Coastal Features

Information about the Rhode Island Coastal Resources Management Council

Special Edition **Volume 8, Number 4**

Special Edition:

Coastal Habitat Restoration...

The Coastal Resources Management Council Takes on the Task of Restoring Rhode Island's Coastal Habitats

Restoring Coastal Habitats for Rhode Island's Future

This Special Edition of Coastal Features is about Habitat Restoration. Some of you may know of a saltmarsh that has better tidal flow and fewer mosquitos or a stream that had a dam removed and now has fish spawning upstream. Habitat restoration is gaining public support as a method of bringing back our natural habitats and ecosystems to benefit our communities and the future of clean water and plentiful fish and wildlife. The following articles are a brief glance at some of the habitat restoration efforts going on in the state, and the wonderful collaborations that have evolved out of a common goal to bring back our valuable coastal resources.

Why Habitat Restoration?

Habitat is the place where plants and animals live. Habitats can be easily identified as rivers, estuaries and wetlands. Some habitats are more obscure such as underwater seagrass meadows and kelp beds. Habitats are critical for plants and animals to perform the basic functions of life: breeding, feeding and growth for survival of the species.

Rhode Island has unique and highly productive habitats including saltmarshes, freshwater wetlands, seagrass beds, anadromous fish runs, beaches and dunes, cliffs and bluffs, coastal grasslands, intertidal flats, rocky intertidal zones, macroalgal beds (beds of attached and unattached seaweeds), coastal ponds and estuarine embayments. These resources have many benefits for a healthy ecosystem and strong economy.

These coastal habitats support economically valuable fish and shellfish resources, protect against shoreline erosion, and create the base of the estuarine and marine food chain. Without these functions, our state could be very different. The loss of coastal habitats in Rhode Island has impacted the state's residents in many ways: the filling of coastal wetlands has resulted in reductions of fish and shellfish habitats and reduced flood protection to coastal property owners. Decline of seagrass beds has led to the extinction of a once profitable Narragansett Bay scallop fishery. The damming of rivers has led to the extirpation of the Atlantic salmon fishery. However, advances in restoration science have demonstrated that investing in ecological restoration results in tangible benefits to coastal resources and our state's economy.

Special Edition
"Coastal Habitat Restoration"

The Rhode Island Coastal Habitat Restoration Team

There is a collaborative effort afoot in Rhode Island to restore coastal habitats, to repair the damage that has been done from decades of filling, dredging and polluting our precious coastal resources. The decision to move forward and address the need for a comprehensive approach to restore damaged coastal habitats was made by groups of citizens, towns, nonprofits, academic institutions and state and federal agencies.

These efforts have materialized into the Rhode Island Coastal Habitat Restoration Team, a group dedicated to creating a plan and finding funds to complete habitat restoration projects around the state. The Team builds on past efforts by state and federal agencies and non-profits, most notably Save The Bay. The Team meets monthly and provides an open forum to discuss projects, funding sources and planning needs to create an effective habitat restoration program in the state. The Rhode Island Coastal Resources Management Council, Rhode Island Department of Environmental Management and Save The Bay coordinate the Team and work together to meet the common objectives of their individual programs.

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Spotlight on Rhode Island Habitats

ᘐ **Seagrass beds**: Our state's primary seagrass is *Zostera marina* or "eelgrass". Eelgrass produces organic material that becomes part of the food cycle, provides a settling substrate for scallops, removes nutrients from the water, binds sediments, prevents shoaling and erosion, and provides nursery habitat for many finfish and shellfish.

History: There are approximately 100 acres of eelgrass remaining in Narragansett Bay (NBEP 1999). Historical accounts indicate that eelgrass once covered many acres in the upper bay where today only a few remain. The coastal ponds of the state are seeing similar losses of seagrass beds; Ninigret Pond on the south shore of the state has lost an estimate of 41% of its seagrass since 1960 (Short et. al. 1996).

Coastal Features

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Cause of Impacts: Major causes of eelgrass loss in Rhode Island include nutrient loading from development and sewage outfalls, physical damage from dredging and boating activities, disease, and shading from fixed piers and docks. The most serious threat to RI's eelgrass is increased nutrient levels from polluted runoff, septic systems, and sewage treatment plants—resulting in excessive blooms of algae, both microscopic plankton and large nuisance drift algae, i.e., sea lettuce (*Ulva lactuca*), which limit the availability of light required for eelgrass to grow.

