



INTEGRATING SOCIAL SCIENCE AND GULF COAST RESTORATION

FINDINGS FROM SOCIAL SCIENCE WORKSHOP
AT THE UNIVERSITY OF NEW ORLEANS



How can we more effectively restore Gulf Coast ecosystems and human communities?

In an effort to answer this question, 55 scholars and practitioners convened at the University of New Orleans in July, 2013. They formed an Integrating Social Science Team (ISS Team), and spent a long day in conversations about coastal residents' needs, knowledge and concerns—and how best to address those concerns in sound restoration projects.

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ACKNOWLEDGMENTS

This report is based on findings from a meeting held by 55 scientists, planners, and public outreach experts at the University of New Orleans on July 24, 2013.

Oxfam America and the Nature Conservancy (TNC) organized the meeting, with help from several individuals and organizations.

Oxfam America and TNC would like to thank Amy Clipp, of Amy Clipp Consulting, for her hard work and invaluable help in documenting the discussions at the meeting, and for working with the participants and organizers to develop the report on the meeting's findings.

We would also like to thank all of the participants for their time, candor and willingness to lend their experience and perspective to this important topic. We particularly thank the presenters, whose innovative work helped to frame the day's conversation and set the bar for accomplishments in bridging restoration and social science. These include Dr. Kris Peterson (University of New Orleans); Melanie Saucier (Louisiana Coastal Protection and Restoration Authority); Dr. Walter Peacock (Texas A&M University); and Christine Shepard (TNC).

We would also like to thank the members of the report's peer review team, who reviewed drafts of the report and the meeting notes to ensure accuracy and robustness. These include Dr. Craig Colten (Louisiana State University/Water Institute for the Gulf); Beth Middleton (US Geological Survey); Melissa Collier (Mississippi Department of Environmental Quality); Christine Shepard; and Bill Kappel (Coastal Environments, Inc.).

The meeting, as well as this report, was made possible by the efforts of many dedicated people. These include the tremendous facilitators from the National Oceanic and Atmospheric Administration (NOAA) Coastal Service Center, Marian Hanisko and Ann Weaver; and the committed team from Oxfam and TNC, led by Avalyn Taylor, Jeffrey Buchanan, Nicole Love, Andrew Yarrow, Mary Babic, Supin Wongbusarakum and Laura Inouye.

Lastly, we would like to thank the Walton Family Foundation for their commitments to supporting the restoration of the Gulf of Mexico's ecosystems and communities, and their generous support of this project.

Citations of this paper

Please use the following format when citing this paper:

“Integrating Social Science and Gulf Coast Restoration,” Oxfam America, 2014.

www.oxfamamerica.org/socialscience

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ACRONYMS AND ABBREVIATIONS

CPRA	Coastal Protection and Restoration Authority
ISS Team	Integrating Social Science Team
NOAA	National Oceanic and Atmospheric Administration
RESTORE Act	The Resources and Ecosystems Sustainability, Tourism Opportunities and Revived Economy of the Gulf Coast Act of 2011
PITS	Gulf of Mexico Alliance's Priority Issue Teams
GOMURC	Gulf of Mexico University Research Consortium

EXECUTIVE SUMMARY

How can we more effectively restore Gulf Coast ecosystems and human communities?

In an effort to answer this question, 55 scholars and practitioners convened at the University of New Orleans in July, 2013. They formed an *Integrating Social Science Team* (ISS Team), and spent a long day in conversations about coastal residents' needs, knowledge and concerns—and how best to address those concerns in sound restoration projects.

The ISS Team began by agreeing that restoration projects should address the needs of *both* human and natural communities. The team identified the need to capture the dynamics of coastal communities: by analyzing links among ecosystems, social systems, and the built environment—and then incorporating this information into decision-making. When social scientists and physical scientists work together, to fully consider how all of these systems affect each other, they will be better able to understand and represent how coastal communities function day-to-day, and to explore how restoration can address the socioeconomic challenges.

