

NERRS Science Collaborative Progress Report for the Period 11/15/11 through 02/29/12

Project Title: Planning for Sea Level Rise: A Pilot Study to Evaluate and Improve the Development and Delivery of Habitat Vulnerability Assessments and Adaptive Conservation Designs to Coastal Decision Makers

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Contributing team members and their role in the project: Michael Shirley (Co-PI) and Emily Montgomery (Co-PI) at the Guana Tolomato Matanzas National Estuarine Research Reserve, and Dawn Jourdan (Collaboration Lead) at the University of Florida

A. Progress overview

The goal of the project is to develop an integrated sea level rise adaptation planning process that will identify potential impacts of future sea level rise on coastal habitats and species, design ecological migration corridors, and build governance and civic capacity for adaptation. The planning process will be tested in the Matanzas Basin of Northeast Florida in partnership with the Guana Tolomato Matanzas National Estuarine Research Reserve, and with the aim of documenting a transferable model for use by other reserves in the National Estuarine Research Reserve System (NERRS). The Matanzas Basin planning process has four components: (1) technical analyses and background research, (2) visualization and communication of research findings, (3) collaborative workshops with stakeholders, and (4) local social science and coordination to support planning following the project's conclusion. To a lesser extent, the project will verify and coordinate the local habitat migration corridor design with statewide ecological greenways planning that incorporates sea level rise considerations. To enable development of the transferable model, the project includes evaluation of the Matanzas Basin process and investigation of the needs and conditions of reserves in the NERRS. Concerns with process transferability and innovation lead to a variety of applied and scholarly questions for each researcher, and the data and analysis needs for these studies will be coordinated with the project.

This three-year project began during the reporting period, so the primary objective during this time was to mobilize and coordinate the research team and local steering committee, and to initiate work on each of the major project components (see above). To get organized, we held several overall team and sub-team (project component) meetings, hired graduate research assistants, set up a project Basecamp site, and hosted a team one-day field trip to the Matanzas Basin. Additionally, two graduate students worked with their faculty advisors on master's thesis research in relation to the project. Following mobilization, the Technical sub-team began gathering geospatial, historical, and social data, and they began running the various models for the vulnerability assessments, including future sea level inundation, storm surge with sea level rise, and habitat changes. The Visualization and Communications sub-team conducted a literature review of sea level rise visualization techniques and designed a survey to evaluate their effectiveness for the Matanzas Basin (the survey is currently being administered to persons affiliated with the project). The Collaboration sub-team conducted a literature review of sea level rise outreach approaches and developed outlines for the first Matanzas Basin Steering Committee meeting to occur in March 2012 and the first set of stakeholder workshops scheduled for Fall 2012. The Future Planning sub-team began cataloging potential adaptation strategies for inclusion in the

custom toolbox to be presented to local leaders and stakeholders at the end of the project. Last, activities in support of project transferability began, including assisting Science Collaborative program staff in drafting a two-page project description for posting on the program website, and researching the concept of “transferability” and background information about the NERRS.

B. Working with Intended Users

- Describe the progress on tasks related to the integration of intended users into the project for this reporting period.

There are two groups of users for this project. The first group is the NERRS and reserves that will ultimately use the transferable planning process. The NERRS Climate Change Committee has agreed to advise our project, and we will begin working with them during the next reporting period.

The second group is the users of the Matanzas Basin vulnerability assessments and habitat migration corridor designs. There are several mechanisms for connecting and collaborating with these users: the project partnership (PI and co-PIs) between the University of Florida researchers and the Guana Tolomato Matanzas NERR Director and Coastal Training Program Coordinator; the Matanzas Basin Steering Committee; the media and general communications; and the series of stakeholder workshops and final public meeting.

During this period we confirmed and added a few participants to the Matanzas Basin Steering Committee, which is a diverse group of local leaders, businesses, and planners who will provide guidance on project implementation and encourage broad participation in the project’s outreach activities. The entire project team participated in a one-day field trip to the Matanzas Basin, from beach to marshes to uplands, and several members of the Steering Committee led parts of the tour. We scheduled and prepared the agenda and materials for the first Steering Committee meeting, which will occur on March 5, 2012. In terms of media relations, we responded to a reporter’s request for information, and this resulted in an article about our project in the Daytona Beach News-Journal on November 20, 2012. The series of stakeholder meetings will begin in Fall 2012.

- What did you learn? Have there been any unanticipated challenges or opportunities?

