

RESTORING SALT MARSHES IN Buzzards bay

Taking action at Hammett cove



A Message from Massachusetts Environmental Affairs Secretary Bob Durand

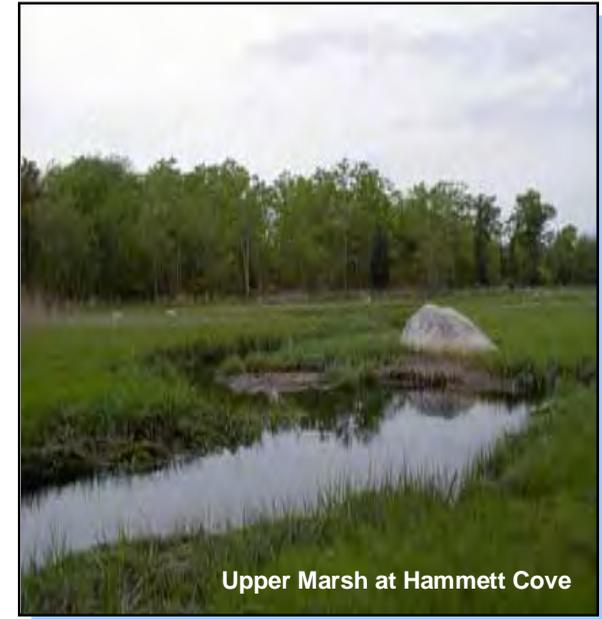
We are all familiar with the salt marshes along our shores. They are wonderful places to watch birds or to walk alongside to view nature's beauty. Salt marshes are diverse in marine life and are a habitat and nursery for birds, mammals, turtles, finfish, shellfish, and crustaceans. They help reduce coastal pollution by filtering and removing pollutants from upland activities as water flows through the marsh vegetation. Salt marshes also minimize the damage of coastal floods and reduce coastal erosion.

It is for these reasons that salt marshes are our most valued and protected coastal resources. It is also why the Executive Office of Environmental Affairs has been making efforts to restore tidally restricted salt marshes around the state. The construction of roads and paths in the past has blocked or restricted the flow of salt water into these ecosystems, which has led to unhealthy habitat and the loss of some salt marshes.

Several salt marsh restoration projects have been initiated in Buzzards Bay. At Hammett Cove, the Buzzards Bay Project National Estuary Program teamed up with the USDA Natural Resources Conservation Service, which provided planning and technical assistance, and the Town of Marion to initiate a salt marsh restoration. Funding was provided by the Executive Office of Environmental Affairs, Massachusetts Wetlands Restoration Program (with a GROWetlands grant), the US Fish and Wildlife Service (funding through Partners for Fish and Wildlife Program), and the Massachusetts Office of Coastal Zone Management, through a Coastal Pollution Remediation grant. The Sippican Lands Trust also donated a drainage easement onto their property. I applaud this collaborative effort and the team that brought this project to fruition. It is my hope this will serve as a model and inspire similar initiatives around the Commonwealth.

WHAT IS A SALT MARSH?

Salt marshes are transitional areas between land and the sea. A salt marsh is a coastal wetland that extends up to the highest high tide line and is characterized by plants that are adapted to, or prefer, living in saline soils. A salt marsh may contain tidal creeks, ditches, and pools. Subjected to the daily rise and fall of the sea, the salt marsh environment is constantly moving and changing. In salt marshes, incoming freshwater from rivers, streams and wetlands mixes with the tidal salt-water, resulting in frequent and rapid changes in salinity, temperature, and water depth within the marsh system.



Upper Marsh at Hammett Cove

Salt marshes are typically divided into two sections; the lowest portion or "low marsh" is submerged twice daily at high tide. Vegetation in the low marsh consists primarily of salt marsh cordgrass (*Spartina alterniflora*). The "high marsh" section is flooded infrequently, only during storms and unusually high tides. Dominated by salt meadow cordgrass (*Spartina patens*), the high marsh serves as a nesting area for marsh birds. Both the salt marsh and salt meadow cordgrasses survive in this salt-flooded environment by excreting unneeded salt on their leaf edges. In addition, cordgrasses possess air passages in the stem that allow oxygen to reach the roots.

WHAT IS A TIDALLY RESTRICTED SALT MARSH?