The team noted that this type of collaboration requires both social and physical scientists, and restoration practitioners, to move away from disciplinary silos, and to embrace interdisciplinary exchanges of data and ideas. Restoration approaches that focus exclusively on *either* human communities *or* ecosystems will not succeed. Because social scientists can foster the analysis and understanding required to meet this standard, they should be integrated more fully into all phases of restoration planning.

The July meeting covered three topics:

- **Coastal restoration decision-making needs to open up to include social scientists.** Social scientists seek to understand how coastal residents interact with the landscape, and they put this knowledge into a technical framework. In so doing, they can prompt decision-makers to consider socioeconomic variables in addition to environmental, engineering, and other variables addressed by other disciplines. Social science research can help make sure that projects assist human communities that are facing severe coastal risks.

Currently, however, social scientists typically are not asked to join restoration planning processes with the same frequency as engineers or experts in other scientific fields. Some federal agencies and foundations have begun to address this imbalance by forming interdisciplinary

planning teams. The ISS Team identified opportunities for broadening this trend, and including social scientists in restoration planning teams being created throughout the Gulf Coast.

- **Best practices need to encourage meaningful public participation and conflict resolution.** Without broad-based support from the communities, large-scale coastal restoration projects are more likely to experience setbacks, delays and roadblocks. Social scientists can provide relevant data to assist residents in their decision-making; they can shed light on how people can best contribute to the project planning process; and they can identify how outreach can take place in specific communities. The ISS Team identified options for conducting public outreach and for handling the disagreements that may arise when stakeholders and decision-makers make choices together. These suggestions focused on ways to engage coastal residents as partners throughout the planning process.
- **Social science information should be delivered to decision-makers efficiently and frequently.** The ISS Team identified areas where social scientists could provide better information to decision-makers. These included employing beneficial methods for qualitative inquiries (such as case study evaluations). In addition, social and physical scientists must find new avenues for working together so that data can be integrated across disciplines. *Similarly, the ISS Team identified the need to synthesize research, which involves distilling the results of multiple studies to identify key findings and recommendations.* In essence, the team called for targeted upgrades to how social scientists perform their work and collaborate with other specialists.

The ISS Team's ideas point the way toward an improved approach to coastal restoration: one that considers the human dimension in concert with ecosystem analysis. This dual focus, on both people and the environment, holds the key to securing a vibrant and resilient future for the Gulf Coast.

INTRODUCTION

This report distills the results of a meeting held by 55 scientists, planners, and public outreach experts at the University of New Orleans on July 24, 2013. The group, which formed an *Integrating Social Science Team* (ISS Team), focused on how social science can help address the challenges facing both human and natural communities throughout the Gulf Coast.

All agreed that action is desperately needed. Recent disasters, and decades of environmental degradation, have damaged the Gulf Coast ecosystems, as well as the economy, communities, and cultures. Gulf residents depend on the coastal ecosystems—for storm protection, fishing and hunting grounds—and consider themselves closely tied to the landscape they have always known. For these residents, a healthy coast is vital to their past, present, and future.

Most of the ISS Team had been on the frontlines of the Gulf Coast's recent crises, from the many hurricanes to the Deepwater Horizon oil spill in 2010. Although their experiences were diverse, they had all observed a troubling tendency: social scientists and coastal residents were not adequately consulted during the recovery and restoration processes. Public agencies often plan how coastal restoration should unfold without considering the needs of the coastal communities. Correcting this imbalance was important for many reasons, the participants believed. Greater inclusion would not only head off lawsuits and other costly project delays, it would also supply information vital to the success of restoration projects.

The ISS Team worked as a large group and in small discussion groups during the course of the day. A detailed summary of this meeting is provided in Appendix A. In subsequent weeks, the team reviewed a draft of this document. A volunteer peer review team also provided more detailed review of text.

The ISS Team's ideas fell into three broad categories: the need to more fully include social scientists in decision-making; best practices for engaging the public; and ways to improve the practice of social science as it relates to coastal restoration. Each of these topics is explored in detail below.

