

Environmental Restoration Is Possible

By Dr. JoAnne Castagna

An eighth grade student from Elizabeth, New Jersey, stands on a pier and carefully lifts a starfish from a water-filled glass aquarium as her classmates surround her. She shrieks as one of its arms breaks off. A biologist with the United States Army Corps of Engineers® quickly assures her that the arm will grow back and that the creature will be okay. The starfish is finally placed safely in its natural habitat in the Hudson River Estuary.

Hudson-Raritan Estuary

The students were taking part in the fourth annual Earth Day celebration sponsored in April by the Corps and other agencies on the Elizabeth Marina City Dock. The

students learned that the nearby Hudson-Raritan Estuary, the starfish's home, could also be restored by keeping it pollution-free. It was a sunny, breezy day when more than 200 New Jersey students gathered on the dock overlooking the estuary. Corps experts explained to the students that an estuary is a partially enclosed coastal body of water with one or more rivers or streams flowing into it and with a free connection to the open sea.

Students learned about the effects of pollution on their environment from a number of Earth Day volunteers. They learned through a variety of interactive educational stations manned by scientific and educational experts. Glass touch tanks containing estuary marine life were featured, and demonstrations of pollution and water quality testing were conducted. The students also boarded a United States Coast Guard vessel for a tour and boarded the Corps vessel *Hocking* as it traveled near the estuary.

Aboard the *Hocking*, Corps experts discussed the estuary's rich history, current condition, and the Corps's ongoing port activities and environmental restoration projects in the estuary, four of which were recently completed with much success. The estuary covers 16,212 square miles and surrounds the Ports of New York and New Jersey in a region populated by 20 million people. For more than 200 years, the New York District has managed the port's navigation, development, and maintenance and is one of the Corps's largest civil works missions. Over the decades, the salt marshes along the shores of navigation channels have experienced some degradation and habitat loss due to a number of factors, including increased boat traffic and years of commercial construction and development along the



Photo by JoAnne Castagna, New York District, U.S. Army Corps of Engineers

Eighth grade students learn about starfish that live in the Hudson-Raritan Estuary.

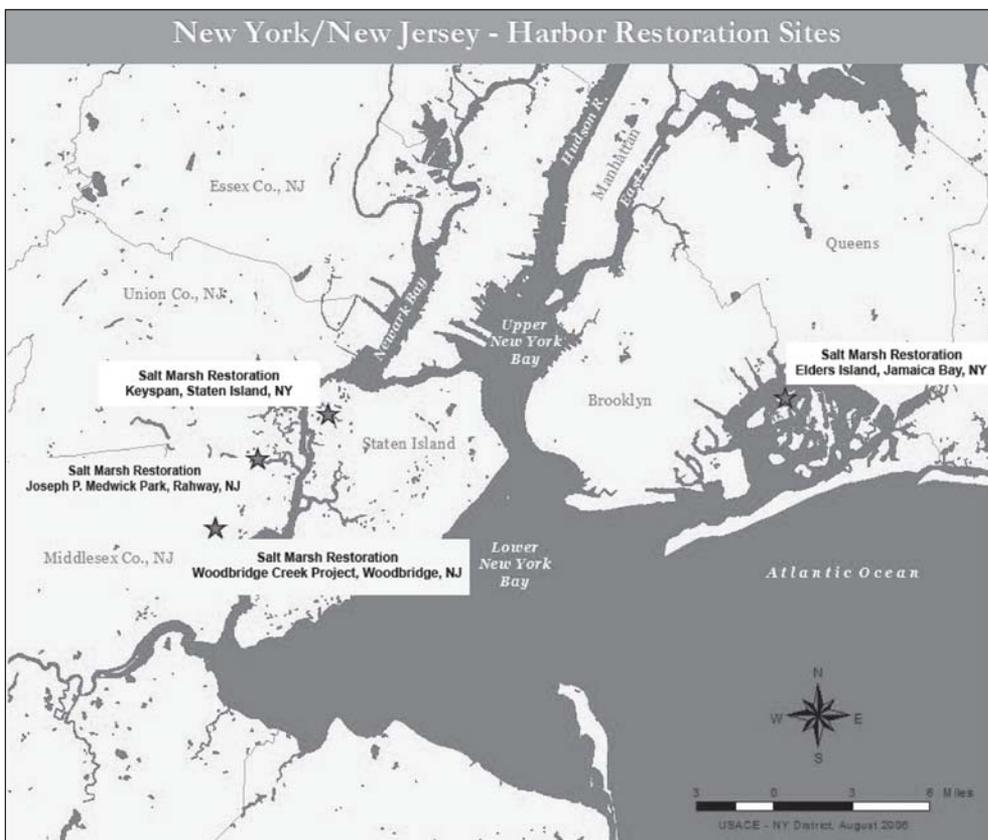


Students board the *Hocking* for a tour of the estuary, where the Corps will be completing environmental restoration projects.

shore. To restore these areas, the Corps has an environmental restoration program in place. Maintaining the health of the estuary is important because salt marshes clean the water environment, reduce flood risks, and provide essential fish and wildlife habitats. Salt marshes are areas of land that are either covered by shallow water or contain waterlogged soil.

