Bringing Wetlands to Market: Expanding Blue Carbon Implementation

Project Location

New England

Project Duration

September 2015 to September 2018

Project Lead

James Rassman
Waquoit Bay National Estuarine
Research Reserve
(508) 457-0495
james.rassman@state.ma.us

Project Type

Collaborative Research – generating
science that informs decisions

Project Partners

- Cape Cod National Seashore
- Friends of Herring River
- Marine Biological Laboratory
- National Estuarine Research
  Reserve Association
- Restore America's Estuaries
- U.S. Geological Survey
- University of Rhode Island
- Waquoit Bay Reserve
- West Virginia University

Overview

Blue carbon storage—carbon sequestration in coastal wetlands—can help coastal managers and policymakers achieve broader wetlands management, restoration, and conservation goals, in part by securing payment for carbon credits. The Waquoit Bay National Estuarine Research Reserve has been at the forefront of blue carbon research, working with end users to provide the information and tools needed to bring blue carbon projects to the carbon market. While end users are becoming more interested in the opportunities that carbon markets present, they are limited by uncertainties, particularly the potential transaction costs associated with bringing a wetland restoration project to market. End users have suggested that using models that incorporate readily available data such as temperature, vegetation type, and salinity may greatly reduce transaction costs.

Through this project, the Waquoit Bay Reserve and its partners are building on efforts from Phase 1 of the "Bringing Wetlands to Market in Massachusetts" project, which was also supported by the National Estuarine Research Reserve System's Science Collaborative. The team is working with end users to test the broader applicability of a previously developed model to accurately predict greenhouse gas fluxes across a wide range of coastal wetlands using a few environmental and ecological variables. The team is also exploring, and working to fill, the blue carbon-related information needs of end users. One effort involves conducting a first-of-its-kind carbon market feasibility study for a wetland restoration project. The team is also developing targeted tools and education programs for coastal managers, decision makers, and teachers. These efforts will build an understanding of blue carbon and the capacity to integrate blue carbon considerations into restoration and management decisions.

OFFICE FOR COASTAL MANAGEMENT
National Estuarine Research Reserve System

Anticipated Benefits

- An increase in the capacity of restoration professionals and conservation organizations in New England and beyond to explore the carbon market potential for wetland restoration initiatives.
- Increased awareness of blue carbon and the benefits of wetland ecosystem service restoration by project end users as well as coastal managers, land managers, restoration professionals, policymakers, project developers, government agencies, conservation organizations, educators, and public audiences.

Project Approach

- Apply new techniques to quantify vertical greenhouse gas emissions, lateral carbon fluxes, and carbon sequestration in tidal coastal marshes.
- Refine the ability of the existing model to accurately and consistently predict greenhouse gas and sequestered carbon over a broader range of environmental conditions, including salinity, vegetation communities, tidal range, nitrogen loading, and age since restoration.
- Evolve the model using existing data from coastal tidal marshes at collaborating sites to expand the model along a latitudinal gradient for broader application in U.S. East Coast salt marshes.
- Collaborate with end users to finalize site selection and the research approach and test the generalized model.
- Collaborate with end users to conduct a carbon market project feasibility analysis for the Massachusetts-based Herring River restoration project, and use it as a case study to build understanding among other users across the country about how blue carbon can help support restoration.

Targeted End Users and Anticipated Products

- A verified and generalized model that can be used by restoration professionals across New England and the U.S. East Coast to assess and predict greenhouse gas emissions and potential carbon sequestration in coastal wetlands across a wide environmental gradient and before and after restoration.
- A feasibility study of generating carbon credits for the Herring River restoration project, which will inform local restoration efforts and serve as an example for other restoration professionals.
- New educational activities added to the existing Bringing Wetlands to Market curriculum in science, technology, engineering, and mathematics (STEM) that apply the generalized model for K-12 students and teachers.
- Targeted workshops and interpretive products to increase understanding of blue carbon concepts for managers, decision-makers, and community members on Cape Cod.
- Primary end users include Restore America's Estuaries; Herring River Restoration Project Committee, which comprises federal, state, and local partners; National Park Service – Cape Cod National Seashore; Friends of Herring River; and the Massachusetts Department of Ecological Restoration and Executive Office of Energy and Environmental Affairs.

OFFICE FOR COASTAL MANAGEMENT
National Estuarine Research Reserve System