The team's recommendations provide guidance for using social science data as a tool to inform policy making; and for fostering a more informed and engaged public.

COASTAL RESTORATION DECISION-MAKING NEEDS TO OPEN UP TO INCLUDE SOCIAL SCIENTISTS

Challenging conventional wisdom: There has been no shortage of planning for Gulf Coast restoration. From Louisiana's 2012 Master Plan, to the Mississippi GOCOAST process, to the Gulf Coast Ecosystem Restoration Council's comprehensive plan, government entities are working hard to help Gulf communities.

However, many policymakers admit that they could do a better job of considering social concerns in their work. For example, the Gulf Coast Ecosystem Restoration Task Force—a high-level group appointed by President Obama to address the long-term restoration needs of the Gulf in the aftermath of the oil spill—acknowledged the need to better consider social science across federal natural resource agencies. Even so, the task force itself did not fully examine social science when given the responsibility to fill in science gaps. To remedy this situation, social scientists should have a more substantive role at all stages of project planning.

Public agencies often keep teams small when discussing restoration projects. Scientists in fields such as physics, hydrology, chemistry, and biology may have more access to the planning process (but even they are not always privy to early phases of planning). However, social scientists are often not included at all, or are minimally represented (even though their research may be directly related to project goals and impacts).

This often occurs on coastal research or planning teams, even those labeled as interdisciplinary. ISS Team members described what they called "the box checking" syndrome: one social scientist is included on a team, along with a larger group of policymakers, engineers, and physical scientists. The lack of adequate representation from the social sciences reduces the consideration of community knowledge and needs, and, in turn, undermines the quality of coastal restoration projects.

Rationale for change: Social scientists have long studied the people and communities in Gulf Coast regions that will be directly affected by coastal restoration projects. These experts can offer analyses of development patterns, community life, cultural processes, and other factors. Involving social scientists from the beginning will help ensure that project decisions are made in a fully informed fashion.

Considering the human dimension becomes more critical as the scale of the project increases. Large projects cost more, receive more media attention, and may impact a larger and more diverse set of stakeholders. Accordingly,

restoration at this scale requires a serious analysis that considers what residents need from the coastal landscape and the potential socioeconomic outcomes of various project options. Including these analyses as part of project planning enables policymakers to develop stronger project rationales, gather increased citizen support, and avoid legal and political challenges. These kinds of improvements will help communities prepare for and adapt to environmental changes.

Requirements for including social scientists in coastal restoration planning do exist, particularly in the Social Impact Assessment processes associated with the National Environmental Policy Act and its environmental impact statement regulations. However, enforcement of these requirements may vary. In addition, many restoration efforts combine directives and funding from a variety of local, state, and federal sources, each of which may have different protocols for including social scientists. Policymakers should support broader and more consistent use of requirements for social science participation.

Next steps: The ISS Team identified suggestions for increasing social scientists' participation in coastal decision-making.

- **Don't wait to be asked.** Social scientists themselves must seek out opportunities to participate in restoration planning teams. They should clearly communicate the assets they bring and the long-term value of having their perspective included.
- **Use science to make the case.** Agencies should conduct an examination of tradeoffs to demonstrate the value of social science analysis in a coastal restoration planning process. This examination could consider both qualitative and quantitative factors and how planning teams could most efficiently use resources. For example, an analysis could examine the benefit of social science research regarding the effects of a project on a particular community, and show how this research could help the agency head off legal challenges or other delays.
- **Make more intensive use of social science in restoration planning.** The National Environmental Policy Act provides the best known requirement that social science be integrated into planning. However, other programs offer opportunities for increased social science participation. These include the National Estuary Programs' management planning processes and the Environmental Protection Agency's willingness to modify work plans and policies to better fit the needs of states with regard to social science inclusion. The National Science Foundation's Gulf of Mexico Program has established an advisory group that includes several social scientists. To date, wider application of these

precedents has been spotty, but these initial opportunities offer a foundation that should be expanded.

