



# Restoring Coastal Ecosystems

A new field of applied science—restoring damaged coastal ecosystems—has become a priority for New York Sea Grant in both its research and outreach programs. Restoration attempts to bring an ecosystem back to some healthier state of functioning. Sometimes restoration is done because of some catastrophic event such as an oil spill. Other times, restoration is attempted to reverse the gradual, long term loss or destruction of coastal habitat.

Many programs have made restoration of coastal ecosystems a priority. For example, the Long Island Sound Study Habitat Restoration Initiative has three broad goals. The first is to restore the ecological functions of degraded and lost habitats. Secondly, the Initiative seeks to restore 2000 acres and 100 miles of natural habitats over the next 10 years. Thirdly, the Initiative will use partnerships to accomplish the restoration objectives and to

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From urban landscape to rural river valley  
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COASTAL LIVES

# *In this winter Coastlines, Coastal Habitat Restoration and Essential Fish Habitat*

*are featured, two leading coastal issues of our day.*

1998 was the International Year of the Ocean. However, a press release by the White House on January 11, 1999, reads: "Today's announcement that 1998 was the warmest year on record is yet more evidence that global warming is real." According to Vice-President Al Gore, "We owe our children and grandchildren a healthy planet that will support strong, sustainable economic growth. Today's announcement makes the task all the more urgent." With New York's 3400 miles of coastline, some of which is the most populated in the country, restoring coastal ecosystems to a healthy state is a priority. We urge our readers to consider Robert Kent's feature article entitled "Restoring Coastal Ecosystems."



Photo by Barbara Branca

**//**  
*We owe our children and grandchildren a healthy planet that will support strong, sustainable economic growth. Today's announcement makes the task all the more urgent.*



*—Vice-President Al Gore*

## ~~Essential Fish Habitat~~

**//**  
~~*This is the most significant piece of environmental legislation since the Clean Water Act of 1972.*~~



~~*—National Sea Grant Director Ronald C. Baird*~~

~~is a concept that sprang from the Sustainable Fisheries Act of 1996. Referring to this law, Ronald Baird, Director of NOAA's National Sea Grant College Program says, "This is the most significant piece of environmental legislation since the Clean Water Act of 1972." Continues Baird, "The law now mandates not only the management of the harvest of commercial species, but the environment necessary for the reproduction, feeding and growth of those species as well. The full implications of essential fish habitat are not widely appreciated by the public. They will be shortly." With Mark Malchoff's featured article entitled "Essential Fish Habitat: Why all the fuss," Coastlines aims to familiarize our readers about this essential concept.~~

~~Photo and wooden fish sculpture by James Cook~~



# Restoring Coastal

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## Success in Urban Restoration

**What does it take to restore a little over two acres along a highly-developed urban coast? Eleven acres of maritime shrubland/grassland habitat fringed with intertidal wetlands located at the Norton Basin in Far Rockaway, Queens was purchased by the New York State Department of Environmental Conservation in 1995. Although the parcel was under significant developmental pressure, it had a high restoration potential and was identified as a high priority site through the Jamaica Bay Damages Account Restoration project. This effort, the Norton Basin Natural Resource Area at the terminus of Healy Avenue in Far Rockaway, consisted of restoring 1.25 acres of wetland and 1 acre of upland shrub grassland.**

The wetland portion was created through excavation of historic fill to appropriate elevations to support wetland vegetation. The wetland plantings consist of a combination of intertidal salt-tolerant plants such as smooth cordgrass, salt hay and spike grass.

leverage the limited state, local, and federal funds. The use of partnerships will be key to successful restoration efforts. The expertise needed to conduct restoration lies in many different places, and so does the funding. Often, local governments own the habitat that is being restored, while the funding and expertise may come from other places. Private landowners are also getting involved in restoration efforts, as are community and environmental groups.