Current CRMC Projects: CRMC is currently coordinating with the Army Corps of Engineers on an eelgrass restoration project in Ninigret, Quonochontaug and Winnapaug Ponds to restore eelgrass habitats to the delta areas that have been impacted by sedimentation. The project is being funded through a State legislative appropriation to the CRMC, the RIDEM Oil Spill Contingency fund, the Army Corps of Engineers (ACOE) and the Towns of South Kingstown, Westerly and Charlestown.

ᘐ **Coastal wetlands**: include saltmarshes and fresh or brackish water wetlands. They provide food and shelter for juvenile finfish populations. Mud flats and creeks associated with coastal wetlands support soft-shelled clams.

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Spotlight on Rhode Island Habitats
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They prevent erosion along the shoreline and provide habitat for shorebirds and waterfowl.

History: By the mid-1980s, Rhode Island lost approximately 37 percent of its estimated original wetlands. According to a 1975 survey, 3,700 acres of saltmarsh remained in the state, and 10 percent were fringe marshes less than five yards wide.

Cause of Impacts: Downtown Providence, much of Quonset and other low-lying coastal communities are built on what was once coastal wetland. Roads, dredge and fill operations, residential and commercial development and sedimentation from overland runoff and removal of vegetation are some of the major causes of wetland loss and degradation.

Current CRMC Projects: CRMC is currently coordinating with the Army Corps of Engineers, the Town of Barrington, the Allin's Cove Neighborhood Coalition and Save The Bay on a salt marsh restoration project in Allin's Cove, Barrington. The saltmarsh was filled in the 1950s when dredge disposal material from Bullock's Cove was deposited. The project is being funded via a State legislative appropriation to the CRMC, the Town of Barrington and the ACOE.

Anadromous fish runs: River herring, Atlantic salmon, rainbow smelt, sturgeon and American shad need fish runs to survive. These are saltwater fish that hatch in freshwater, but mature and spend most of their lives in the Bay or the ocean. These fish must return to the freshwater rivers and streams where they were born in order to spawn. Conversely, catadromous fish, such as the American eel *(Anguilla rostata)*, require downstream passage to spawn in saltwater.

History: Narragansett Bay previously supported lucrative Atlantic salmon, shad, and alewife (river herring) fisheries. Prior to European expansion into RI, Native American groups depended on the spawning runs of herring and salmon as important food staples. Historic accounts from Roger Williams, Verrazano, and other early colonists describe an astounding productivity of bay tributaries. Unfortunately, The Atlantic salmon fishery, once one of RI's premiere commercial fisheries, was eliminated from its Bay spawning runs by 1869. Commercial harvest of herring ceased in the Bay by 1930. A few areas still support small runs of river herring, including Gilbert Stuart Brook and the Annaquatucket River in North Kingstown.

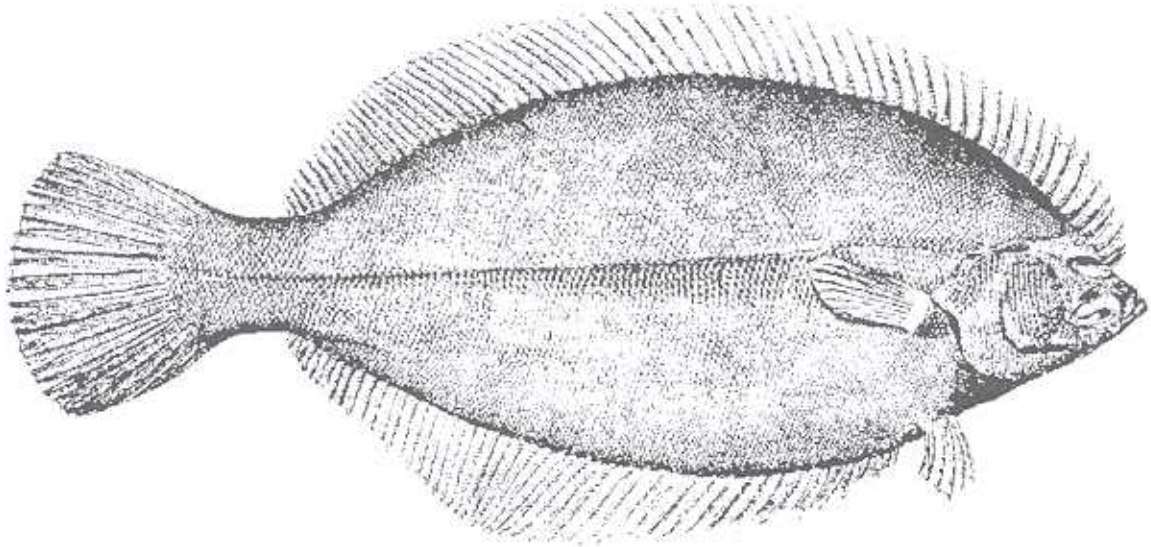
Cause of Impacts: The Atlantic salmon fishery began to decline with the onset of the Industrial Revolution. Dams were placed on the Blackstone, Ten Mile and Pawtuxet Rivers, blocking the salmon from returning to the waters of their birth. The Blackstone River has on average one dam for every mile. Currently only 11 out of 36 tributaries in the Rhode Island section Narragansett Bay are accessible to anadromous fish.