- **Avoid getting caught in the silo mentality.** Social scientists, city and regional planners, and physical scientists need forums that help them exchange ideas and research results. These activities can increase awareness about what social scientists can bring to the table.

The ISS Team further recommended that this step could be applied to the Gulf Coast as follows:

- Several advisory groups will inform decision-making related to the RESTORE Act, including the Gulf Coast Ecosystem Restoration Council's proposed scientific advisory committee, NOAA's RESTORE Act Science Program Working Group, and committees that may be formed to advise state decision-makers on related coastal issues. These groups should include social scientists from multiple disciplines.
- Many advisory and stakeholder groups provide advice and expertise to state and federal agencies with responsibilities in the coastal zone. These include the Gulf of Mexico Alliance's Priority Issue Teams (PITS), the US Fish and Wildlife Service's Landscape Conservation Cooperatives, and advisory committees for the Gulf of Mexico Fishery Management Council. Many of these efforts are open to all interested participants, and social scientists should seek to be involved.

EXAMPLES OF USING SOCIAL SCIENCE IN RESTORATION

Social scientists make use of methodologies that gather information about and analyze public concerns and knowledge. By putting socioeconomic variables into a technical framework, these initiatives provide data and knowledge that can be considered alongside other scientific findings. In this way, social scientists can help decision-makers better understand the human dimension when planning restoration projects.

- The **Sci-TEK Project** in Louisiana identified residents with local traditional ecological knowledge (TEK) and incorporated their expertise into coastal restoration planning using mapping and modeling. As part of this project, social scientists with the University of New Orleans worked with Louisiana's Coastal Protection and Restoration Authority as well as the non-profit Coalition to Restore Coastal Louisiana.
- The **Louisiana Master Plan cultural heritage modeling** looked at factors related to reducing flood risks. The modeling determined: (1) that the plan would not disproportionately increase flood risk for low income communities; and (2) that for 37 out of 50 communities analyzed, the plan would reduce risk enough to allow people to sustain themselves in coastal communities. Social scientists on the planning team were instrumental in the examination of these issues.
- **Coastal Resilience 2.0** is a set of computer-based tools that allows decision-makers and communities to explore how habitats reduce risk. Developed by The Nature Conservancy, the tool is being used by a variety of Gulf Coast communities to assess risks and to identify how restoration projects can best mitigate those risks. Communities can customize the tool for their local environments; the tool can also be upgraded as new data is received.
- Scientists at Texas A&M's Hazard Reduction and Recovery Center have developed a **protocol that assesses the effectiveness of selected hazard mitigation plans in Texas**. Most plans that have been assessed measured in the 30 to 40 percent effectiveness range, a clear indication that hazard mitigation preparations need to be upgraded.

BEST PRACTICES NEED TO ENCOURAGE MEANINGFUL PUBLIC PARTICIPATION AND CONFLICT RESOLUTION

Challenging conventional wisdom: Staff at coastal agencies face difficult choices. On the one hand, they are under pressure to fast-track restoration projects. On the other hand, they will be criticized if the projects are not vetted through a sound public engagement process. Conventional wisdom says they can't do both: they must choose between moving quickly or involving the public and falling behind schedule.

The ISS Team thought otherwise, and affirmed the need to use public outreach best practices— including conflict resolution procedures— to ensure that residents are fully consulted. The team maintained that social scientists in particular have detailed knowledge about community dynamics which can help decision-makers perform this outreach in ways that improve project quality and timeliness.

Rationale for change: Coastal planners may invite residents to meetings— but if they do not allow attendees to influence how decisions are made, little will have been accomplished. Meaningful public engagement requires coastal planners to meet regularly with residents in the field, listen to their views, and find ways to apply this information.