Many types of ecosystems are candidates for restoration. Tidal wetlands are a major focus of many restoration projects. These wetlands perform many important functions as they remove nutrients and contaminants from surface runoff and ground water and provide habitat for a wide variety of coastal and migratory species.

Other habitats being considered for restoration include rivers, dunes, coastal forest communities, intertidal flats, estuarine embayments, and coastal grasslands. On Long Island's east end, the Peconic Estuary Program seeks to restore a variety of ecosystem types including submerged aquatic vegetation (SAV) beds. SAV consists of rooted plants, primarily eelgrass (*Zostera marina*). SAV beds provide essential habitat for the bay scallop, as well as nursery and feeding grounds for juvenile stages of many finfish species. They are also very important food for some waterfowl, especially the Atlantic brant.

The Hudson River Habitat Restoration project is a partnership between the U.S. Army Corps of Engineers, the New York State Department of Environmental Conservation, and the New York State

## Step 1

Photo by Dawn McReynolds



Excavating the site.

## Step 2

Photo by Tammy Greco



Planting the wetlands.



# Ecosystems

Department of State. A joint study identified opportunities for habitat restoration and recommended feasibility studies to determine their likelihood of success and to estimate restoration costs.

Because so many areas need restoration and because resources to get the job done are so limited, a process of establishing priorities is typically put into place. Community groups, scientists, local governments, and resource managers are asked to nominate potential sites for restoration. Criteria used to establish priorities include whether endangered species use the area, how severe the degradation is, the costs involved, how much community support there is for the project, and the likelihood of success.

Committees of experts and concerned citizens steer and implement

restoration projects. New York Sea Grant is quite actively involved with the committees serving several estuary programs. Getting the best scientific information to groups that will actually do the restoration work is another goal of New York Sea Grant. Recently, Oregon, Louisiana, and New York Sea Grant, with funding from the National Sea Grant Office, teamed up to begin the Coastal Ecosystem Restoration Pilot Project. The objectives of the pilot program are to: 1) increase the capacity and skills of local restoration groups to incorporate the best available science into landscape-level plans and into the individual restoration and enhancement projects they design, construct, and monitor; 2) increase the capacity and skills of local restoration groups to make difficult decisions, set priorities, resolve

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## Restoring Rose-Covered Dunes

After screening out concrete debris from the excavated fill used to create the wetland at the Healy Avenue site in Queens, the fill was placed in the upland of the site to create a low, rolling dune habitat. The new dune was planted with shrubs such as pitch pine, Virginia rose, groundsel bush, bayberry, shad bush, and beach plum. Grasses such as switch grass, little bluestem, seaside goldenrod, sand dropseed broom sedge, purple lovegrass, side-oats gramma, and crowfoot cyperus were also planted to maintain the dune. The existing dune was regraded and planted with beach grass.

Norton Basin Natural Resource Area Restoration was completed in June 1998 and is slated to be monitored with both qualitative methods such as general on-site observations of fish and wildlife usage and quantitative methods such as plant densities, soil organic matter, above and below ground biomass and sedimentation rates.

—Information supplied by NYSDEC

## Step 3

Photo by Tammy Greco



Restoring the dunes.

# Restoring Coastal

## Sea Grant Along the Hudson

Currently funded by New York Sea Grant, Stuart Findlay, scientist at the Institute of Ecosystem Studies in Millbrook, New York, is working closely with the Habitat Restoration Project and in particular with the Hudson River National Estuarine Research Reserve. In Tivoli Bay North, one of four nationally designated estuarine reserves along the Hudson, Findlay is comparing the dynamics of decomposition for both invasive reeds (*Phragmites*) and the native cattails (*Typha*). Reeds stay standing long after they die compared to cattails which fall over soon after they die. Thus the rates at which the plant matter decays differ as do the nutrient loads added to the water and the dynamics of populations of bacteria and fungi that decay the plants. Findlay's documentation will be important in determining the benefit of restoration efforts made in many coastal areas which focus on removing invasive reeds. According to Findlay "Reed invasion and potential reed removal are central issues on the Hudson and our documentation of important marsh functions related to specific plant communities will contribute to overall tidal wetland management."

