



Enhancing Coastal Zone Management through Quantification and Public Dissemination of Carbon Stocks Data for Pacific Northwest Tidal Wetlands

Project Location

Pacific Northwest

Project Duration

November 2016 to October 2019

Project Lead

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Project Type

Collaborative Research – generating science that informs decisions

Project Partners

- South Slough National Estuarine Research Reserve
- Padilla Bay National Estuarine Research Reserve
- California Coastal Conservancy
- Environmental Services Inc.
- GeomaticsResearch LLC
- Institute for Applied Ecology
- Oregon State University
- Pacific Northwest National Laboratory
- Portland State University
- Puget Sound Partnership
- Restore America's Estuaries
- Silverstrum Climate Associates LLC
- The Climate Trust
- U.S. Geological Survey
- Verified Carbon Standard
- Washington State Department of Natural Resources

Overview

Tidal wetlands are recognized for their important role in carbon sequestration, as well as for their potential to become significant sources of greenhouse gas emissions when converted to other land uses. The substantial quantities of carbon captured and stored by tidal wetlands—termed “blue carbon”—is an ecosystem service of great interest to those developing regional, national, and global climate change adaptation and mitigation strategies, including carbon markets. While carbon stocks data have been collected in several parts of the world to quantify the carbon sequestration potential of tidal wetlands, there is a scarcity of such information in the Pacific Northwest. This project helps to fill this gap by conducting the first-ever comprehensive blue carbon assessment in Pacific Northwest tidal wetlands and generating a user-friendly database of regional blue carbon data. Input from end users will guide the design, scope, outputs, and outcomes of the project. This project will contribute to national and international efforts to incorporate blue carbon science into coastal management and climate change mitigation and adaptation.

Anticipated Benefits

- An important data gap will be addressed in estimating potential carbon stocks for coastal and estuarine habitat classes across the Pacific Northwest.
- Regional decision-makers will have improved access to and better understanding of scientific data on carbon stocks and other blue carbon data through a newly established Pacific Northwest blue carbon database.
- Pacific Northwest blue carbon stock data will be available to help guide coastal restoration efforts and inform regional and national climate change adaptation and mitigation projects.

Project Approach

The project team will work with end users to pursue the following primary objectives:

- Identify and prioritize Pacific Northwest carbon data information needs and determine the best way for end users to access and use those data;
- Collect new data on carbon stocks and associated data on climatic, environmental, and geomorphic variables from representative Pacific Northwest tidal wetlands that address project research questions;
- Develop a Pacific Northwest blue carbon database (including new carbon stocks data from this project and other available data); and
- Share project results and the database with end users in the Pacific Northwest and more widely to support initiatives for which quantitative blue carbon data are needed, such as local and landscape-scale coastal ecosystem restoration and coastal zone planning.

The Pacific Northwest tidal wetland blue carbon assessment will be driven by the following research questions:

- What is the range and variability of carbon stocks of intact tidal wetlands?;
- How do carbon stocks of converted coastal wetlands (e.g., pastures) compare with the least disturbed habitats?;
- What are the potential greenhouse gas emissions that could arise from tidal wetland loss?; and
- How do Pacific Northwest carbon stocks compare with carbon pools in other North American wetlands?

Targeted End Users and Anticipated Products

Project end users are members of a growing Pacific Northwest working group formed in 2014 to address gaps in regional blue carbon science. The group includes biophysical, social, and economic scientists, coastal planners, land managers, restoration scientists and practitioners, state and federal agency representatives, academic institutions, consulting firms, and nonprofit organizations from Oregon, Washington, and California. The major product resulting from this project will be an expandable database populated with all existing carbon stock values in Pacific Northwest tidal wetlands to establish a single repository of Pacific Northwest blue carbon data readily accessible to end users. Toward the end of the project, the team will also share and train users of this database more broadly through workshops or other approaches as identified by end users.

About the Science Collaborative

The National Estuarine Research Reserve System's Science Collaborative supports collaborative research that addresses coastal management problems important to the reserves. The Science Collaborative is managed by the University of Michigan's Water Center through a cooperative agreement with the National Oceanic and Atmospheric Administration (NOAA). Funding for the research reserves and this program comes from NOAA. Learn more at coast.noaa.gov/nerrs or graham.umich.edu/water/nerrs.