

OUTCOME 4: COASTAL HABITATS PROTECTED AND RESTORED



Coastal habitats, including wetlands, tributaries, bay bottoms, and upland woodlands, have undergone considerable change in the past century. Loss of habitat to development has been substantial. Paralleling these changes has been a decline in populations of many coastal species, most notably shellfish, finfish, waterfowl, colonial waterbirds, and shorebirds. Management measures are needed to strengthen protection for natural habitats in the Reserve and restore impaired habitats to enhance the ability of coastal fish and wildlife species to maintain or increase their populations within the Reserve.

Restoration of Wetlands

Tidal wetlands, or salt marshes, are a significant source of primary productivity in the Reserve and provide critical foraging, nursery, and nesting habitat for many coastal species. Furthermore, tidal wetlands help protect the shoreline from flooding and erosion and filter pollutants from stormwater runoff. Freshwater wetlands are also present in the Reserve and provide similar benefits. Tidal wetlands have been impacted by many factors, such as residential and commercial construction, shoreline hardening, and the spread of invasive plant species, particularly the common reed (*Phragmites australis*). Reserve partners have completed the following wetland restoration projects:

- The Long Island Wetland Restoration Initiative (LIWRI) is a partnership of agencies and organizations that was formed to restore tidal wetlands and upland grasslands on Long Island. The Initiative implemented a pilot Open Marsh Water Management project on approximately 40 acres of tidal marsh at Wertheim National Wildlife Refuge on the Carmans River in Shirley. Grid ditches were filled, tidal channels were added, and small fish reservoir ponds were dug in cordgrass areas.
- Suffolk County prepared a long-term plan for vector control and wetlands management that includes the use of a series of best management practices to restore approximately 4,000 acres of tidal wetlands that were grid ditched in the 1930s.
- The Village of Freeport is implementing a project that will create a tidal wetland and intertidal marsh ecosystem at Sea Breeze Park at the end of the Nautical Mile.
- In addition to projects completed in cooperation with the Beaverdam Creek Task Force (see below) and LIWRI, Ducks Unlimited initiated invasive species control projects on Yaphank Creek and Little Neck Run.
- The Town of Babylon completed wetland restoration projects on Ketchams Creek in Copiague and Santapogue Creek in West Babylon. The Town also completed a shoreline restoration project on Elda Lake (part of the Carlls River) in North Babylon.

RESTORATION OF TIDAL WETLANDS AT BEAVERDAM CREEK

Tidal wetland restoration at Beaverdam Creek is one of the foremost comprehensive habitat restoration efforts in the Reserve. The Beaverdam Creek Restoration Task Force, a coalition of state, county and local government agencies, non-profit organizations, and academic institutions led by Ducks Unlimited and the Post-Morrow Foundation, was formed to restore degraded tidal wetlands habitat in the Beaverdam Creek watershed.



Volunteers plant native salt marsh grasses at Beaverdam Creek



Restored Beaverdam Creek wetlands

To mitigate impacts of dredged material placement, grid ditching for mosquito control, shoreline hardening, nonpoint source pollution, and invasion of the common reed (*Phragmites australis*), the Task Force has initiated a comprehensive program to restore tidal wetlands, improve water quality, and enhance stewardship. By June 2004, efforts to restore eight acres of wetlands on the east side of the creek were completed.

The restoration process involved removal of 10,000 cubic yards of dredged material and vegetation, and creation of four tidal channels, four tidal pools, and a mixture of high marsh, low marsh, and mudflats. Volunteers planted one-third of the site with native salt marsh grasses such as smooth cordgrass, spike grass, and salt marsh bulrush.

Dramatic wildlife response has been observed at the site and programs are in place to monitor water quality, flora, and fauna. Plans for restoration of 20 acres on the west side of the creek are under development. A successful restoration effort within Beaverdam Creek watershed will serve as a prototype for similar programs throughout the Reserve.

Habitat Restoration in Tributaries

The large number of tributaries that drain the Reserve watershed have historically been a focal point for human activities and continue to provide key natural resource values. High potential exists for protecting the remaining tributary systems and restoring those that are impaired. Reserve partners have initiated the following projects to protect and restore tributaries:

- Watershed management plans (see Outcome 1) that are being developed for several priority tributaries in the Reserve include evaluations of living resources in tributary corridors and recommendations to protect and restore those resources.
- Nassau County implemented a tributary restoration project at Tanglewood Preserve in the Mill River watershed. The project included dredging the ponds to a depth and configuration to support a warm water fishery. Additionally, two sediment ponds were dredged to improve their efficiency in capturing sediments prior to entry into the main body of the pond. Water quality and bank stabilization problems were addressed by installing freshwater wetland plantings and aquatic benches at the pond perimeter. The outlet weir was repaired and park amenities were added to improve the overall aesthetic value of the preserve.
- Nassau County completed the Final Environmental Impact Statement for aquatic habitat restoration in the Massapequa Preserve, including wetland restoration, stream-flow