—Barbara Branca

In many wetlands, invasive *Phragmites* (right) flourish at the expense of native cattails (left).

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disputes, and operate effectively over the long term to achieve their goals; 3) share what was learned in the pilot project with the National Network of Sea Grant programs. Because it began in February of 1998, the Coastal Ecosystem Restoration Pilot Project is just getting started. In its first year a habitat restoration manual is being developed and in its second year the manual will be introduced in training programs in the three states involved. The principal audiences for the materials will be local government and agency staff, non-

governmental organizations, and the workforce that carries out restoration and enhancement projects.

Restoring our coastal environment to a healthier level of functioning is a major undertaking. It will require the best science and the commitment of a wide variety of agencies and people. Restoration projects are expected to remain a major priority in both the marine and the Great Lakes districts in New York as well as regionally and nationally.

## *Norton Basin before restoration*

Photo by Dawn McReynolds



Illustration by James Cook

# Ecosystems

Recently, New York Sea Grant was contacted about establishing a fund focused on habitat restoration by the family of Allan Overton of Quogue, NY. The result is the Allan Overton Memorial Coastal Habitat Restoration and Education Fund. The goals of the fund are to raise dollars that can be used to restore ecosystems, with a special emphasis on involving youth in the projects. Mr. Overton's mission in life was helping young people, including those whose lives had run into trouble, get back on the path of constructive living. Often this

involved sharing his love of nature with young people. An information brochure about the fund can be obtained by contacting Robert Kent, Marine Program Coordinator, New York Sea Grant, 3059 Sound Avenue, Riverhead, New York 11901, telephone 516-727-3910. Anyone wanting to make a contribution to the fund may do so by sending a check made payable to Cornell University to Mr. Kent.

**—Robert Kent  
Robert Kent is NYSG's  
Marine Program Coordinator.**

## ... And in the St. Lawrence

Along the St. Lawrence river valley, far to the north of the Hudson's headwaters, strides are being made to restore the native black ash (*Fraxinus nigra*), a once abundant species made scarce by the development of the St. Lawrence Seaway. At the Akwesasne Mohawk reserve, NYSG community issues specialist Dave Greene and Cornell Extension state forester Peter Smallidge are collaborating with the Mohawk people and the Akwesasne Environmental Task Force to address the issue of restoring black ash which is used in traditional basket making and thus important culturally and economically.

Of his recent award of two grants to promote the restoration and use of this native species, Greene says, "Some of the landowners who will be participating in the black ash demonstration plots will be using the Wetlands Reserve Program (WRP) to support their efforts." Explains Smallidge, "Black ash seedlings will be planted in areas most likely to support the trees as well as in experimental sites to assess the ecological and financial efficacy of 'tree shelters' that offer protection against competing vegetation and browsing deer." One potential site at the Akwesasne Freedom School will also support sugar maple and sweetgrass. Greene's second grant from the Rural Development Council (RDC) enables basketmakers to initiate a project that will lead to a video demonstrating the crafting of black ash baskets.

**—Barbara Branca**

## ...and after.

Photo by Jodi McDonald



Splints of black ash (leaves pictured) and sweetgrass can be used to make traditional Mohawk baskets like the one shown.

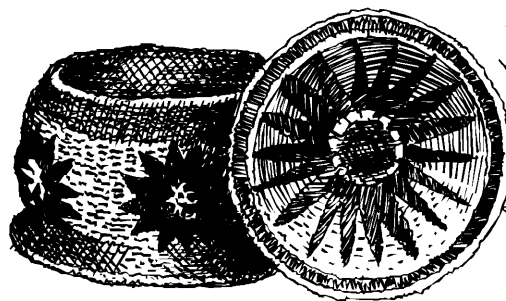


Illustration by James Cook