

April 15, 2016

Award #: F14AC00604

Performance Report for the period October 1, 2015 to April 1, 2016

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:

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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

As noted previously, work on the tasks associated with this scope of work was delayed by several months due to delays in completing phase 2 of the Designing Sustainable Landscapes (DSL) project, of which this project is an extension. The delays were the result of requests for additional analyses and model development by the partners involved in the Connecticut River watershed Landscape Conservation Design pilot which went beyond the original phase 2 scope of work. However, we have made significant progress in meeting the above objectives during this work period 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.* As part of the expansion of the LCAD model to better evaluate the ecological integrity of salt marsh ecosystems in the Northeast, we are in final stages of developing and applying the tidal restrictions metric to the entire Northeast. Specifically, we completed the geospatial processing of the required input data and are finalizing the statistical models associated with this metric. We anticipate completing this metric in the next

several weeks. In addition, we developed and applied the salt marsh ditching metric to sample areas using standard DEMs and orthophoto imagery and compared it to that derived from LIDAR elevation data, and determined that the metric is only acceptable when based on LIDAR data. Currently, LIDAR data does not exist for the entire region; therefore, we are not able to apply this metric across the region. Instead, we have a proven algorithm that is ready and available to use when LIDAR data becomes available for the entire region.

- 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 August 31, 2016.
- 3) *Work with LCC partners and coastal decision-makers to test and refine the coastal ecological integrity and landscape capability models.* Work has not begun in earnest on this component as it is dependent on completion of #1 and #2 above. Contingent upon timely completion of #1 and #2 above, I anticipate completion of the integration of the new metrics into the ecological integrity assessment and species landscape capability models by August 31, 2016.
- 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.* Work has not begun in earnest on this component as it is dependent on completion of #1-3 above. Contingent upon timely completion of #1-3 above, I anticipate integration of #1-3 above into the second version of the regional landscape design being done under the auspices of the Regional Conservation Opportunities Areas by August 31, 2016.

Please note that there are no youth under 25 years of age or veterans employed under this agreement.