NERRS Science Collaborative Progress Report for the Period 3/1/13 through 08/31/13

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**

Principal Investigator(s): **Kathryn Frank, University of Florida**

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Report compiled by: **Kathryn Frank**

Contributing team members and their role in the project: **Tina Gordon (Co-PI) at the Guana Tolomato Matanzas National Estuarine Research Reserve, and Briana Ozor (Research Assistant) 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 identifies potential impacts of future sea level rise on coastal habitats and species, designs ecological migration corridors, and builds governance and civic capacity for adaptation. The planning process is being piloted in the Matanzas Basin of Northeast Florida in partnership with the Guana Tolomato Matanzas National Estuarine Research Reserve (GTM NERR), and with the aim of documenting a transferable model for use by other reserves in the National Estuarine Research Reserve System (NERRS).

The majority of the work this reporting period pertained to six project components, five of which relate to the Matanzas Basin pilot study:

(1) *Consultation with the project's* ***Matanzas Basin Steering Committee***

The Steering Committee held its fifth meeting on March 18, 2013. Steering Committee members reviewed the technical presentation materials for the upcoming professional stakeholder workshops and provided feedback. Jackie Kramer, steering committee member, presented the lessons that she learned from engaging communities on climate change issues in Alaska. In preparation for the professional stakeholder workshops, committee members coordinated to determine potential workshop dates. After the meeting, Steering Committee members received a fact sheet and short informational Powerpoint presentation about the project to aid them in media communications. Prior to this, the media had approached several members about the project. The research team is preparing for the next Steering Committee meeting to be held in October 2013.

(2) ***Technical analyses***

The project team completed modeling future land use using Land Use Conflict Identification Strategy (LUCIS) with sea level rise included. The team also completed 1-meter sea level rise impact assessments for 38 focal species within the project area using habitat models and element occurrence data from the University of Florida and the Florida Natural Areas Inventory (FNAI). Future priority and secondary habitat for the focal species has been identified and combined with data from the Critical Lands and Water Identification Project (CLIP) and the Florida Ecological Greenways Network (FEGN) to create a rough assessment of future conservation priorities with 1-meter of sea level rise. Data from this assessment will be used to

create a revised future land use scenario with conservation priorities. Results from these analyses will figure prominently in the multi-stakeholder public workshops to occur in Fall 2013 and Spring 2014.

To prepare for conducting the vulnerability assessments, preliminary research was conducted on conflict assessments and readiness assessments focusing on how these assessments are conducted and how they are used. Researchers are finishing identification of data gathered from the stakeholder workshops in Fall 2012 and Spring 2013 to incorporate into the conflict assessment. This information will be combined with the results from the sea level rise scenarios, future land use modeling and the habitat conservation design to assess potential conflicts in the study area.

(3) ***Visualization and communication*** *of sea level rise science and technical findings*

In preparation for the Spring 2013 stakeholder workshops, researchers focused on presenting sea level rise science and the project's technical findings effectively for a professional audience. Several maps were created using existing data, including a map that highlighted points of interest in a sea level rise scenario. Additionally, two fact sheets were created. As mentioned above, one was a general project fact sheet to aid the Steering Committee members with communicating to the media. The other fact sheet, intended for a general audience, was developed for the adaptive strategy role-play game (used in the stakeholder workshops) and initially distributed to middle and high school teachers attending an independent workshop about climate change at the University of Florida. To prepare for the project's youth workshops (see below), materials from the previous stakeholder workshops were adjusted for a younger audience. Primarily, the role-play game was altered to conform to a middle school comprehension level. For the final project report products, the Matanzas Basin findings and the NERRS guidebook, templates with a cohesive design were developed.

(4) ***Collaborative workshops*** *with stakeholders*

The project team conducted the professional stakeholder workshops. The natural resources managers and eco-tourism businesses workshop was held on May 8, the local government and planner workshop on May 9, and the urban developer, real estate, and economic development workshop on June 4. Each workshop was three hours in length and conducted in a similar format to the Fall 2013 resident stakeholder workshops. The project PI (Kathryn Frank), co-PIs (Michael Shirley and Emily Montgomery), and Collaboration Lead (Dawn Jourdan) delivered all of the presentations and facilitated the interactive exercises. The workshops consisted of a keypad polling exercise for audience identification and evaluation purposes, an overview presentation, a technical presentation, a viewing of sea level rise simulation videos, a large group visioning exercise, and a small group role-play game concerning adaptation strategies. In total, 26 professionals participated in the workshops. The project team recorded participant input through the keypad polling and written notes, and the team is currently processing the results for use in the conflict and readiness assessments.