Residents can quickly tell when they are being listened to, and when they are not: when staff members are simply going through the motions. If they sense disrespect, they will soon find a voice and a way to protest—creating what the ISS Team called "Stalled Project Syndrome." Protests and legal actions can paralyze important projects. This leads state and federal legislators to believe that action is impossible, which makes it hard to attract government dollars for future projects.

On the other hand, agencies that commit to strong public engagement programs build civic trust: the solidarity that is created when diverse groups find a common purpose. This broad-based support significantly increases the odds that projects will proceed well and on time.

Coastal planning agencies deal with a variety of stakeholders whose perspectives and needs vary. The team recommended that coastal agencies use conflict resolution procedures¹, which can address the many interests involved in restoration projects—both while the projects are being planned and implemented.

¹ Two ISS Team members felt that the term "conflict resolution" was polarizing. However, the larger group felt that this term was accurate. In their view, conflict resolution is the strategy needed to address the different interests concerned in restoration projects. The term is used in this report to reinforce the collective sense that facing divergent interests squarely and

Use of conflict resolution can head off debates about whether a project unduly benefits any one of the economic, environmental, or community interests. By considering all sides— using data from social scientists, physical scientists, affected residents, and other stakeholders in a mediated process— staff will be able to customize projects to meet multiple objectives. While this approach may appear time consuming, and cannot guarantee complete consensus, when it is done right, conflict resolution builds a network that allows all parties to share ideas and build alliances.

Next steps: The ISS Team suggested the following **public engagement** best practices.

- **Provide project information that is tailored to community members.** Publish materials in residents' primary languages using clear text and images. Consider that some communities do not have ready access to the Internet, and make information available in other formats. Use libraries as clearinghouses; they are equipped to share information with multiple audiences.
- **Make sure public meetings are oriented to the public,** from the venue to the agenda. Residents are understandably reluctant to give up their time to attend poorly planned or duplicative events. Make sure the location is easily reached, and the days and times are convenient. Ask community members to help shape the agenda.
- **Establish a reciprocal relationship between agency staff and local residents.** The goal is to learn from each other and apply this knowledge to project selection, design, and construction. Build in time during meetings for agency staff to listen as well as talk. Agency staff should take notes on residents' ideas and pursue ways to quantify them in a technically credible way. Be creative in gathering information that is useful to technical teams. For example, residents can fill out a questionnaire about ecosystem services, indicating which are most crucial to them.
- **Follow up.** Agencies should let residents know how their ideas are being used, and check in regularly as projects go forward. Nurturing these connections provides a flow of information that can augment project planning.
- **Build a culture of public engagement at coastal planning institutions.** Agencies lose momentum when new staff members need to be convinced about the value of public engagement. An analysis of why

building in capacity to deal with them results in stronger restoration initiatives over the long term.

this engagement is worthwhile should be conducted and made part of agency training and orientation. In addition, staff turnover at agencies often leaves residents without liaisons, which halts communication at crucial junctures. Training agency staff on public engagement can mitigate this problem, as can formal community liaison assignments.

The ISS Team identified several best practices for mediating different interests. Information from social scientists in such a process will allow more perspectives to be integrated into restoration project decision-making.

- **Build in credibility.** While public agencies should initiate a conflict resolution process, they shouldn't direct the process themselves. Instead, a professional mediator who is seen as neutral should prepare for, run, and follow up after meetings. Participants should represent constituents, share meeting activities with them, and bring constituents' ideas back to the table for discussion. Make sure to include those with interests at stake, particularly if they are vocal opponents of the proposed project.
- **Clearly define roles and desired outcomes.** The roles of conveners, mediators, and meeting participants should be documented and ratified by the group. Long-term goals should also be defined. Because consensus on every aspect is unlikely, mediators should define an appropriate level of agreement, and determine a process to achieve it.
- **Level the playing field.** Some participants may not have the time, resources, or technical knowledge to provide polished alternative plans for restoration projects. Some may not be able to take time off work to attend. The conflict resolution process should support all participants. Make resources available to help people identify design alternatives; make sure scheduling accommodates a variety of schedules.
- **Increase access to technical information.** Restoration projects are complicated, and understanding them requires the group to reach a common understanding of the issues at stake. Social scientists can translate technical data to terms all participants can understand. This will encourage productive dialogue.

