

## Climate Change, Community Resilience, and Restoration in the Gulf of Mexico

Co-hosted by the Environmental Law Institute, Gulf of Mexico University Research Collaborative (GOMURC), and the four Gulf of Mexico Sea Grant programs

### Webinar

April 10, 2015

Many restoration planning documents and programs in the Gulf of Mexico highlight the need to address climate change impacts as part of the restoration framework. While precedent exists on how to integrate climate change into restoration decision-making, many post-Deepwater Horizon restoration projects fail to adequately address climate change impacts. At the same time, coastal communities in the Gulf of Mexico region are both on the front line of climate impacts, as well as the ones hit hardest by the Deepwater Horizon oil disaster.

This webinar brought together a panel of experts to discuss the complex intersection of climate change, community resilience and Gulf of Mexico restoration, focusing on the challenges of and opportunities for creating restoration projects that both incorporate climate change considerations and are responsive to the needs of coastal communities.

#### MODERATOR

- **Andrew Shepard**, Florida Institute of Oceanography, Gulf of Mexico University Research Collaborative

#### SPEAKERS:

- **Dr. Kathryn Mengerink** (Director, Ocean Program, Environmental Law Institute) Overview of Gulf Restoration Programs
- **Dr. Robert Twilley** (Executive Director, Louisiana Sea Grant) Ecosystem Adaptation Climate Change Impacts on the Gulf Coast and Restoration Efforts
- **Colette Pichon Battle** (Executive Director, Gulf Coast Center for Law & Policy) Climate Impacts on Communities and Options for Response
- **Dr. Tracie Sempier** (Coastal Storms Outreach Coordinator, Mississippi-Alabama Sea Grant) Climate Change Decision-Making by Coastal Communities
- **Jonathan Porthouse** (Senior Manager, Coastal Habitat Restoration, Gulf Environmental Benefit Fund) Integrating Climate Change Impacts into Restoration Planning and Project

[Andrew N. Shepard](#), Florida Institute of Oceanography, moderator:

Mr. Shepard began the presentation by stating that, for a complex ecosystem like the Gulf of Mexico, a variety of anthropogenic and climactic factors conspire to make it challenging to manage marine resources. Long-term efforts are needed to service the people and environment impacted by the *Deepwater Horizon* oil spill. Reports that are assisting with the creation of the restoration framework encourage us to consider the known and potential impacts of climate change on restoration efforts in order to build resilience in coastal communities. He noted that, as an output from the webinar, Lauren Ward, a graduate student at Scripps, will be doing a capstone project on community impacts of climate change. She is preparing a white paper with key messages that she will present to restoration project managers, and she will also present in May 2015 at the annual meeting of the Gulf Climate Change Outreach Community of Practice. In addition, she will interview and create a video on how program managers and citizens in the Gulf view climate change, which she will also share at the May meeting.

[Dr. Kathryn Mengerink](#) (Director, Ocean Program, Environmental Law Institute) *Overview of Gulf Restoration Programs*

Dr. Mengerink provided an overview of the existing programs focused on Gulf of Mexico restoration following the *Deepwater Horizon* oil disaster, noting that these funds are unprecedented and provide an enormous opportunity to build a healthy Gulf environment and economy (see ELI or GOMURC summaries for overview of programs and funding). She highlighted the different types of restoration programs, including the Natural Resource Damage Assessment Program, the RESTORE Act and its programs, the National Fish and Wildlife Foundation program and the National Academy of Sciences. She noted that predicted climate change impacts should inform the restoration process, including consideration of the social impacts that relate to restoration and climate change. She then described the RESTORE Act in further detail and identified language in the RESTORE Act that supports the inclusion of climate change considerations in the restoration process. She provided this more in-depth discussion as an example for the authority to consider climate change and community resilience in the development of restoration projects.

[Dr. Robert Twilley](#) (Executive Director, Louisiana Sea Grant) *Ecosystem Adaptation Climate Change Impacts on the Gulf Coast and Restoration Efforts*

Dr. Twilley stated that Gulf-wide ecosystem restoration plans and implementation actions are not one-size-fits-all. Restoration efforts must embrace diversity across the Gulf Coast region, including: diversity of climate drivers and impacts, habitats, natural resources, socio-economic conditions, and human and land uses. The biodiversity of the Gulf Coast is a function of the diversity of coastal settings, and each region has to adapt specific guidelines that deal with the coastal processes. Land use change and other human modifications to coastal processes (and their watersheds) change the features of ecosystems in coastal settings and is part of challenge of building long-term resiliency.