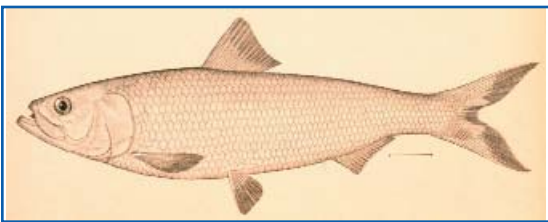
augmentation, and improved buffers for Massapequa Creek. Additional components of the project include incorporation of fish ladders to improve safe and effective fish passageways. The project will improve water quality, increase stream baseflow, and reduce stream temperature, which will provide the opportunity for year-round trout habitat.

- Suffolk County worked with the US Army Corps of Engineers (ACE) to initiate design and feasibility analysis for the Mud Creek Watershed Section 206 Aquatic Ecosystem Restoration Project, which aims to restore wetland and stream habitats that were extensively degraded by the operation of a former duck farm on a 35-acre site in East Patchogue that is now Suffolk County parkland. When completed, the project could restore approximately 1,870 linear feet of habitat on the east branch of Mud Creek, 7 acres of freshwater wetlands, and 10 acres of upland habitat.
- South Shore Audubon, in contract with Nassau County, managed Brookside Preserve, which comprises 20 acres of woodland and meadow along Milburn Creek, a tributary of Baldwin Bay. Management efforts include cleanups, invasive species removal, and native landscaping.

Restoration of Diadromous Fish

Diadromous fish, those species that spend certain stages of their lives in salt water and other stages in freshwater, have historically been a key component of the Reserve's ecosystem. However, their populations have declined significantly from historic levels. Knowledge of fish spawning ranges in south shore tributaries is limited and recent restoration efforts have focused on gaining a better understanding of their size and distribution. Reserve partners have taken the following steps to advance restoration of diadromous fish:

- The Reserve Council formed a diadromous fish workgroup that is made up of representatives of government agencies and stakeholder organizations and is led by Environmental Defense. The workgroup collaborated to identify priority tributaries, secure funding for fish passage projects, and initiate a volunteer survey of alewives, an important diadromous species on the south shore.
- NYS Department of Transportation (DOT), NYS Department of Environmental Conservation (DEC), and Trout Unlimited partnered to secure funding from the National Oceanic and Atmospheric Administration (NOAA) and the Fish America Foundation to design and install a fish ladder on the Hards Lake Dam on Carmans River. Project design is underway.
- NYS DEC stocks more than 25,000 trout in 21 freshwater and tidal lakes, ponds, and streams in the Reserve. Assistance is provided by Trout Unlimited (Long Island and Art Flick Chapters).
- NYS Office of Parks, Recreation, and Historic Preservation (OPRHP) restored a historic hatchery at Connequot River State Park. Restoration efforts included improvements to water flow and erosion stabilization, as well as addition of an observation room and interpretive signs.



Reserve partners recruited volunteers to assist with a survey of alewife populations in priority tributaries. The alewife is an important diadromous fish on the south shore.

- The Art Flick Chapter of Trout Unlimited worked with NYS DEC to restore trout habitat on the Carmans River through its Stream Improvement Project. Projects included construction of log structures for cover and experimental planting of native trees and bushes to stabilize the banks and provide shade.

Evaluation and Restoration of Eelgrass Beds

Beds of submerged aquatic vegetation (SAV), which occupy much of the Reserve's shallow sub-tidal zone, are a major contributor to overall estuarine productivity. SAV beds, composed primarily of eelgrass, appear to be thriving in many areas of the estuary. Reserve partners have conducted a number of projects to assess, protect, and restore seagrass in the Reserve.

- Fire Island National Seashore (FINS) created a GIS-based vegetation map that includes distribution of eelgrass beds within its boundaries. As part of its Vital Signs monitoring program, FINS will also monitor the distribution and abundance of SAV beds and determine long-term trends in seagrass condition.
- The Town of Southampton, in partnership with the marine program of Cornell Cooperative Extension and the NYS Department of State (DOS), is designing a demonstration eelgrass project that will result in the creation of a GIS-based comprehensive restoration plan for this species in the Town's south shore bays.
- Using prior GIS-based SAV mapping projects supported by NOAA, the NYS DOS, SUNY Marine Sciences Research Center, New York Sea Grant, The Nature Conservancy, and Bluepoints Bottomlands Council are conducting research to restore and protect seagrass in Great South Bay and Shinnecock Bay.

