whom to engage
 - Social sciences (economics)
 - Mexico
 - Oil and gas/offshore

- National Environmental Protection Act
- Senior citizens
- Land cultivators upriver
- High school students
- Caribbean
- Cuba
- Index of all topics that you can choose what you are interested in - quarterly/monthly
- Series of documentaries - YouTube, National Public Radio, Public Broadcast System
 - one hour and series of themes
 - bilingual
- Social media especially lay people
- Find a way to hit all audiences
- Follow Gulf of Mexico Alliance website model
 - General → more in depth → very in depth
- Report card on goals - annual
- Two-way to provide feedback that is heard
- Global involvement → citizen science
- Ecotourism
- Empirical information from communities
- Private sector
- Detailed, updated website
 - links to other RESTORE sites
- Work through existing networks (GOMA, Sea Grant, Hypoxia Task Force, Harte Research Institute)
- Work with IOOS
- Connecting at appropriate agency/group levels
- Connecting at appropriate action levels in the Plan
- Other means of communication to reach different audiences (newsletter, social media, etc.)
- Active versus informational engagement
- Connect with nontraditional partners
 - Continental versus Gulf agencies - water flow, freshwater, hypoxia, etc.
- Where does private sector fit?
 - All sectors - commerce, shipping, transit, industrial, agriculture
 - Encourage partnerships/research with such groups
- K-12 engagement
- Agricultural extension
- Regular scheduled briefings with the other RESTORE 'pots' of funding
 - Share good science
 - Avoid duplication
 - Not just a data site - active outreach
- Coordination with and between outreach groups (Sea Grant agricultural extension, National Estuarine Research Reserves) and integration with science programs

- Connect with National Park Service, aquaria, inform science centers, state parks, National Estuarine Research Reserves, National Estuary Programs
- Connect with private sector data - make nonproprietary a part of this too
- Partner, communicate, and outreach with international Gulf partners
- Connect with private sector outreach
 - joint messaging development for mass media
- There are five Gulf states
- Social science/socio-economics
 - Integrate into science effort
 - Human health
- Have decision-making process in public sphere - all can observe and participate
 - Like Fishery Management Council process
- Leverage non-governmental organization community at all levels
 - Can help engage with public
 - Use existing non-governmental organization tools to engage public
 - Bi-weekly non-governmental organization teleconference
- Translate materials (written, radio...)
- Engage elected officials
 - Good political will
- Engagement and outreach
 - Help with data management
 - Get it out and available
- Leverage operations/ship time to get the data we need
- Citizen scientist groups
 - Sample/collect data
 - Donations
 - Broaden effort/volume of science
 - Link to practical use of data
- Advisory group including local program representation (National Estuary Programs, National Estuarine Research Reserves, county, etc.) (different scale)

Question 5: What are the challenges this Program faces? What are strategies for overcoming these challenges?

- Prioritizing what to do *first*
- Understanding what projects or techniques will be synergistic, how they will be synergistic
- Data management -- making all the data available
- Keeping focus for long-term
- Intergovernmental communication and coordination. Inter- and Intra- state coordination and communication.
- Strategy: Gulf-wide Consortium like FL's Consortium of counties
- Getting on same page and thinking at ecosystem scale, cross jurisdictions
 - Bureaucracy / different mechanisms for moving money in each jurisdiction