Dr. Twilley also noted that climate change will amplify the effects of land use change on coastal processes and coastal ecosystem stability, and restoration plans must account for these interactive

effects. Sea level rise, increases in storm water runoff, extreme weather events, and changes in soil moisture all amplify human influence on processes that affect ecosystem resiliency.

Dr. Twilley stated that one of most critical changes to coastal settings will be future sea levels, which will change the risks of living along the coast to ecosystems and people. In some places, because land is sinking, such as in the Mississippi River Delta, the relative sea level rise might be even more extreme. Restoration plans need to build in adaptation measures for coastal areas proportional to predicted changes in elevation. He concluded that to be resilient, our ecosystem programs need to plan for future scenarios and create aggressive implementation plans that account for storm surges, ocean acidification, and other issues.

[Colette Pichon Battle](#) (Executive Director, Gulf Coast Center for Law & Policy) *Climate Impacts on Communities and Options for Response*

The Gulf Coast Center for Law and Policy works primarily with communities of color, focusing on issues including climate justice, migrant rights, land sovereignty, economic justice, and voting rights. Ms. Pichon Battle said that, while some may think it is strange to group these topics together, they have found it to be important to cover all the topics in order to see structural shifts and build community resilience. The 2005 hurricane season, which included Katrina and other storms, made it clear to her that we needed to pay attention to shifting weather and climate patterns in the Gulf region, and the 2010 BP oil spill highlighted the huge impact of extractive industries disasters on the environment and vulnerable communities. Her organization believes that climate change is where these things meet and that climate justice is where solutions lie. She noted that coastal communities of all classes and color are particularly vulnerable to climate change and sea level rise, as are the elderly, disabled, those coming from unique cultures and who speak English as a second language, and communities located near extractive industries.

Ms. Pichon Battle stated that the U.S. South has some of the highest concentrations of black people and contains many states with high poverty rates. In order to lessen and dissolve the unequal burdens created by climate change on poor communities, restoration projects must take extra steps to engage with at-risk communities. She cited several partners for change, including the United Houma Nation, which is fighting for federal recognition, migrant workers who are disproportionately affected by agricultural pesticides (which have also contributed to creating ecological “dead zones” in the Gulf) and Gulf South Rising (GSR), a regional movement of coordinated actions and events to highlight the impact of the global climate crisis on Gulf Coast states.

[Dr. Tracie Sempier](#) (Coastal Storms Outreach Coordinator, Mississippi-Alabama Sea Grant) *Climate Change Decision-Making by Coastal Communities*

Dr. Tracie Sempier stated that communities often interpret climate change based on their localized impacts. When working with city officials, she uses visuals to start a conversation about climate. By asking them how they interpret the pictures presented to them, she can assess whether they are seeing climate stressors in their cities. Sea Grant assists cities with completing a community self-assessment to

identify vulnerabilities and strengths with a resiliency index. It also uses visualization tools, such as NOAA's sea level rise viewer and the Community Health and Resource Model (CHARM). Through these different tools, she has found that communities are relating climate change to increases in hurricanes, sea level rise, storm surge, and in some areas, drought, based upon what they are experiencing on the ground.

Some communities are trying to adapt and others are taking action to mitigate the effects of climate change. For example, Waveland, MS, which was Ground Zero for Hurricane Katrina, used grant funding from Sea Grant to better understand the impact of climate change and resulting sea level rise on the city. As a result, Waveland included climate change in its Hazard Mitigation Plan, which will assist the city in maximizing its credits under Activity 510 of the Community Rating System under the National Flood Insurance Program.

Dr. Sempier noted that there are a number of financial incentives for communities to take action. The National Flood Insurance Program Community Rating System rewards cities for including future scenarios in their hazard mitigation plans, such as improving storm water management or creating and implementing watershed plans. There are also significant savings to be had - \$1 spent on mitigation can yield over \$4 in future benefits. She concluded that ecosystems, communities, and the economy all affect each other, and disasters and climate change have a significant impact on all three areas.