Current CRMC Projects: CRMC is currently coordinating with the ACOE and RIDEM Fish and Wildlife to restore fish passage to Cross Mills Stream and Factory Pond Brook in the Towns of Charlestown and South Kingstown. Once completed, these passages will allow species of herring to reach spawning areas that are currently blocked.

Estuary Restoration Act of 2000

The US Congress is considering spending $315 million over the next five years to fund on the ground and in the water restoration projects. The Senate version of the bill (S. 835) passed in March and the last major action reported for the House version (H.R.1775), was preparation for the floor later this month. The money would be used to match efforts by non-profits, states and local governments to ultimately restore 1 million acres of coastal marshlands, seagrass beds and other estuarine habitats over ten years.

CRMC to Map Winter Flounder Habitats



Winter Flounder
(Pseudopleuronectes americanus)

The RI Coastal Resources Management Council is working with the RI Department of Environmental Management, Division of Fish and Wildlife and the URI Environmental Data Center to map Essential Fish Habitat for winter flounder (*Pseudopleuronectes americanus)* in Narragansett Bay and Block Island Sound. Trawl survey data and icthyoplankton sampling are just some of the data that will be used to compile maps that will identify important areas for winter flounder habitat that can be used by coastal managers and fishery biologists to manage this important commercial fishery.

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CRMC Slated as Lead Non-Federal Sponsor of Allin's Cove Saltmarsh Restoration Project

Portions of this article are adapted from literature provided by the Allin's Cove Neighborhood Coalition and the US Army Corps of Engineers Section 1135 Preliminary Restoration Plan for Allin's Cove

All it took was one look seven years ago at the beauty of Allin's Cove and the secluded neighborhood along its western bank, and Sandra Wyatt knew that she "had to live here." But it wasn't long after she moved in that she noticed trouble. The rush of tidewaters through Allin's Cove each day was badly eroding the western bank, adjacent to Byway Road, where Ms. Wyatt lived. Alarmed, she set out to try to stop the erosion problem. What she discovered led her to the conclusion that a major effort to restore the entire cove was needed.

At the turn of the 20th century, Allins's Cove was ringed by about 25 to 30 acres of saltmarsh. Natural silting and shifting sands eventually covered portions of the marsh, and other sections disappeared as they were filled to accommodate road construction and other development. In 1959, the U.S. Army Corps of Engineers (ACOE) filled eleven acres of remaining saltmarsh and some mudflats on the south shore of the cove with dredge spoils. This reduced the cove to about one fourth of its original size.

As the marsh was filled its elevation increased. This eventually excluded the daily tidal exchange of bay water. Fresh water continued to flow into the now degraded marsh from landward sources, and saltmarsh vegetation that could not tolerate freshwater conditions died off. They were replaced by the common reed (*Phragmites australis*) that quickly spread from the edge of the cove until it covered all the original saltmarsh above the high tide level. The fill also restricted the remaining lower elevations that still supported remnant saltmarsh to a much smaller, narrower area. This led to an increase in the velocity of tidewaters, and a resultant increase in erosion of the remaining marsh. In effect, Allin's Cove has lost much of its saltmarsh habitat to filling, invasion by *Phragmites*, and it continues to be degraded by erosion. Other resources that depend on the saltmarsh have also been effected by this destruction: fish, shellfish, and birds are only a few of the many creatures that depend on saltmarsh habitat for food, shelter, and breeding grounds. Humans lose too. Food, recreation, and aesthetic values are all diminished by the environmental damage to Allin's Cove.

