

Pilot Program Aims to Save Jamaica Bay's Shrinking Marshes

Source: nytimes.com

Published: October 14, 2015



John K. McLaughlin, of the city's Department of Environmental Protection, looking at artificial wetlands (or wave attenuators) off Brant Point, Queens. Yana Paskova for The New York Times

By [Lisa W. Foderaro](#)

At first glance, the five rectilinear islands that bob off the south shore of [Jamaica Bay](#) look like an art installation cooked up in a studio in Williamsburg or Bushwick.

But the structures, which resemble giant planters and are filled with smooth cordgrass, have an ecological purpose. They are helping to protect a quarter-mile ribbon of marshland that hugs the shore in the Rockaways by slowing the onslaught of waves, which are small but relentless.

“Think of it as death by a thousand pin pricks,” said John K. McLaughlin, the director of the Office of Ecological Services for New York City’s Department of Environmental Protection. “It’s the everyday waves that are constantly hitting the marsh.”

The floating wetlands are officially called wave attenuators, and they are merely the latest in [a series of projects](#) undertaken by the city, state and federal governments to restore the bay to its pristine, fertile former self.

In August, the city installed the five islands, which are anchored to the bay’s bottom via industrial-strength rubber bands that can stretch with the tides. Environmental officials say the \$500,000 pilot project will give them information about whether the attenuators can slow the erosion of the marsh’s edge.

Mr. McLaughlin said that in the 1800s, Jamaica Bay looked nothing like the watery expanse of today. Instead, visitors saw mostly a sea of green marshland — 16,000 acres in all — interlaced with shallow creeks. But over the decades, the marshes along the shore were filled in to make room for highways, housing and Kennedy International Airport. Marshy areas in the center were dug out to accommodate shipping channels. Wave action, pollution and sea-level rise have accelerated the decline. Today, there are just 800 to 1,000 acres of marsh left.

Acre for acre, marshes are among the most productive ecosystems on the planet. They filter nitrogen and phosphorus from the water; provide fish habitat; store carbon; and protect against storm surges. City officials are eager, therefore, to protect the marshes that remain.

The five islands are actually stand-ins for beds of [oysters, a keystone species](#) that the city is also trying to restore to Jamaica Bay. A single adult oyster can filter 25 gallons of water a day. Before the overharvesting of oysters from the bay and the dumping of raw sewage there, oysters carpeted the bay's bottom. Based on analyses of Chesapeake Bay's past oyster population, it is believed that oysters in Jamaica Bay once filtered the entire basin every three to five days.

Two oyster beds that were installed in recent years lasted only as long as the individual bivalves lived, five to six years. City officials were disappointed that there were no new recruits, meaning new larvae to colonize the bed. That would have made the beds self-sustaining. The problem, they now believe, was that the beds were not large enough. "The water quality was fine," Mr. McLaughlin said.

The Environmental Protection Department is now preparing a much larger project — the installation of a half-acre oyster bed — that will be placed underwater at the head of the bay next spring. Water clarity in the bay has improved markedly in recent years, the result of upgrades to the four wastewater treatment plants there. The hope is that while the oyster bed further cleanses the bay, it will also protect the marshes.

"Oyster beds are subtidal," Mr. McLaughlin said. "So you have a hump at the bottom, and as the wave comes in, it hits that hump and slows down."

Before the wave attenuators were installed in mid-August, 100 feet off Brant Point in the Arverne section of Queens, the Environmental Protection Department made baseline measurements of the wave activity there using remote acoustic monitoring devices. Computer models show that floating wetlands can decrease wave energy by 52 percent.

Mr. McLaughlin said that even small waves had carved out a section, similar to the shape of a wave, of the marshland.

The attenuators, measuring 40 feet by 8 feet, are made from recycled plastic and planted with [spartina alterniflora](#), commonly called smooth cordgrass, which can tolerate being inundated by salt water twice a day. At the end of two years, city officials will also measure the line of marsh along the shore, to see if it has receded at a slower pace — or not at all — compared with nearby marshland that was not protected by the attenuators.

Don Riepe, the Jamaica Bay guardian for the [American Littoral Society](#), which focuses on coastal preservation, was wary in his appraisal of the floating wetlands. “I’m not crazy about artificial structures in the bay,” he said. “More marshland is better. Marshes are the real attenuators. But these are small and they may do some good.”

For the past decade, city, state and federal environmental agencies have also worked to [restore some of the dozen marsh islands](#) that dot the bay. The Environmental Protection Department alone has invested \$20 million so far in the restoration of islands like Big Egg, Rulers Bar and Black Wall. Those islands have shrunk over the decades by 45 percent to 90 percent, while others have disappeared altogether.

The result is a much wider fetch, or stretch of water, across which wind can gather speed, thus creating bigger waves. That leads to more marsh erosion.

If successful, the wave attenuators could bolster the city’s resolve to return the oyster to Jamaica Bay. Either way, city officials say, the project will make a contribution. “Even failure gives you a lot of information,” Mr. McLaughlin said.
