

## Citizen Science: Volunteerism for Salt Marsh Monitoring & Restoration

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Salt Marsh Monitoring Site	Total Degraded Acreage	Restoration Project Status			
		Status of Tidal Restriction	Pre-Restoration Monitoring	Post-Restoration Monitoring	Status of Salt Marsh Restoration Based on Citizen Science Data
Bass Creek, Yarmouth	37 acres	Removal scheduled 2006			-
Bridge Creek, Barnstable	40 acres	Removal completed 2004-05			Creek salinity increasing above former tidal restriction
Freemans Pond, Brewster	24 acres	Feasibility of removal being assessed			-
Namskaket Creek, Brewster/Orleans	10 acres	Removal scheduled 2006			-
Quivett Creek, Dennis/Brewster	11 acres	Removal completed 2005			Tidal flows partially restored; monitoring under way
State Game Farm, Sandwich	9 acres	Removal scheduled 2006			-
Wings Neck, Bourne	12 acres	Removal completed 2002			Creek and pore water salinity the same above and below former tidal restriction; initial indications of decline in invasive species ( <i>Phragmites</i> )

Almost 10,000 acres of Cape Cod's historical salt marsh habitat have been lost or severely degraded due to residential and commercial development, agricultural operations, mosquito control, and other human activities. Engaged citizens are helping evaluate baseline physical and ecological conditions in tidally restricted salt marshes and monitor the success of restoration projects designed to rejuvenate critically important habitat.

Salt marshes — among the most biologically productive environments in the world—deliver a host of valuable ecosystem services. They act as nurseries for fish and shellfish, thereby contributing to the local economy and to food self-sufficiency. They provide habitat for many other species, including some that are threatened or

endangered. They assimilate contaminants and nutrients, including the nitrogen introduced to local environments by septic systems, atmospheric deposition, and other sources. They attenuate coastal flooding and protect shorelines from battering waves. They store tremendous volumes of carbon that might otherwise be liberated to the atmosphere as greenhouse gases. And they provide unquantifiable recreational and aesthetic value.

Roads, other transportation corridors, berms, rights-of-way, and additional structures that cut across salt marshes can degrade these habitats by restricting tidal flows. As of May 2006, the Salt Marsh Monitoring Program developed by the Association to Preserve Cape Cod encompassed seven sites where restoration of tidal flows is planned or where restrictions already have been reduced or eliminated. It involved more than 50 volunteers in documenting salinity levels, as well as the presence and abundance of plant, bird, and fish species.

Citizen-supplied data are used by state officials, scientists, and resource managers to evaluate and implement restoration projects in wetlands and coastal habitats. Counting birds, managing fertilizer use, and tracking water quality in Cape Cod ponds, lakes, and embayments are among the many other important contributions being made by citizen science programs. Public awareness and civic participation are essential to protect and enhance the ability of local ecosystems to deliver lifeline services.

**Sources:** Data and information from Association to Preserve Cape Cod; analysis by WEE*info* Services.