Allin's Cove: map showing outline of 1959 dredge disposal site

But thanks to the resolve of many people, including Sandra Wyatt, President, Allin's Cove Neighborhood Coalition, State Representative Peter Ginaitt, Chair, Joint Subcommittee on Environment and Energy, and State Representative Mark Heffner from Barrington, progress has been made. A local effort to address the issue began with the Barrington Salt Marsh Working Group (a subgroup of the Barrington Conservation Commission) which was formed in 1997.

After studying the history of Allin's Cove, the Working Group requested reparation from the ACOE for damage to the saltmarsh due to its initial filling and the subsequent erosion. The Corps responded in December 1999 by submitting a Preliminary Restoration Plan to the town of Barrington. The plan proposes to restore the degraded coastal wetland at the

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Allin's Cove Salt Marsh Restoration
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mouth of the cove. In addition, about eleven acres of degraded habitat will be restored to a healthy saltmarsh ecosystem by re-grading some of the area to an elevation suitable to encourage and maintain the growth of saltmarsh vegetation and potentially restoring some of the open waters that existed prior to the filling. The plan also proposes to stop the erosion at Byway Road by using a combination of excavated material from the fill area and new material to widen and stabilize the eroding coastal shoreline.

The proposed ACOE plan will cost approximately $760,000. $172,000 of the $190,000 non-federal sponsor share for the Allin's Cove project was recently proposed by State Representative Peter Ginaitt. CRMC, as the lead state agency responsible for coastal habitat restoration, has agreed to be the lead non-federal sponsor of the Allin's Cove Salt Marsh Restoration Project. The probability of CRMC receiving the funds to pay their share of the costs looks good so far. The RI House Finance Committee appropriated the funds in April and the full House followed suit during May. The RI Senate awaits, and the decision will be known this June, at the close of the current session of the RI General Assembly. CRMC looks forward to working with the Town of Barrington, the Allin's Cove Neighborhood Coalition, and others to complete this important project.

Mitigation Project at Allen Harbor Superfund Site Leads to Saltmarsh Restoration

A recovering saltmarsh at the Navy Landfill Superfund Site at Davisville, North Kingstown, shows how opportunistic thinking and quick action by government regulators can help to restore coastal habitat.

The idea to restore a 1.5 acre degraded saltmarsh adjacent to the landfill at Allen Harbor came up in 1998, as the final stages of capping the landfill were underway. CRMC biologist Dave Reis and USFWS biologists Greg Mannesto and Tim Pryor proposed restoring the saltmarsh as a measure to mitigate some of the environmental damage caused by the landfill.

Saltmarsh Restoration: CRMC Supervising Biologist Dave Reis (right) and USFWS Biologist Greg Mannesto stand in front of the rapidly recovering saltmarsh at Allen Harbor, North Kingstown

Knowing that the heavy construction equipment being used to cap the landfill site would soon be leaving, they approached the project consultants and suggested that the equipment could be used to restore the degraded saltmarsh. The idea was to first remove the *Phragmites* that had overrun the former saltmarsh, and then grade the entire site to a lower elevation that would accommodate inundation by tidewaters. In this way, the saltmarsh could be restored through natural processes; the saltmarsh would be re-established as seeds of saltmarsh plant species carried by tidewaters settled on the site.

The details were negotiated and according to Reis, " the permit to conduct the construction work on the degraded saltmarsh was completed in a month…the fastest any restoration project has ever been approved." And just two years later, it's working. Already, healthy stands of saltmarsh cordgrass *(Spartina alterniflora)* surround the new shoreline.

South Shore Habitat Restoration Project
Fact Sheet

This fact sheet was prepared by the Salt Ponds Coalition for the Coastal Resources Management Council

Project Goal: To selectively restore once productive, now damaged, habitats in the breachway tidal deltas of Ninigret, Quonochontaug, and Winnapaug Ponds using a combination of choices that include planting, seeding, and sand removal. To restore, as well, fish passage in the slat pond tributaries leading to Cross Mills Pond and Factory Pond.

Reasons for Action: Sedimentation basins, designed to trap sand as it surges through the three breachways, have not been adequately maintained since breachway construction. Tidal sand deltas have formed inside the breachways. The shifting sand has killed aquatic vegetation that once sustained fertile fish and shellfish breeding areas.

