Evaluating Management Actions to Promote Salt Marsh Resilience

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THE ISSUE

Salt marshes provide nutrient removal, storm and flood protection, carbon sequestration, and essential habitat for waterfowl and marine life. Currently salt marshes are adversely affected by sea level rise, eutrophication, legacy ditches, increased storm intensity, tidal restrictions, and low sediment supply.

PROJECT PARTNERS







Our recent work in the Westport Rivers revealed that by 2016 about half of the salt marsh area had been lost from six marsh islands. The recent rate of loss (2012–2016) was twice as high as earlier rates (1938–1962), which is alarming. Communities urgently want solutions to slow marsh loss.



Map shows the salt marsh areas (green) and locations of long-term salt marsh monitoring that began in 2019.



WHAT WE'RE DOING

This project brings together a unique team of researchers and practitioners to promote saltmarsh resilience: Buzzards Bay Coalition, Woods Hole Research Center, Buzzards Bay National Estuary Program, Save The Bay (Narragansett), U.S. Geological Survey, and Bristol County Mosquito Control Project. This project will take a two-prong approach to evaluate different types of management actions.

First, the use of runnels (shallow, meandering furrows that drain water off the marsh surface), will be assessed by synthesizing current knowledge and by performing new field experiments. In Rhode Island, runnels have drained impounded water off marshes, reversing marsh vegetation loss. However, the approach has not been tried across marshes in the various stages of degradation found in Buzzards Bay.

Second, the relationships between conservation strategies in the watershed, nutrient enrichment, marsh elevation, and salt marsh stability will be evaluated by combining geographic information with long-term water quality data and new data on the marsh areas. Salt marsh loss and watershed conservation land will mapped for nine sub-estuaries of Buzzards Bay. Models will be used to estimate nitrogen loading, sediment supply, and erosion pressure from wind and waves.



Conceptual diagram of runnel experiments (left). Before (top right) and after (bottom right) photos of a runnel project.



FINDING SOLUTIONS

The significant loss of salt marsh habitat is a concern for natural resource managers as well as the public — both are seeing rapid changes in recent years throughout southeast New England. This project will provide guidance for communities struggling to slow marsh loss by testing runnel use and by developing information on what characteristics are associated with marsh resilience in Buzzards Bay. The results will provide a holistic picture of salt marsh status and aid strategic planning to promote salt marsh resilience in Buzzards Bay.