The ISS Team further recommended that improved public engagement and conflict resolution processes could be applied to Gulf Coast decision-making as follows:

- **Identify opportunities related to state nonstructural flood protection processes.**² For example, the Louisiana Coastal Protection and Restoration Authority (CPRA) has convened a Coastal Community Resilience Program charged with helping communities protect themselves from flooding. This program is a good candidate for conducting in-depth public outreach and conflict resolution.
- **Build capacity.** The Gulf Coast needs a center of excellence with funds for professional mediators and complementary research. Sea Grant organizations with agents in the field may be good candidates for this *type* of service.

Agencies involved in coastal restoration decisions should develop a set of guidelines that indicate when mediation is needed, along the lines of National Environmental Policy Act-style triggers.

SOCIAL SCIENCE INFORMATION SHOULD BE DELIVERED TO DECISION-MAKERS EFFICIENTLY AND FREQUENTLY

Challenging conventional wisdom: The ISS Team's suggestions weren't directed just at policymakers; the team also discussed how the practice of social science itself needed to improve. The team agreed that sociological analyses need to be performed with more rigor if they are to make a difference for coastal communities.

The team's focus reflects the unique role that social science can play in the policy arena. Social scientists do perform quantitative (numbers based) analyses; but they also use qualitative tools (such as case study evaluations) to learn about society's relationship with the natural world. Case studies can provide an important counterpoint to more general, data dependent studies; they can explore how a specific group of people interacts with a particular landscape. This kind of qualitative social science can identify new questions that may have been overlooked, and that merit investigation with quantitative methods.

Together, qualitative and quantitative research efforts amplify each other, providing a richer understanding of the issue being studied. Precisely because sound qualitative social science is so urgently needed, the ISS Team

² According the Army Corps of Engineers, nonstructural flood protection can be defined as efforts which keep people and property away from flood waters (eg, land use planning, home hardening, and natural resource adaptation). Structural flood protection keeps flood waters away from people and property (eg, levees).

encouraged practitioners to adhere to high standards for this type of research (see "Best Practices for Conducting Case Studies" below).

The team also identified the need to capture the dynamics of coastal communities better—by analyzing links among ecosystems, social systems, and the built environment. By working with physical scientists to fully consider how all of these systems affect each other, social scientists will be better able to represent how coastal communities function day to day. This will require social and physical scientists to move away from disciplinary silos and embrace interdisciplinary exchanges of data and ideas. The scientists on the ISS Team stated the need for this collaboration, but they also noted the difficulties. Researchers and practitioners are already busy; carving out time for interdisciplinary efforts on top of regular research can be difficult to arrange. Fostering collaboration on the scale needed will require institutional shifts in how data is generated and shared.

Funding drives many of these choices. While some funders are beginning to support multi-disciplinary research efforts, it remains difficult to obtain funding for long-term studies that examine community dynamics over many years. According to the ISS Team, funders sometimes show a preference for studies that concentrate on initial data gathering. This ignores follow-up studies that assess how projects work in communities, and how these projects should be adapted going forward. Whether they fund initial data gathering (baseline studies) or evaluation (follow-up studies), funders need to be more fully informed about research that has already been done, so they can avoid duplicating efforts.

Funders also need to consider funding *synthesis reports*, which are summaries of prior research across scientific disciplines. Synthesis reports analyze a range of research conclusions to highlight what earlier studies have shown and what needs further examination. Such reports would help target where new research is needed. Social scientists also need to consider this aspect; the team noted that social scientists often find themselves reinventing the wheel, repeating the same types of research in ways that do not benefit the communities being studied.