- Communicating with processes for other RESTORE pots of money.
 - Strategy: share science at lay level so it is applied
 - Strategy: need to share so policy-makers can use (keep it short!)
- Strategy: Need to articulate what the program is *not*. What are the limits. Manage expectations.
- First level communication is needed: What science will be covered by the program? How wide a geography?
- Monitoring of projects beyond what's needed for individual projects is a need (e.g., multiple projects in multiple jurisdictions may impact water quality in one bay.) Ecosystem-wide monitoring is needed. Long-term and consistent.
- Need to build science foundation for multiple processes happening post-Deepwater. NRDA. RESTORE. GOMESA. NFWF.
- Strategy: Identify indicators to track / monitor.
- Strategy: Data management ties to communication needs. Should work with all the other data management pieces already out there in the Gulf.
- Can't do everything. Strategy: Try to set goals that are as quantitative as possible.
- Managing the money for the long run. Sustaining the funding.
 - Strategy: Would be good to have some money from the other pots of RESTORE funding come in to support science. 2.5% isn't a lot.
- Strategy: Manage / coordinate priority science needs across the region. This program can't do it all, but can help coordinate across RESTORE, NRDA, and NFWF.
- Will be efforts to do restoration without full understanding of the impacts.
 - Strategy: Coordinating across science program, NRDA, NFWF can help with this.
- Adaptively managing will be a challenge. Strategy: Have a strategy for this laid out ahead of time (e.g. "If this happens, we'll do this.")
- Data integration
 - Strategy: Develop database structure on front end that can have data from all pots of money.
 - But data management / integration can be a big resource commitment.
 - Strategy: Need to determine what want to do with the data to inform how set it up. (What analysis do you want to do?)
 - Strategy: Need comprehensive data analysis plan that drives structure of data management.
- Biggest benefit is from long-term, but money won't last forever
- Getting engagement from areas outside of Gulf that impact Gulf (Gulf of Mexico basins.)
- Strategy: Focus on long term goals but allow flexibility for goals to evolve some as learn more.
- Need to define restoration -- of what and to what condition?
- Identifying timeframe to guide development of framework
- Communication/coordination needed across existing science efforts in Gulf (NGI, GoMRI, etc.)
- Sampling compatibility, ability to compare across state and federal programs.
- Public engagement. How will it influence the program?
- Need coordination with NFWF efforts (where rubber hits the road)

- Strategy: There's a move toward coordinated monitoring Gulf-wide (GOMURC, GCOOS, GOMA all working on this; consortium in Mexico too) -- Should coordinate with / engage with this effort.
- Public awareness and action (not just engagement) needed. Science should inform behaviors.
- No structure to coordinate all the different pieces under RESTORE / post-Deepwater activities.
- Strategy: Engage at bi-national meeting organized by DOI happening in October.

Challenges

- Lots of entities involved.
 - Impacts communication/coordination
 - Internal politics between entities
 - Entities have different goals and purviews
 - Need a Gulf-wide vision (international)
 - How do we achieve a plan that everyone will agree to and help implement?
- Too many priorities and needs for the Gulf and not enough money
 - 2.5% isn't enough to fund projects and long-term monitoring. It doesn't come close to addressing the magnitude of the spill that happened in the Gulf. It's unprecedented (the spill, that is).
- Timeframe: Is the science program going to be 5 years, 10 years, 20 years??
- There is pressure to get things done to show that the money is being used. This might lead to short-term thinking.
- How can we ensure that work continues beyond RESTORE?
- Congress needs to remain active and understand that long-term program monitoring is a necessity.
- Educating politicians about the importance of science. This is a challenge and a strategy!
- How do we keep Gulf science in front of people? People get distracted by other events.
- We need to continue to plan and evaluate even though we are all tired of planning.
- We need to prioritize research and modeling that needs to be done so that we maximize our return on investment.
- Link observations, monitoring, modeling with decisions and communicate it. Explain who is using the information and how. This is connected to the challenge of prioritizing research to get the biggest bang for our buck. It's also connected to Integrated Ecosystem Assessments (IEA's).
- It's a challenge to communicate what an IEA is and why people should care.
- Need to "stitch together" near-shore and deep water environments. It's challenging to bring together both into one plan. Difference stakeholders are involved.

Strategies:

- Use Trust Fund money to make sure work continues beyond RESTORE.
- Coordinate between pots of money to address priorities and needs.
- Bring groups together to find out which issues and restoration goals are important to all.

- See what people are doing so we do not duplicate effort. Can also leverage activities...
- Discuss how strategies are implemented at spatial scales
- Consider jurisdictions, too.
- Look at how other states, countries, regions have handled complex challenges. Case studies like the Florida Keys and Everglades Task Force.
- Coordinate a dialog with Mexico (e.g., Gulf of Mexico Large Marine Ecosystem)
- Re-visit our goals periodically to make sure they are the right ones and to evaluate progress.
- Develop feedback mechanisms at local, state, and federal levels to communicate activities, successes, challenges. This could be meetings, forums, etc. It will help keep these issues at the forefront and hopefully help engage/educate political leaders.
- Integrated Ecosystem Assessments could be a strategy for prioritizing needs.
- Gulf Report Card
- Find a resource or food web connection to link near and offshore environments.
- Establish a communication plan/framework/body among the various “pots” of money. This will help address the need for a communication structure across RESTORE, NRDA, NFWF, etc. A “Council of Councils”...