Expected Outcomes: When the restoration is complete, there will be newly planted eelgrass beds where they used to exist before the sand from poorly maintained breachways buried them. This new vegetation will promote the return of greater numbers of valued fish and shellfish than have been seen in years. They, in turn, will generate more robust fisheries and healthier salt ponds along the Rhode Island south shore.

Project Managers: RI Coastal Resources Management Council (CRMC) & the US Army Corps of Engineers (ACOE).

Project Sponsors: State of Rhode Island, ACOE, CRMC, RI Department of Environmental Management (RIDEM), Towns of Westerly, Charlestown, and South Kingstown.

Project Partners: CRMC, ACOE, RIDEM, University of Rhode Island (URI)/Graduate School of Oceanography, URI Geology Department, URI Department of Natural Resource Sciences, RI Sea Grant, US Fish and Wildlife Service, NOAA Restoration, National Marine Fisheries Service, US EPA, and the Salt Ponds Coalition (SPC).

Project Phases:

Reconnaissance Phase – Completed in June 1998. During this phase it was determined that selective dredging and planting will have a beneficial effect on tidal delta habitats and fish passage will benefit anadromous fish.

Feasibility Phase – Current Phase. Estimate completion during summer of 2000. Researchers are studying all aspects of tidal delta evolution and habitat alteration, the value of present habitats and the impacts those restoration alternatives might have on these existing habitats. Selection of areas to be restored and alternatives to be used will be determined in this phase. Fish passage engineering designs will be completed.

Restoration Phase – Restoration will begin, where it is projected to be beneficial, using differing combinations of dredging, planting, and seeding at each site. The state must commit to funding for a long-term breachway maintenance plan before any restoration work begins. The restoration phase is expected to take about two years.

Project Funding: The US Army Corps of Engineers will pay for 50 to 60 percent of the costs depending on the phase. The remainder will come from the State of Rhode Island and the Towns of Charlestown, South Kingstown, and Westerly.

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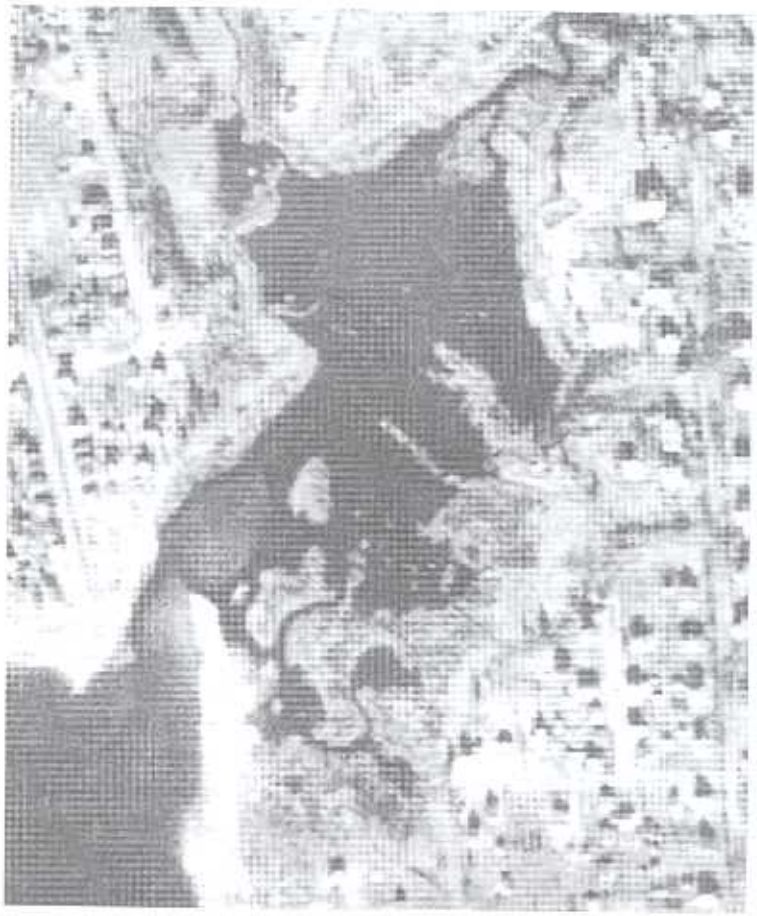

Allin's Cove: 1938 aerial photograph of Allin's Cove shows the saltmarsh as it existed prior to being filled in 1959. Saltmarsh is located at the bottom-center of the photo, to the right of the light colored vertical strip of beach at the mouth of the cove. (Photo number GSF 6 95)

Coastal Features

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