Many salt marshes have been adversely impacted by human activities. Usually these activities are transportation related, such as the construction of roads, bridges, railroads, and footpaths. Bridges and culverts are commonly installed during construction to allow movement of tidal waters. However, these structures are often too small to allow full tidal flows necessary to maintain natural salt marsh vegetation upstream. Structures that restrict the normal tidal flow of a salt marsh are referred to as “tidal restrictions.”



Old 30-inch culvert

Restricting the tidal flow of a salt marsh can result in significant changes in its ecology. The strongly saline environment can change to one that is brackish or freshwater when seawater is unable to reach the restricted areas. This change in marsh hydrology enables plants able to tolerate lower salinities, such as the common reed *Phragmites australis*, to invade the marsh and replace the natural salt marsh plants. This in turn leads to the displacement of wildlife species dependent on salt marsh vegetation.

IDENTIFYING TIDALLY RESTRICTED SALT MARSHES IN BUZZARDS BAY

In the winter of 1998, the Buzzards Bay Project, together with the Executive Office of Environmental Affairs and its Massachusetts Wetlands Restoration Program, began identifying tidally restricted salt marshes along the coast of Buz-

zards Bay. Identification of the restricted tidal exchange was based on the presence of *Phragmites* and other factors. The location and condition for the restriction were noted in this inventory.



Mapping *Phragmites* in a salt marsh

Maps of degraded habitat, along with information on the potential causes, were compiled into *The Atlas of Tidally Restricted Salt Marshes – Buzzards Bay Watershed*. This document has been made available to municipalities, state agencies, and other organizations. The *Atlas* was published with funding from the Wetlands Banking Program and Massachusetts Environmental Trust.

RESTORING Hammett Cove

Hammett Cove Salt Marsh is a 52-acre salt marsh located in the Town of Marion, Massachusetts. The marsh is connected to the waters of Sippican Harbor and Buzzards Bay through a series of tidal creeks. Many years ago, the construction of the town-owned Creek Road divided the marsh into two sections. The upper (northern) portion of the marsh receives salt water from the lower (southern) portion through one main tidal creek. This creek flows under Creek Road through a 30-inch culvert. This culvert was not large enough to provide adequate tidal water to maintain salt marsh vegetation on the upstream marsh. This restriction resulted in the replacement of over half of the upper marsh with *Phragmites*.

In the summer of 2001, as part of the Hammett Cove Salt Marsh Restoration Project, the inadequately sized Creek Road culvert was replaced with a 5-foot by 6-foot box culvert. This larger culvert allows more tidal flow to reach the north-

ern marsh. In time, this increase in flow will restore the marsh to its natural condition and allow the salt marsh vegetation to recover.

The replacement of the Creek Road culvert is only one component to the overall restoration of this marsh system. In addition to the tidal restriction, the marsh and the Cove were adversely affected by the direct discharge of stormwater pollutants from Creek Road. Pollutants from road runoff often contribute to the closure of shellfish beds and swimming beaches.

With funding from the Massachusetts Office of Coastal Zone Management, the town was able to eliminate the direct discharge of stormwater pollutants into the marsh and creek. Now, runoff from Creek Road is being rerouted through two stormwater basins that allow the pollutants to settle out and filter through the vegetation. This reduction in pollution plus the tidal flow enhancement will lead to improved salt marsh habitat and water quality in Hammett Cove.



New 5'x6' culvert under Creek Road

HOW CAN YOU HELP?

If you believe you know of a salt marsh that is tidally restricted or if you would like more information on how to restore tidally restricted salt marshes in your community, please contact us. Additional information about the Hammett Cove Salt Marsh Restoration Project and the *Atlas of*

Tidally Restricted Salt Marshes in the Buzzards Bay Watershed can be obtained by calling (508) 291-3625 or visiting www.buzzardsbay.org.

WHAT IS THE BUZZARDS BAY PROJECT?

The Buzzards Bay Project (BBP), established in 1985, is one of 28 National Estuary Programs in the United States. The BBP is a unit of the Massachusetts Office of Coastal Zone Management and receives funding from the U.S. Environmental Protection Agency. The mission of the BBP is to provide technical assistance and funding opportunities to municipalities surrounding the Bay to facilitate implementation of the recommendations contained in the Buzzards Bay Comprehensive Conservation Management Plan (CCMP). The CCMP, which was completed by the BBP in 1991, outlines research conclusions and management strategies for the protection and restoration of water quality and living resources in the Bay and its surrounding 432 square mile watershed.

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