In addition, the project team acted on the steering committee's suggestion to engage youth in the study area. The GTM NERR Coastal Training Program (CTP) staff, with assistance from UF project team members, worked with three schools of differing educational levels to deliver workshops using the same format as in the resident and professional workshops, but with

modified language and images appropriate to the grade levels. First, two Environmental Science classes taught by Chris Farrell at St. Johns River State College participated. A total of 33 students viewed previously recorded workshop presentations through distance learning. On April 9, CTP staff joined them for the interactive portions of the workshops, including the visioning exercise and role-play game. Second, on April 29-30 and May 2 and 6, CTP staff delivered presentations and interactive portions of the workshop to six Marine Science classes at Matanzas High School ranging from 10^{th} to 12^{th} grade and including 135 students. Our final youth group consisted of about 40 middle school students in a summer program at St. Johns River Technical High School. In total, about 208 students participated in the youth workshops. The youth provided valuable input that, along with the resident and professional input, will be incorporated in the next steps of the project.

(5) ***Outreach and transfer***

On June 3, at the invitation of a steering committee member, the project PI and Collaboration Lead presented project information and findings to the staff of the St. Johns County government (one of the two counties in the study area). About 20 persons across a variety of departments attended, and there was a lively discussion. According to the steering committee member, the presentation prompted further organizing for sea level rise planning within the County. The project team followed up with a staff member interested in the use of the Sea Level Affecting Marshes Model (SLAMM).

As part of the NERRS Science Collaborative program oversight, and related to project transfer to the NERRS, the project team hosted a visit by funding program manager Justine Stadler. Ms. Stadler attended the professional workshops on May 8 and 9. Following the workshops, the PI and Collaboration Lead provided a tour of the study area, including kayaking in the estuary with an eco-tour guide.

Jonathan Lerner, a journalist based in New York City, is writing a feature piece about the project for the national professional magazine *Landscape Architecture*. He visited the study area and attended the professional stakeholder workshops on May 8 and 9. He has also conducted extensive interviews with project team members.

On May 26, the project PI led a session at a University of Florida symposium on climate change for middle and high school teachers from across Florida. The session included information about the Matanzas project's youth workshops, particularly the use of the role-play game. The role-play game fact sheet was created for this session, and it was also posted on the project website.

The GTM NERR Coastal Training Program Coordinator (and co-PI) Emily Montgomery and Specialist Tina Gordon promoted the project through numerous invited presentations and informal communication opportunities across the Northeast Florida region and statewide. For example, Emily Montgomery presented at the Amelia Island Chamber of Commerce's Leadership Nassau Class on April 18 and the South Anastasia Civic Association on May 1. In the previous reporting period, on February 14, Ms. Montgomery presented the project at the statewide Coastal Hazards Summit in St. Augustine.

The project website, PlanningMatanzas.org, continued to be a primary source of public outreach. Since its creation, the site has received 5,880 views, of which 5,626 are from the

United States (the remainder represent 46 other countries). The project team posted updates and presentation materials for the professional and youth workshops. Other blog posts included information about the fifth steering committee meeting, the NERRS Science Collaborative program visit, the adaptive strategy role-play game (including the fact sheet), a new regional sea level rise planning initiative in Northeast Florida that is coordinated with this project, and the project's parallel Facebook page (facebook.com/PlanningMatanzas). The Facebook page automatically receives blog posts published on the project's Wordpress site (PlanningMatanzas.org). The Facebook page further enables convenient notification of new blog posts, peer-to-peer sharing of information, and community interaction via "likes" and comments.

(5) *Overall **project management and reports***

The project team continued drafting two reports: (i) Matanzas Basin findings and recommendations and (ii) guidebook of the transferable planning process for use by other reserves. The drafts are currently being updated with activities and outcomes from Spring and Summer 2013. The project team will continue adding to these drafts as the project progresses through the second and third years.