**Jonathan Porthouse** (Senior Manager, Coastal Habitat Restoration, Gulf Environmental Benefit Fund)  
*Integrating Climate Change Impacts into Restoration Planning and Projects*

The [National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund \(GEBF\)](#) totals over \$2.5 billion and comes directly from BP and Transocean. It is at the forefront of restoration funds – while there are substantial funds available under NRDA and RESTORE, the exact amount and timing of them are yet to be determined. The Gulf Environmental Benefit Fund is meant to conduct or fund projects (not fund long term costs), and remedy harm and reduce or eliminate risk of future harm to Gulf Coast natural resources impacted by the Macondo oil spill. Mr. Porthouse noted that they consult with state resource agencies, USFWS, and NOAA in order to maximize the environmental benefits of projects. State resource agencies identify and propose topics for action and have the best sense of what project needs are unmet by other funding streams.

Mr. Porthouse said that the GEBF requires the integration of climate change impacts into restoration projects. Proposals must discuss linkages to adjacent existing and planned projects and major project risks, such as sea level rise. Engineering and design analyses must document existing and projected future conditions relevant to the project design. In addition to project level monitoring, integrating climate change requires ecosystem scale monitoring and modeling to assess environmental stressors and restoration potential of sites. NFWF relies on the states to select their priority GEBF projects, such as Louisiana's [Coastal Master Plan](#) and Mississippi's [GEBF project in progress](#). NFWF has a history of land acquisition and management, such as the acquisition of Powderhorn Ranch in Texas, which is an endeavor to reduce risk of future harm to resources that were impacted by the spill. It facilitates the migration/transition of habitats by managing ecosystems at the upland/wetland transition. Other NFWF

efforts include the Hurricane Sandy Coastal Resiliency Program, which creates resiliency hubs, which are sizable natural areas that serve to protect human life, property, and infrastructure from natural disasters. Mr. Porthouse concluded by saying the Gulf Environmental Benefit Fund planned to engage in partnership activities to help with regional resiliency efforts.

## Q&A

*How do we achieve climate justice through the Deepwater Horizon restoration processes and programs? What does that look like?*

Ms. Pichon Battle said that restoration programs need to devote resources to support not just natural resource restoration, but also jobs and workforce development for citizens of the Gulf coast, especially communities most at risk and in need. She said that we should invest in innovation rooted in renewable energy and/or labor practices that reduce inequities and promote justice. As an example, projects funded to date do not provide support for Native American communities and their land.

*Some marsh restoration projects in New York/New Jersey did not take sea level rise into consideration. Are Gulf of Mexico marsh restoration projects being done with future sea level rise taken into consideration? If so, how?*

Dr. Twilley said that that some projects may not have directly factored in sea level rise scenarios. He said that the master planning process in Louisiana has specifically looked at sea level rise relative to long term stability of wetlands systems. LA Sea Grant is now funding a [project](#) to predict how proposed river diversions to supply needed sediments to wetlands may be affected over time in the face of relative sea level rise and saltwater intrusions.

Mr. Porthouse said that NFWF projects are required to consider and monitor significant changes that may occur over the project design-life. As sea level rise continues in some of these areas, some wetlands may be cut off from sediment supplies and so impacted by saltwater that they may not be sustainable long-term, when viewed in a 50-60 year timeframe, while in the shorter term, impacts can be monitored and controlled. He stated that NFWF may still fund projects that may be negatively impacted by changes if they provide needed benefits over the accepted project life.

*How do you navigate the political context (especially in states where "climate change" is not recognized) in integrating climate change considerations into restoration projects?*

Ms. Pichon Battle stated that the shift around the issue of climate change needs to come from having an informed community and constituency that can change and hold accountable decision makers. She said that we must connect people's everyday experiences to climate change and have them ask policy makers to put climate change on the agenda – an activity which many marginalized peoples have not been taught to do.

Dr. Sempier said that she was less concerned about what terms local communities use when describing climate change. She asserted that we should not care about labels as much as the outcomes and that changes in terminology will come as more communities become familiar with hazard mitigation strategies.

