

April 9, 2015

Award #: F14AC00604

Performance Report for the period August 1, 2014 to April 30, 2015

Project Title

Designing Sustaining Coastal Landscapes in the Face of Sea-level Rise and Storms

Project Sponsor: US Fish and Wildlife Service, Region 5

Principal Investigator:

Kevin McGarigal, Professor, Department of Environmental Conservation. University of Massachusetts, Amherst, MA 01003. Phone: (413) 577-0655; email: mccgarigalk@eco.umass.edu

Project Scope and Objectives

The specific objectives of this scope of work are as follows:

1. Develop and apply a tidal restriction stressor metric and salt marsh ditching stressor metric and incorporate them into the overall ecological integrity assessment for salt marsh ecosystems across the Northeast;
2. Develop landscape capability models for additional tidal marsh obligate species and piping plover in collaboration with partners and apply the models across the Northeast;
3. Work with LCC partners and coastal decision-makers to test and refine the coastal ecological integrity and landscape capability models, and
4. Incorporate these additional metrics and models into the overall Designing Sustainable Landscapes Landscape Change Assessment and Design model along with sea-level rise models and create and evaluate coastal conservation designs.

Accomplishments

Work on the tasks associated with this scope of work has not begun in earnest due to delays in completing phase 2 of the Designing Sustainable Landscapes (DSL) project, of which this project is an extension. However, in our initial efforts to meet the above objectives, we initiate effort on the following tasks during this work period:

- 1) *Develop and apply a tidal restriction stressor metric and salt marsh ditching stressor metric and incorporate them into the overall ecological integrity assessment for salt marsh ecosystems across the Northeast.* As part of the expansion of the LCAD model to better evaluate the ecological integrity of salt marsh ecosystems in the Northeast, we began scoping out the needs and availability of spatial data for the tidal restriction and salt marsh ditching metrics. In particular, we have identified several limitations in our current spatial data representing road-stream crossings involving potential tidal restrictions (e.g., stream centerlines that do not extend far enough into subtidal waters to capture all potential tidal restrictions) and have begun the process of correcting the data using both semi-automated routines and manual editing of data layers. I anticipate completion of

these two stressor metrics and their integration into the composite index of ecological integrity (IEI) by December 31, 2015.

- 2) *Develop landscape capability models for additional tidal marsh obligate species and piping plover in collaboration with partners and apply the models across the Northeast.* As part of the expansion of the LCAD model to include additional tidal marsh obligate species and piping plover, we have begun communicating with partners who are developing distribution and/or abundance models for these species to determine what exists and the feasibility of either adopting extant models or the final product of the model (e.g., probability of occurrence raster), or reimplementing the model in the common species modeling framework of LCAD. I anticipate completion of the species' modeling and accompanying documentation by December 31, 2015.