B. Working with Intended Users

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

Several methods for integrating users of the Matanzas Basin vulnerability assessments and habitat migration corridor designs have been utilized and expanded upon in this reporting period. The project team collaborated with the Matanzas Basin Steering Committee at a meeting in March 2013 and the direct connection is ongoing via Basecamp, email, and phone calls. Steering Committee members continued to express their commitment in assisting the project to bring the important issue of sea level rise to decision-makers, stakeholders, and the public. Steering Committee members attended and participated in the Spring 2013 professional stakeholder workshops. Leading up to the workshops, their guidance was especially helpful as they identify with the local professional community.

The project team engaged professional stakeholders of the Matanzas Basin at the second set of workshops in May and June 2013. Stakeholders participated in keypad polling, a visioning exercise, and a role-play game in order to gauge their level of local sea level rise awareness and determine what qualities of the Basin they value most. Similarly, the youth workshops engaged over 200 middle school, high school, and college level students. The information gathered at these workshops will added to the information gathered from the Fall 2012 workshops and incorporated into the conflict assessment and future scenarios analyses to be presented in Fall 2013-Spring 2014.

The project partnership between the University of Florida researchers and the Guana Tolomato Matanzas Research Reserve staff continued to flourish due to continuous communication and recognition of each group's unique expertise, resources, and relationship with the Matanzas Basin community. UF and GTM NERR team members had face-to-face communication at the March 2013 Steering Committee Meeting and the Spring 2013 stakeholder and youth workshops. Additionally,

17 UF and GTM NERR team members gathered on May 15 in Gainesville for an "all hands" meeting. UF and GTM NERR team members also held frequent conference calls and exchanged email.

Last, the public can continue to access information about the project at their convenience through the main project website, planningmatanzas.org, and the project's Facebook page, facebook.com/PlanningMatanzas. Website visitors can learn of past and upcoming project events such as the stakeholder workshops, obtain answers to questions about sea level rise and how it affects the Matanzas Basin, read descriptions of the scientific models used, learn about the importance of ecological conservation, see maps generated by the project team for the study area, and access the materials used during the workshops. The blog gets updated regularly through text and visual formats. Visitors are encouraged to provide feedback in the comments section.

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

The chance to engage with youth audiences produced unanticipated opportunities and challenges. Working with youth taught the project team about how much this audience knows, what they value in their communities, and how creative they can be in coming up with solutions. This gave the project team the opportunity to work with an audience with a varied knowledge level and interest in sea level rise and planning. Working with youth also gave them the opportunity to see themselves as invested in the future of community planning. Working with students from middle school to college level also gave the project team a better understanding of how technical data and interactive programming can be translated to engage a youth audience.

A challenge of integrating the youth audience was finding ways to translate the scientific material to an appropriate learning level for the middle school students. Although the project team did well in adjusting the materials, the students had great feedback on how to improve aspects of the game and the project team, and in presenting to them, got a better understanding of what needs to be clarified or adjusted for future education needs.

Who has been involved?

The University of Florida research team worked closely with the GTM NERR staff on technical and community outreach matters. The Reserve staff members have proved invaluable in setting priorities for the technical analyses (such as identifying focal species), understanding ecological and social features of the Matanzas Basin, connecting with the local Steering Committee, developing a collaboration evaluation plan, and planning and conducting the stakeholder workshops.

There are currently twelve members of the Matanzas Basin Steering Committee, and they have been regularly attending the past five meetings. These citizens, business leaders, and planners have generously committed their time and have played an active, engaged role at the meetings and in additional conversations. Twenty-six local representatives of different professional affiliations participated in our stakeholder workshops in May and June 2013. They collaborated with researchers during the sessions, assisting researchers in understanding the values and priorities of local residents in the Basin.

Between April and June 2013, over 200 students varying from college to middle school level worked with the project team to understand what they know about sea level rise and community planning as well as what they value in their community.

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 major changes in methods for integration have occurred during this reporting period. Minor changes are discussed above in response to "What did you learn?".

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

A multi-stakeholder workshop will be held in Fall 2013 (possibly December). The team will share the future scenario analyses and conflict assessment results, which have incorporated the stakeholders' input from the previous workshops. The team will work with the Matanzas Basin Steering Committee to prepare for this workshop. A steering committee meeting will be held in October, and members will be asked to provide their input on the materials and communication approach for the multi-stakeholder workshop.