*How much is long-term monitoring being incorporated into the restoration process? Are any funds being held over for longer term use or placed in a trust to bolster restoration in response to future change and/or for long-term management of restored sites?*

Dr. Twilley emphasized the importance of monitoring, which is critical in any restoration project. With all the money invested in restoration, he stated that we have to have an adaptive management framework where we can learn from our mistakes and incorporate better designs as we move forward with the investments that we are making. Some programs have monitoring measures built in, but a lot of restoration money in Louisiana has not included an extensive monitoring program.

Mr. Porthouse stated that monitoring and adaptation is a central part of what NFWF is trying to accomplish. NFWF has specific monitoring requirements for all its projects, which are linked to specific goals and methodologies to track performance. Restoration requires an adaptive management approach based on ecosystem monitoring that assesses many relevant indicators over the many scales of this massive recovery effort. Mr. Porthouse said he spent a lot of time working with other programs to ensure that monitoring is as consistent across programs as possible, so that there may eventually be a region-wide assessment.

*Is NFWF conducting or supporting social vulnerability analysis in the identification of priority projects for restoration? Not just understanding where communities are but understanding what communities are most vulnerable to impacts and in need of restoration?*

Mr. Porthouse said that NFWF itself is not conducting those analyses, but is looking to the states to be in the forefront of prioritizing projects. He cited the state of Mississippi as an example of a state making a concerted effort to reach out to minority communities, especially the Vietnamese fishing community in the state, and to understand development patterns along the coast and what the community truly values and what to restore.

*Where do SLR scenarios that communities are using (1 ft. vs. 6 ft. sea level rise by 2100) to plan for mitigation come from? Are there discussions between local experts and the community, or is it an internal government process?*

Dr. Sempier said that data for SLR scenarios is readily available from a variety of academic and federal sources. The City of Waveland, for example, used Stennis Space Center GIS data developed for a NASA planning exercise. [NOAA](#) and [USGS](#) provide commonly used SLR viewers with predicted inundation levels. Local managers often utilize contractors to synthesize these data and products for local application and planning. The hazard mitigation planning process for many cities and counties includes engagement of steering committees that engage citizens and local stakeholders.

*Louisiana has a massive amount of infrastructure (e.g., cities, oil/gas and ports) on the coast in harm's way. When will best practices for climate resilience for Louisiana be developed, and who is developing that plan? Are parish floodplain managers involved?*

Dr. Sempier replied that, at the parish and the municipality level, the floodplain managers are usually involved in the hazard mitigation process. Sometimes comprehensive planning and hazard mitigation planning are not done at the same time, but some communities have both. A lot of times, if a municipality does not have enough funds to create a hazard mitigation plan, they will adopt the county's plan.

Dr. Twilley was unsure if large port systems factored in sea-level rise and climate change in their infrastructure needs over the life cycle of their port facilities. He noted that LA Sea Grant has been working to educate and assist parish managers through extension programs and materials (e.g., [Homeowners Handbook to Prepare for Natural Disasters](#)). One challenge is that most local plans do not look out far enough to handle expected changes; managers need tools to transition to longer range plans.

*Do you see any potential conflicts between addressing both ecological and community resilience in restoration projects? If so, are there ways to mitigate these conflicts?*

Ms. Pichon Battle said that they are closely aligned in scope and purpose and that strong and healthy local communities are the most important stewards for a healthy environment. Restoration programs need to engage and value local knowledge as well as high level scientific expertise. She also said that what is needed is a “both/and” approach. If we are working with ecosystems, then we need to have a new system of management; we need to have conversations about our economy and who drives it and who participates in it. Restoration programs should support activities that value and restore socio-economic conditions with a racial and social equity lens.

Dr. Twilley said he was trained that people are part of ecosystems. In coastal Louisiana, there was a coevolution of how the ecosystems developed and where people live and how they live. Saltwater intrusion affects all coastal species, whether we consider drinking water for humans or the survival of plants and trees. He said that conflicts may arise when we look for quick fixes, such as hardening shoreline (building seawalls) to hold off the sea, versus more environmentally friendly solutions that may be cheaper and longer lasting.

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