

PROGRESS REPORT

Cooperative Agreement No: F15AC00027

Project Title: **Identifying Resilient Sites for Coastal Conservation**, part of Department of the Interior Project # 24, Decision Support for Hurricane Sandy Restoration and Future Conservation to Increase Resiliency of Tidal Wetland Habitats and Species in the Face of Storms and Sea Level

Reporting Period: November 1, 2014 through June 30, 2015

Receipt Organization: The Nature Conservancy

Project Leader: Dr. Mark Anderson

Were planned goals/objectives achieved last quarter? We are behind on this grant due to a slow start as we completed other projects such as the Canada Habitat Map but we expect a lot of progress over the next 6 months.

NALCC Conservation Need Addressed: Decision Support for Hurricane Sandy Restoration and Future Conservation to Increase Resiliency of Tidal Wetland Habitats and Species in the Face of Storms and Sea Level

Progress Achieved: (For each Goal/Objective, list Planned and Actual Accomplishments)

This quarter we focused on reviewing existing product, meeting with other researchers and developing an approach to the study that complements the work of other researchers. Specifically we:

Developed a literature database of relevant publications. We read and discussed a variety of papers to become familiar with the range of work happening in the NALCC region. For several of papers we wanted to make sure we could replicate the analysis, and these included Lentz et al (2015) *Evaluating Coastal Landscape Response to Sea-Level Rise in the Northeastern United States—Approach and Methods*. Engle et al. (2007) *A Classification of U.S. Estuaries Based on Physical and Hydrologic Attributes* and NOAAs (2012) *Mapping Coastal Inundation Primer*. We had follow up conversations with some of the authors

Developed an inventory of web sites and datasets. We investigated a wide array of datasets and websites that might be useful in this study building off the NALCC sponsored salt marsh resiliency meeting last December. We downloaded and explored some of the potential base datasets from NOAA Digital Coast, NOAA Sea Level Rise Viewer, NOAA Marine Cadastre, TNC Coastal Resilience, and the Northeast Ocean Portal. We also had conversations with Meghan Tyrell and Brad Compton about data needs and developed a shared data need list.

Identified a marsh migration space assessment as a good starting point. We investigated the methods developed by Brad Compton to rank tidal restriction and think they could be modified to create a regional map of potential migration space available to each tidal marsh. In short, to estimate tidal marsh migrations space we can develop a logistic regression that predicts salt marshes versus uplands from tidal range and elevation data. Next we can apply the predictive model and compare it with existing cover of salt march to estimate the ratio of existing salt marsh to potential salt marsh in each coastal shoreline unit. This would allow us to explore scenarios of sea level rise by adjusting the mean tidal range input and measuring the degree to which the marsh can expand without meeting a restriction. We think this approach has great potential and we are now testing it for Massachusetts where the data is available. Regional data should be available by next month.

Difficulties Encountered:

We got a late start on this project and there is a lot of work to become familiar with. Much of our effort has gone in to trying to identify how we can best complement the other work.

Activities Anticipated Next Quarter:

Goals for the upcoming Quarter include:

- Complete the Massachusetts test area for estimating marsh migration spaces by Coastal Shoreline Unit. Test the methods for incorporating sea level rise scenarios.
- If the data becomes available begin expanding the marsh migration model to the whole study area.
- Begin characterizing the CSU with information on their coastal and offshore sediments, geology, seabed forms, landforms, elevation, bathymetry, and habitats

Expected End Date:

October 2016

Employment Information:

As required by the terms of this Agreement, we are reporting that no Veteran or Youth have been hired during the period of this report.

Signature:

A handwritten signature in black ink, appearing to read "Mark Anderson", is enclosed within a thin black rectangular border.

Mark Anderson
Director of Conservation Science
The Nature Conservancy, Eastern Division

Date: July 28, 2015