The project team has learned that there is a lot of public support for sea level rise planning in the Matanzas Basin and larger region, in addition to some skepticism. The skepticism was anticipated, and it has not had a major impact on the project. The project team understands that a significant portion of the general U.S. population is skeptical about sea level rise and climate change, and we are taking this into account as we prepare for the stakeholder workshops, e.g., through the guidance of the diverse membership of the Matanzas Basin Steering Committee.

- Who has been involved?

The University of Florida research team has worked closely with the GTM NERR Director and staff on technical and outreach matters. The GTM NERR regularly communicates with the general public about the Reserve’s activities, and they have

answered questions about the project from citizens, stakeholders, and government representatives.

- Has interaction with intended users brought about any changes to your methods for integration of intended users, the intended users involved, or your project objectives?

No changes in methods have occurred during this reporting period, but the project team anticipates some changes to result from interaction with the Matanzas Basin Steering Committee during the next reporting period. Such changes, however, will not alter the overall project goals, objectives, approach, or overall funding needs.

- How do you anticipate working with intended users in the next six months?

The project team will host the first meeting of the Matanzas Basin Steering Committee on March 5, the second meeting will be in May, and the third meeting will be in August, 2012. Immediately following the first Steering Committee meeting, we will establish a Steering Committee Basecamp site to archive materials and facilitate communication in between meetings.

The project team will also develop a mechanism for regularly updating other persons who are interested in the project but not on the Matanzas Basin Steering Committee. Currently, the PI and Co-PIs answer these requests for information and updates on an individual basis, but as interest widens, another mechanism will be helpful. In addition to referring interested persons to the Science Collaborative program project site, we are currently evaluating whether a project Facebook page is the desired approach.

A second group of intended users of the project results is the NERRS reserves. The project team will communicate with the NERRS Climate Change Committee in the next six months to identify sea level rise adaptation planning process needs across the NERRS and specific reserves that may be most interested in the transferable process generated by this project.

C. Progress on project objectives for this reporting period

- Describe progress on tasks related to project objectives for this reporting period.

The project objects are listed in the project scope of work (also the project proposal). The first project objective is to develop a transferable planning process for use by other NERRS reserves. The project scope of work provides the basic structure for this planning process. The project team established a Basecamp site to archive project materials and references. The project team began a literature review to identify a typology of sea level rise planning processes and techniques, and desirable properties of a “transferable” process. The project team also conducted research on NERRS goals and sites’ current status of sea level rise planning. This information will inform drafting of the guidebook and implementation of the process in the Matanzas Basin (see the next objective). Project team members stay up to date on sea level rise planning, such as through attendance at NOAA’s Social Coast Forum held in February 2012.

The second project objective is to pilot test the planning process in the Matanzas Basin. Work on this objective is underway. The project team began conducting the vulnerability assessments and background historical and social research (e.g., studies of Florida

citizens' beliefs about climate change and sea level rise), developing visualization and communication materials, designing the agendas of the Matanzas Basin Steering Committee and first set of stakeholder workshops, and cataloging potential adaptation strategies for the toolbox. The project team also began designing the final public meeting (to be conducted in the project's third year) as a sea level rise planning themed workshop of regional significance.

The third project objective is to coordinate the Matanzas Basin process with statewide ecological greenways planning. Several members of the project team are currently conducting the statewide project, and they will coordinate the results into the Science Collaborative project when Matanzas Basin habitat migration corridor design begins in Fall 2012.

The fourth project objective is to conduct related science, social science, and applied research. Two masters' theses projects directly relate to the Science Collaborative project. The first investigates the communication impacts of techniques for visualizing sea level rise. The second examines the role of historical analysis of past local adaptation events in communicating future sea level rise impacts and adaptation options. Both theses were active during the reporting period, and they will conclude in April 2012. The research team has also begun to formulate additional studies and analyses in several areas, such as the implications of using LiDAR data for the vulnerability assessments and communications with the public, and the importance of identifying currently observable impacts of sea level rise versus an emphasis on long term impacts.

- What data did you collect?

