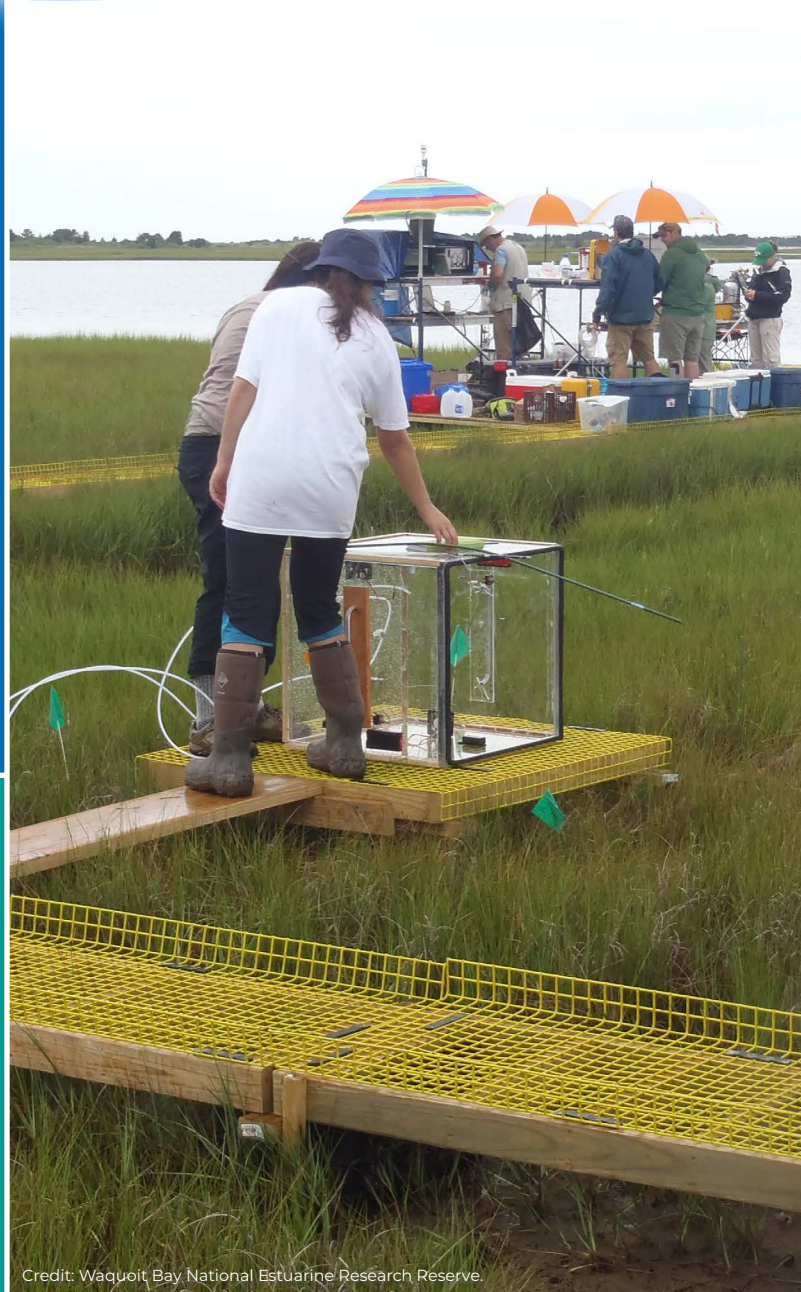# International Partnership on MPAs, Biodiversity and Climate Change

Blue Carbon in Marine Protected Areas

CASE STUDY

Waquoit Bay National Estuarine Research Reserve - Bringing Wetlands to Market

Credit: Waquoit Bay National Estuarine Research Reserve.

The International Partnership on MPAs, Biodiversity and Climate Change is an alliance of government agencies and organisations from across the world, working together to progress the evidence base around the role of Marine Protected Areas (MPAs) and biodiversity in tackling climate change.

Our vision is for global decision-makers to implement MPA networks as nature-based solutions for biodiversity conservation and climate change mitigation, adaptation, and resilience.

Waquoit Bay National Estuarine Research Reserve - Bringing Wetlands to Market

Waquoit Bay National Estuarine Research Reserve (WBNERR) and partners created the "Bringing Wetlands to Market" project to demonstrate the climate mitigation benefits of salt marshes and consider how these benefits can be included in carbon markets, wetlands management and restoration, and climate policy.

WBNERR is a coastal Marine Protected Area (MPA) on Cape Cod, in the Northeast United States. The MPA serves as a living laboratory for research, education and stewardship, and is part of a network of 29 estuarine reserves across the U.S. While the biodiversity and coastal protection values of salt marshes have long been recognized, their carbon benefits were less well understood by state and local decision makers, coastal managers, and restoration practitioners. WBNERR and a multi-disciplinary team of partners from research institutions, government agencies, non-profit organizations and community groups developed the blue carbon collaborative research project to develop science and tools to address this need.

Salt marshes at Waquoit Bay, Cape Cod.
Credit: Waquoit Bay National Estuarine Research Reserve.

The first phase (2011-2015) focused on conducting science to predict the greenhouse gas emissions and carbon storage at the site's salt marshes under different environmental conditions, including examining the impacts of nitrogen pollution. The project developed a methodology for how coastal wetlands can be considered in carbon markets and a guidebook for coastal managers on blue carbon applications. It also created the first iteration of the Coastal Wetland Greenhouse Gas Model – a user-friendly tool to predict how greenhouse gas fluxes and potential carbon storage in tidal wetlands change under different conditions.

In the second phase (2016-2019), the reserve worked with other MPAs and restoration sites to collect data, generalize and test the model, and conduct a feasibility study for a restoration project with the potential to be included in a carbon market. The project also explored the methane reduction benefits associated with restoring degraded wetlands and removing tidal restrictions as a natural climate solution. This work may help coastal and MPA managers leverage new funding sources through carbon markets.

Conducting the project at an MPA was a key part of its success as WBNERR provides a reference location for long-term research. The project also built on long-term community engagement efforts to provide workshops and outreach materials to explain the complexity and benefits of blue carbon to state and local land-use decision makers. As part of national and international networks of MPAs, WBNERR formed many partnerships that allowed it to broaden the relevance and impact of its blue carbon work. The reserve shared education curricula with other U.S. estuarine reserves and project findings with MPA managers across North America through workshops and other fora. The project helped advance understanding of the value of coastal wetlands for carbon storage and paved the way for wetland restoration projects to be considered in carbon markets. The project also demonstrated the climate mitigation value of restoring degraded tidal wetlands to reduce methane emissions and connecting such projects with state climate action plans. Lastly, the project demonstrated the value of a collaborative research model to bring together scientists and end users from project concept to implementation.

Fieldwork during the Bringing Wetlands to Market project.
Credit: Waquoit Bay National Estuarine Research Reserve.

www.mpabioclimate.org

For further information on this case study project visit:
www.waquoitbayreserve.org/research-monitoring/salt-marsh-carbon-project