Salt Marsh Successes

In 2006, the New York District, in cooperation with the Port Authority of New York and New Jersey and state and local agencies, successfully completed four salt marsh restoration projects in the estuary that are preserving and restoring more than 143 acres of salt marsh.



Elders Point Island, Jamaica Bay, New York

Located in the boroughs of Brooklyn and Queens, the easternmost areas of New York City, is the Jamaica Bay Gateway National Recreation Area. It is a popular park visited by millions each year and home to a variety of wildlife species, including migratory birds and fish nurseries. Since colonial times, 90 percent of the Jamaica Bay marsh islands have degraded and the remaining acres of islands are disappearing at a rate of 44 acres per year. That rate has grown faster in the last decade. If the islands are not restored, they will be completely lost within the next three decades. The Corps is successfully restoring these islands, including Elders Point Island, which is composed of



The Corps restores a degraded salt marsh in Joseph P. Medwick Park on the Rahway River in New Jersey.

two separate islands—Elders Point East and Elders Point West—that are connected by mudflats. They totaled approximately 21 vegetated acres before the Corps's restoration. That restoration plan for Elders Point Island includes recontouring the land using dredged sand from various harbor channels and restoring the existing vegetation.

In the summer of 2006, 250,000 cubic yards of sand were pumped onto Elders Point East, and 700,000 plants were hand-planted, including salt marsh cordgrass, salt hay, and spike grass. Today, marsh grass is flourishing there, promoting the return of wildlife. The tentative schedule for Elders Point West is to place sand on the island next year and plant vegetation in 2009.

Keyspan, Staten Island, New York

One of the first salt marsh areas identified for restoration by the Corps was the nine acres of marsh adjacent to the Keyspan Corporation Facility in Staten Island, New York. In recent years, areas of the site have been overrun by an invasive species of common reed called *Phragmites australis*, which is a problem because its roots can grow very thick and high, preventing tidewater from penetrating the area frequently. Without a frequent tide, fish, shellfish, and other food sources for birds and mammals cannot exist.

The Corps removed the reed and 36,200 cubic yards of soil, graded the land to elevations suitable for native plants, and planted a diverse group of 107,000 native plants, including salt marsh cordgrass, salt hay, and marine shrubs. The plants provide a food source for fish and other marine life in the estuary and vegetation for nesting birds. Water flow to the area has been reestablished, improving the water and soil quality and promoting the return of native fish and wildlife.

Joseph P. Medwick Park, Rahway, New Jersey

The Corps decided to restore approximately 14 acres of salt marsh in the northern portion of Joseph P. Medwick Park along the southern shore of the Rahway River. Years ago, a berm

was built on the banks of the Raritan River, cutting off the site from the daily tide. As a result, the area was overrun by *Phragmites australis*. The reed prevented a normal tide of water from flowing into the site, degrading the site and adversely affecting its fish nurseries and the birds and wildlife that live and breed there. The Corps removed the reed and approximately 30,000 cubic yards of soil, recontoured the land, and planted 270,000 plugs of native wetland plants, including salt marsh cordgrass, salt hay, and marine shrubs. The plants provide a food source for fish and other marine life in the estuary and vegetation for nesting birds. Water flow to the area has been re-established, improving the water and soil quality and promoting the return of native fish and wildlife.

Woodbridge Creek Project, Woodbridge, New Jersey

Woodbridge Creek is a salt marsh with a diversity of vegetation and wildlife. In recent years, areas of the site have been overrun by *Phragmites australis*. As at the other sites, the reed prevented a normal tide of water, which has degraded the site and adversely affected its fish, bird, and wildlife habitats. The Corps restored approximately 23 acres of the marsh. In addition, approximately 8 acres adjacent to the site were restored in cooperation with the National Oceanic and Atmospheric Administration and the New Jersey Department of Environmental Protection. These additional acres helped to restore the land adversely affected by a 1990 oil spill. The restoration included removing soil from within the marsh, grading the land to make it suitable for native marsh vegetation to flourish, and replanting more than 240,000 marsh plants. The plants provide a food source for fish and other marine life in the estuary and vegetation for nesting birds. The project has restored the water flow to the site and now juvenile fish species are creating nurseries there, and bird and wildlife habitats are returning to the site.

Future Environmental Leaders

The Earth Day celebration was a great opportunity to energize the students, our future environmental leaders, about the health of their own estuary in the New York and New Jersey Harbor and help them understand the connection between land and water. It was an important part of the effort to encourage public support to maintain this resource as a world-class estuary.

For additional information about the New York District's Hudson-Raritan Estuary Program, visit <http://www.nan.usace.army.mil/harbor/index.htm>.



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