During the youth workshop at Matanzas High School, a student suggested that a public service announcement (PSA) produced by students at the school would be useful in engaging youth on the topic of sea level rise. The project team has been in contact with the video production teacher at Matanzas High School and plans to work on a student directed and produced PSA in the fall. Outreach materials and suggestions by students developed during our middle school workshop were transferred to the GTM NERR Education Department and teachers at St. Johns Technical High School to assist in future development of programming on sea level rise for this age level.

The NERRS reserves are another group of intended users of the project results. 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 interested in the transferable process generated by this project.

The project blog and website will continue to provide public and professional outreach. There will be project updates with the direct opportunity for website visitors to provide feedback. The project team will also communicate with the media regarding opportunities for stories related to the latest technical results and next public workshop.

C. Progress on project objectives for this reporting period

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

The first project objective is to develop a transferable planning process for use by other NERRS reserves. The major accomplishments were the conducting of literature reviews for the conflict and readiness assessments, and continuing to draft the final reports, including creating visually appealing report templates.

The second project objective is to pilot test the planning process in the Matanzas Basin. Major accomplishments were to hold another meeting of the Matanzas Basin Steering Committee, to finalize vulnerability assessments in the Basin, to conduct professional and youth stakeholder workshops, and to significantly advance the technical analyses involving future development

modeling (LUCIS) without and with sea level rise impacts, and coordinated habitat and species migration corridor design (including identification of focal species, habitat modeling).

The third project objective is to coordinate the Matanzas Basin process with statewide ecological greenways planning. Statewide projects conducted by project team members and related to this objective are active and ongoing.

The fourth project objective is to conduct related science, social science, and applied research. Manuscript writing for scholarly journal publication is underway, including for the project communications approach, the role-play adaptation game, and the method of coordinated modeling of sea level rise impacts, future development scenarios, and design of habitat migration corridors.

What data did you collect?

The project team collected information about the activities and evolution of the project through archived draft documents, meeting notes, the project website blog, Basecamp posts, and email messages. The technical team collected data for habitat modeling from UF and the Florida Natural Areas Inventory. The collaboration team gathered data from the Spring 2013 workshops that will be used in the analysis of future scenarios and conflict assessment along with the data gathered from the local residents workshops in the previous reporting period. Stakeholders' values in relation to their professions and the Matanzas Basin and priorities for planning were gathered, including their preferences for adaptation strategies.

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 continued to recognize new opportunities for working with the Matanzas Basin Steering Committee. With an interest in being ambassadors of this project in their local community, the team developed a project fact sheet and short Powerpoint presentation to empower Steering Committee members in media engagement and local outreach through their professional networks. Steering committee members are leading related, coordinated sea level rise planning initiatives at the regional, county, and community levels. By invitation, the project team presented to the staff of St. Johns County. The project team also recognized the need for a youth perspective and engaged middle school through college-level students in the project through workshops. The project team created and promoted a Facebook page to enhance web and social media presence.

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

The team adapted to changes in researcher availability and stayed on schedule. Co-PI and GTM NERR Coastal Training Program Coordinator Emily Montgomery left her position to take a job in Hawaii. Tina Gordon was promoted to the Coordinator position. Ms. Gordon has been engaged in the Matanzas sea level rise project since its inception, so there is preservation of institutional memory and team members. The project team welcomes a new CTP Specialist, Lia Sansom.

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 (September 2013 – February 2014). The team will further evaluate the Spring 2013 professional and youth workshops for building stakeholder capacity and generating useful planning information. Geospatial data overlays of critical facilities and important sites, LUCIS, and habitat migration corridors will provide additional insights. The collaboration team will make preparations for the multi-stakeholder public stakeholder workshop in December 2013, where the research team will share future scenarios. Also during the next six months, the technical team will continue to work on the analyses and conservation designs to inform future land use scenarios. Steering Committee input into the methodology for designing the habitat migration corridors will occur, possibly through a sub-committee with leadership by the Reserve staff.

The team will also continue to conduct research at the NERRS level, work with the NERRS Climate Change Committee, and coordinate team members' related specialized studies. Final report and journal article writing will be ongoing.

D. Benefits to NERRS and NOAA

Other sites in the NERRS can use the planning process piloted in the Matanzas Basin, including the technical analyses, visualization and communication techniques, and the workshop format and materials developed to engage the professional stakeholders and youth of the Matanzas Basin. The project's resulting guidebook will explain, and provide examples of, this approach, tools, and materials.

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.

None.