Restoration of Coastal Bird Habitat

The Reserve has long been recognized for its important shorebird and colonial waterbird populations, including a number of rare and/or endangered species. While some species have maintained population levels and geographic distribution in the face of development, most have experienced declines in numbers and shifts in distribution. Reserve partners are working to identify, protect, and manage key feeding and nesting areas as follows:

- FINS has worked with NYS Department of Environmental Conservation (DEC) to remove vegetation on bay islands formed by dredged materials to enhance shorebird nesting habitat.
- US ACE facilitated enhanced shorebird habitat through placement of dredged sand from the bi-annual dredging project for Fire Island Inlet.
- At Jones Beach State Park and Robert Moses State Park, the NYS OPRHP implemented a management plan for protection and restoration of coastal birds and removed vegetation to enhance shorebird habitat. OPRHP also established seasonal migratory staging areas for migratory birds and created endangered species management plans for large public events occurring during the nesting season at its facilities in the Reserve.
- Suffolk County completed a shorebird habitat restoration project at Cupsogue Beach County Park.



Reserve partners have taken steps to improve habitat for coastal birds such as the osprey.

Management of Upland Ponds

Upland ponds are another important habitat for freshwater fish, bird, reptile, and insect species that are part of the Reserve ecosystem. Often they are part of Reserve tributary systems. Reserve partners have completed the following projects to manage upland ponds:

- OPRHP completed design of trash racks in key locations to facilitate removal of floatable debris in the Northeast Pond Area of Hempstead Lake State Park.
- Nassau County completed the Millburn Pond project, which entailed dredging the pond to a depth and configuration to support a warm water fishery. A sedimentation basin was installed at the pond outlet in an effort to capture sediment in a concentrated fashion and to increase the functional life of the pond. A floatable collection boom was installed to capture debris and prevent it from entering the main body of the pond. Water quality improvements and bank stabilization were accomplished by installing freshwater wetland plantings and aquatic benches. Park amenities were installed to improve the aesthetic value of the park.

- Nassau County designed a stormwater mitigation and floatable debris trap project at Roosevelt Pond Park. Project components include restoration of streambanks using bioengineering methods, installation of a sedimentation basin and a separate device to capture sediment and floatables, partial dredging of the pond to increase circulation and improve its capacity for a warm water fishery, shoreline stabilization using wetland plantings, and improvements to park amenities.
- Nassau County also completed the design phase for three park ponds within the Reserve - Loft's Pond, Silver Lake, and Mill Pond. In all three instances the ponds were dredged to improve pond circulation and warm water fishery capability. Other improvements include shoreline bioengineering to curb bank erosion and improve water quality, sediment structures to capture sediment prior to entry into the estuary, and removal of aquatic weeds.
- The Town of Oyster Bay redesigned Marjorie Post Park, incorporating measures to manage the park's pond such as shoreline erosion prevention, native plant buffers, and fencing to separate humans and geese. Management measures also included continued implementation of education programs and signage to prevent human feeding of waterfowl.

Significant Coastal Fish and Wildlife Habitats

Significant Coastal Fish and Wildlife Habitats (SCFWH) on the south shore of Long Island were originally designated in 1987, based largely on records from 1983 and 1984. Between 2004 and 2005, NYS DOS collected data and information from various stakeholder groups in order to update the SCFWH on Long Island. As a result of this effort, DOS intends to designate two new SCFWH on the south shore and to extend the boundaries for seven SCFWH, establishing over 2,000 acres of additional SCFWH area. Habitat narratives have been revised to include more information on ecological communities, new impact assessment language to recommend and guide restoration efforts within Reserve significant habitats, and guidance in regard to docks compatible with the protection of SAV beds and benthic habitats.

NEXT STEPS FOR HABITAT PROTECTION AND RESTORATION

Reserve Council partners will work to incorporate and advance the guiding principles for ecosystem-based management, as articulated in the recently promulgated New York Ocean and Great Lakes Ecosystem Conservation Act, in developing and undertaking habitat restoration projects Reserve-wide.

Reserve Council partners will broaden efforts to identify potential sites for wetland restoration and invasive species removal, and to strengthen partnerships for implementation of restoration projects.

Reserve Council partners will examine and inventory barriers to fish passage in Reserve tributaries and strategies will be developed regarding actions to accommodate fish passage. Aquatic habitat restoration and fish passage projects funded through the Clean Water/Clean Air Bond Act, and other grants from public and private sources to restore diadromous fish habitat, will be implemented.

