



Blue Carbon Case Study – Herring River

What is blue carbon? Blue carbon is the carbon stored in wetlands and seagrass beds. These natural habitats contain massive amounts of carbon that would otherwise contribute to carbon dioxide loading in the atmosphere and global climate change. Not only do wetlands store large quantities of carbon, and do it at a rate many times faster than even tropical forests, but, because this storage is in waterlogged oxygen-poor peat, decomposition is very slow and turnover time of stored carbon is thus very long. Carbon storage is now recognized as yet another reason, in addition to fish and wildlife habitat preservation, pollution control, and storm-surge buffering, for coastal wetland protection and restoration.

The Herring River Restoration Project presents a first-of-its-kind opportunity to achieve greenhouse gas benefits from a large-scale tidal wetland restoration. The Waquoit Bay National Estuarine Research Reserve (WBNERR) proposes to work with end users from the multiagency Herring River Restoration Committee and Restore America's Estuaries to use this site as a demonstration of the process to seek carbon credits from a restoration project. The demonstration would include a carbon market feasibility assessment, estimation of the greenhouse gas benefits of the project using a new model developed by this study, and recommendations on the governance structures required for a successful project. The team would share lessons learned from the project with broader audiences by working with end users and WBNERR's Coastal Training and Education Programs. Further cost effectiveness will be achieved by leveraging data developed through completed and ongoing studies at Herring River. This would be the first project of its kind in the nation, serving as a model for the global coastal management community for linking economic incentives with wetland restoration.

Although competition for funding is intense, the Restoration Committee and WBNERR are optimistic because of the large size of the Herring River project and the inclusion of diked and waterlogged wetlands (e.g. Bound Brook marshes), likely emitting methane, a much more powerful greenhouse gas than carbon dioxide. The restoration of seawater flow is expected to largely eliminate methane production.

While this proposal is being considered, under separate funding US Geological Survey and Woods Hole Oceanographic Institute, in 2015 scientists began measuring greenhouse gas flux from Herring River wetlands. Methods and results from this work will be used widely to develop a methodology and model that predicts potential increases in greenhouse gas storage with the restoration of tidal wetlands. And for Herring River, potential carbon credits derived from marketing the restored river's carbon-storage potential could provide long-term funding for all-important monitoring and adaptive management.

For more information on blue carbon, check out Restore America's Estuaries website:
<https://www.estuaries.org/bluecarbon-science>.