Rationale for change: One of the goals of many coastal restoration projects is to improve the resilience of communities, allowing them to recover more quickly after events such as storms and flooding. The scientific consensus is that we must understand such disasters as interactions among several factors: infrastructural, environmental, emergency planning, and so on. Project analyses that limit themselves to covering a single aspect will not provide useful information. The term "holistic analysis" can sound like jargon, but throughout the Gulf Coast, it is a deeply practical research need. Communities and ecosystems need projects that are based on data from a range of scientific disciplines, including accompanying analyses that blend the methods and findings of interdisciplinary research.

As an example, the confusion about who will benefit from RESTORE Act dollars reflects this problem. The act is designed to help repair damage caused by the Deepwater Horizon oil spill. But without analyses that consider social needs along with infrastructure and ecosystems, policymakers can't gain an accurate picture of how the restoration should proceed.

The ISS Team mentioned this challenge when discussing Louisiana's 2012 Master Plan for the Coast. At the meeting, a representative of CPRA, which produced the plan, spoke at length about her agency's needs. She mentioned community-level data gaps that needed to be filled: from quantitative analyses of social impacts to economic valuations of ecosystem services to financial estimates of the cost of mitigation. She also stated that CPRA needs integrated data sets (data that is derived from many disciplines) in order to accurately assess complex social issues.

The need for detailed, integrated data is increasingly recognized at the federal level. The National Science Foundation, the National Oceanic and Atmospheric Administration, and the US Geological Survey have each sponsored workshops on long-term observational data pertaining to the social, physical, and built environment. The University of Maryland's Socio-Environmental Synthesis Center, also funded by the National Science Foundation, represents another venue for exploring these issues. These developments show that the fact base is slowly changing to include more social science, creating more traction for researchers interested in building bridges among disciplines.

Next steps: The ISS Team identified the following best practices for social scientists conducting case studies.

- **Use rigorous methods.** Case study interviews themselves can be informal, so that people feel at ease. However, the preparation for and follow up after these interviews needs to be thorough.
- **Target research.** Carefully select the communities to be studied; make sure that the communities chosen reflect the larger question to be answered.
- **Leverage relationships.** Researchers with established links to the community should conduct the inquiry. Researchers should not "helicopter in" to a community that they do not know well.
- **Do homework.** Ensure that adequate background research is done to fully understand the relevant nature/society relationships and how they relate to the basic research question.
- **Conduct an appropriate number of interviews.** Scale interviews to the size of the community being studied. For a fishing village with fewer than

ten residents, three interviews might be sufficient. For larger communities, you would need to do more interviews.

- **Expand monitoring.** Social scientists should perform formal monitoring of their own studies, including direct follow-up with communities they have studied. As noted above, funders should also prioritize this type of monitoring in making funding decisions. In addition, social scientists can be valuable contributors when public agencies fulfill monitoring requirements associated with restoration projects. Impact analyses that examine how participants' lives would have changed without restoration projects may also provide important information.

The demand for comprehensive sociological data in the Gulf region creates opportunities for social scientists ready to play a larger role in how coastal plans are developed. To foster optimal collaborations with policymakers and other scientists, the ISS Team identified the following ideas for social scientists and their funders to consider.

- **Explore the potential of integrated data sets.** Unless information is brought together from multiple fields, policymakers won't know what information is available. Opportunities to create new models in this field are emerging. For example, the Department of Labor's Workforce Data Quality Initiative links data on wages, education, and welfare status. The ISS Team felt that merging this kind of administrative data with primary (directly measured) data sets is the frontier for long-term social science data collection. Broadening this trend will require a host of networks integrated data systems, coordination among owners of administrative data, common metrics across data collection efforts, and open source data and models for academics and government.
- **Upgrade data quality and analysis.** Policymakers want social science indicators that are expressed as numbers (as ecosystem indicators are). To start, the field needs good baselines; however, this requires agreement about what should be measured in the first place. Once that has been established, baselines can be developed using primary data, or using a combination of primary data and extrapolations from direct measurements (synthetic data) as well as qualitative data. For example, researchers can combine ecosystem services mapping with user surveys to better understand which stakeholders have interests in specific projects and habitats.
- **Expand production of synthesis reports.** As mentioned, the ISS Team emphasized the need for synthesis of study results, both within the field of social science and across scientific disciplines. Synthesis will help avoid

duplicative efforts, and foster a deeper understanding about what social science data are revealing, making it easier to highlight groundbreaking research.