In addition to the literature reviews describe elsewhere in this report, the scientific and social scientific data collection for the Matanzas Basin study area included: the gathering and processing of existing geospatial data for input into the models, as well as assembling of existing orthoimagery and habitat/species information for the study area; the gathering of historical maps and oral histories; and administering the survey regarding the effectiveness of different sea level rise visualization techniques. During the next reporting period, the research team will continue the above activities, geospatially identify critical infrastructure/facilities and other important places, and "cross-walk" the study area to identify habitat categories for the SLAMM modeling. The PI and Collaboration Lead will also begin keeping journals of the project's overall project management and collaboration components, and establish evaluation mechanisms for the collaboration component upon approval by the University of Florida's Institutional Review Board for human subjects research compliance.

- Has your progress in this period brought about any changes to your methods, the integration of intended users, the intended users involved or the project objectives?

The project team identified the need to have a person responsible for evaluating, coordinating, and documenting the various geospatial modeling, especially for the purpose of creating the transferable process. Dr. Russell Watkins, who is affiliated with the GeoPlan Center at the University of Florida, is serving as the coordinator of the geospatial models.

The proposal reviewers recommended having an economist advise the research team. Dr. Laila Racevskis in the Food and Resource Economics Department at the University of Florida is filling this role.

The project team has learned that in the Matanzas Basin the issue of water supply, and the impact of sea level rise on it, is of critical importance to the communities in the study area. The team has begun identifying Florida researchers, planning practices, and literature to incorporate this concern into the project. The PI is well positioned for this task, because she participates in the statewide Public Water Supply Utilities Climate Impacts Working Group (including its sea level rise sub-group), and she is a member of the University of Florida Water Institute's Faculty Advisory Council and Biennial Symposium Planning Committee.

An update to the Matanzas Basin background research tasks is that the team will characterize existing planning processes, institutions, and actors in the next reporting period. This information will be useful for the project's collaboration component and the Readiness Assessment to be conducted during the third year of the project.

The Science Collaborative program informed the project team of the University of New Hampshire TIDES internship program, and the team is planning to offer a position with the project for Summer-Fall 2012.

The GTM NERR director and staff have identified other projects that relate to the Science Collaborative project, such as research of incentives for conservation of ecosystem services, and the establishment of a sea level rise educational kiosk at the Reserve. They are pursuing funding for these projects.

- Have there been any unanticipated challenges, opportunities, or lessons learned?

The team discovered a gap in the LiDAR-based Digital Elevation Model (DEM) data for the southwestern corner of the Matanzas Basin study area (the watershed and a 5 km buffer zone). This gap is not a concern, however, because the NOAA Coastal Services Center's coastal DEM we are using is LiDAR-based for all areas subject to the highest projected sea level rise inundation (12 feet). The DEM for the remaining study area is the best available and assembled from contours and spot elevations by the Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute.

- What are your plans for meeting project objectives for the next six months?

The project is on schedule to meet objectives during the next reporting period (March 1 – August 31, 2012), which in the Matanzas Basin are to: begin meetings of the Matanzas Basin Steering Committee, finalize the vulnerability assessments and local background research, develop visualization and communication materials for the stakeholder workshops, and fully plan and schedule the workshops, which will begin immediately following the next reporting period. The project team will finalize the Science Collaborative program website materials for project transfer, continue to conduct research at the NERRS level and work with the NERRS Climate Change Committee, network with other researchers and practitioners across Florida and beyond, and coordinate with team members' related, specialized studies. The project team will also establish a mechanism for archiving the geospatial modeling results.

D. Benefit to NERRS and NOAA

No products have been finalized during this reporting period.

E. Describe any activities, products, accomplishments, or obstacles not addressed in other sections of this report that you feel are important for the Science Collaborative to know.

The research team members have dynamic professional and personal lives, and good communication, scheduling, and flexible arrangements are key to project continuity. Dr. Greg Kiker, who oversees the SLAMM model, moved to Africa in January 2012 to conduct a year long research project. He remains in contact with our Science Collaborative project, and Dr. Anna Linhoss, who is a post-doctoral researcher working with Dr. Kiker, is continuing the SLAMM modeling. Dr. Kiker will remain engaged with the project for its three-year duration, including upon his return to Florida at the end of 2012. Another upcoming change is that Dr. Dawn Jourdan is taking a position at the University of Oklahoma in June 2012. She will remain on our project as Collaboration Lead and will travel to Florida as needed for the steering committee, stakeholder, and public workshops at no additional project expense.

The project PI has publicized the project among researchers and practitioners across Florida through presentations at various University of Florida departments' seminars, announcement in the Florida Climate Institute newsletter, and direct communication with leaders of local and statewide sea level rise planning and coastal resiliency initiatives.