- **Find ways to connect.** Regional communities of scholars who share perspectives and data may be able to jumpstart the creation of data sharing networks. Since many researchers who work in a given region do not live near each other, this could be accomplished remotely through online repositories and social media venues. Bringing people face to face in symposia and networking forums can also go a long way to creating a common vocabulary that will speed the transfer of information. The Gulf of Mexico Alliance's Priority Issue teams offer one model for accomplishing this goal.

The ISS Team further recommended that interdisciplinary research should be applied to Gulf Coast decision-making as follows:

- In 2014, the Gulf of Mexico Program is sponsoring the Gulf of Mexico University Research Consortium (GOMURC) to use "big science." This effort will bring case studies from multiple disciplines together. Social scientists should play a major role in this effort and channel the consortium's focus in ways that can be readily applied by decision-makers.

Fiscal constraints at the federal level offer opportunities for consolidating data collection across disciplines, given that multiple federal agencies gather the same types of data and may be looking for ways to stretch their research dollars.

CONCLUSION

Coastal restoration projects are major undertakings. They can change how people do business, where they live, and how they live. Projects with this kind of civic impact rarely succeed unless they are supported by civic trust and cooperation.

At the meeting in July 2013, the ISS Team identified ways that social scientists can help build this trust in service to Gulf Coast communities. Put simply, social science can help communities prepare for and adapt to environmental changes that are coming, whether the cause is a natural process or a major restoration project.

First, decision-makers should take advantage of the wealth of expertise and knowledge that social scientists can contribute to the planning process. By representing socioeconomic variables in ways that mesh with other technical analyses, social scientists can credibly account for the human factor, a consideration that has largely been missing from Gulf Coast restoration planning. Social scientists should thus move from being minimally represented on restoration planning teams, to being central to the process of selecting and designing projects.

Second, the meeting focused on public engagement and conflict resolution. While this work is most often led by public agencies, social scientists can inform these efforts by sharing their knowledge of communities. Further, efforts to engage social science can be spearheaded by the communities themselves. With the help of social scientists and local residents, agencies will develop project designs that both respond to the Gulf Coast's environmental challenges and offer workable solutions for those whose livelihoods are affected by restoration efforts. Such integrated planning will identify and quantify the short-term and long-term socioeconomic impacts of project alternatives. It will also offer a transparent benefit-cost analysis of project implementation options. Projects developed through such a process are much more likely to function successfully than those that are designed without a broad base of support.

Third, the team identified ways for social scientists to improve certain research methods; a concern was connecting the many technical disciplines involved in coastal restoration. Only by combining concepts, data sets, and analyses can social and physical scientists join together to provide the information needed to make good decisions.

In the end, the overarching theme of the meeting was clear: coordination, breaking down silos, building bridges among people who care about the coast. Coastal restoration is too big a job to be handled by any one organization or

scientific sector. It must be tackled with teamwork, and supported by the shared ideas and alliances that result.

Resilience, after all, is what everyone is working toward: the security of knowing that Gulf Coast communities can weather disasters and stay strong. According to the ISS Team, that kind of resilience starts now, with decisions about how we work together.

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The Nature Conservancy has been part of the Gulf Coast community for more than 35 years and has offices, people and projects in every state that touches the Gulf. Working with partners, the Conservancy has helped protect or restore more than 3 million acres in the five Gulf states. In the wake of Hurricane Katrina and the Deepwater Horizon oil spill, the Conservancy has concentrated its conservation efforts on large-scale restoration of the habitats—oyster reefs, marshes, and coastal forests—that are the foundation of the Gulf's health and productivity.