

In City Waters, Beds (and a Job) for Oysters



Nicole Bengiveno/The New York Times

John K. McLaughlin is in charge of a city effort that will use shellfish, which filter water as they feed, in some areas.

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Hendrix Creek, flowing for just over a mile in Brooklyn through East New York, passes under the Belt Parkway and between two dormant landfills before it empties into Jamaica Bay. The creek, once fed by a natural stream, now starts at the output pipe of a wastewater treatment plant.



Nicole Bengiveno/The New York Times

The shell of a mollusk. Oyster beds will be introduced in Hendrix Creek in Brooklyn, which runs into Jamaica Bay.

It is the perfect kind of place, said John K. McLaughlin, an ecologist for the New York City Department of Environmental Protection, for an experimental project that would establish oyster beds, not for harvest, but as living water filters.

Natural oyster beds once stretched for 350 square miles in New York's waterways. Over time, overharvesting and pollution took their toll. Sewage first forced the bay's shellfish beds to close in the mid-19th century, with all harvests outlawed in the 1920s.

There probably has not been an oyster in Jamaica Bay since the 1930s, Mr. McLaughlin said. "There may be a single individual or a few that seagulls dropped," he said. "But there's no population of any significance."

The new project, outlined in Mayor Michael R. Bloomberg's PlaNYC 2030 sustainability policy, is meant to change that.

Scientists in the last several decades have developed a better understanding of the ability of oysters to filter water. As an adult oyster feeds, it can filter 5 to 50 gallons of water a day, depending on its size and the temperature of the water.

During this process, it absorbs nitrogen, algae and bacteria, depositing them in the sediment at the water's bottom. The oyster beds also serve as the foundation for an ecosystem that can support other marine species, like eelgrass, which in turn absorb other waste materials and provide habitats for fish.

Dozens of similar shellfish restoration projects have been started in other states, some financed by the Nature Conservancy and the National Oceanic and Atmospheric Administration.

"You can only improve water quality so much with hard engineering," said Mr. McLaughlin, who is in charge of the city's effort. He added that "using soft engineering approaches" can produce both benefits to water quality as well as benefits to the overall wildlife habitat in the bay.

Hendrix Creek was chosen because it is protected from the stronger currents from the bay, and because it is small enough for a relatively modest number of shellfish — oysters and ribbed mussels — to have a measurable effect. Since the creek is directly fed by the 26th Ward wastewater treatment plant, the experiment will also provide a good indication of how well the shellfish can filter water coming directly from the city's own filtration system.

The city plans to plant oysters near the creek's mouth, where they will absorb nitrogen, a byproduct of human waste. Further up the creek, beds of ribbed mussels, which feed on smaller bacteria, will be added.

The Gaia Institute, a consulting group that is working with the Department of Environmental Protection on the shellfish project, has estimated that 20 cubic meters of mussels should be able to filter all the effluent from the wastewater treatment plant. But Mr. McLaughlin said it was unclear how effective the mussels would be in removing the kinds of bacteria that can end up in the bay.

The city plans to install water monitors to measure levels of oxygen and nitrogen this year. The shellfish will be introduced in the spring of 2009, and will stay in place for three years. At least one other creek feeding the bay may also be included in the project, which will cost \$600,000.

Although the bay's condition is far from pristine, water quality has improved significantly in recent years, said Paul Mankiewicz, executive director of the Gaia Institute. Already, oysters have returned to several areas in the city without help, including City Island, Pelham Bay and Eastchester Park.

"The long-term modifications of the estuaries because of the Clean Water Act have made all the difference," Mr. Mankiewicz said.

Even so, four waste treatment plants empty into Jamaica Bay, discharging 30,000 to 40,000 pounds of nitrogen each day. That amount is far more than the bay can naturally absorb, and leads to algal blooms that starve other plants and animals of oxygen. Storms also regularly overflow the city's sewage system, sending untreated wastewater into the bay.

Mr. McLaughlin said that "any reduction" in nitrogen levels in Hendrix Creek would be considered an accomplishment. The city has not established hard objective measures of success, he said.

Even if the initial change in water quality is not significant, he said, the creation of a self-sustaining habitat in Jamaica Bay — where oysters and other species can survive and spread — would be an achievement. That process, Mr. McLaughlin said, would be the first step to restoring something close to the bay's original ecosystem.

But if the Hendrix Creek oysters thrive, the city may well face another challenge: keeping away adventuresome gourmands who might be tempted to help themselves to the delicacies.

"There's a worry that if you have oysters that sell for a dollar apiece, people will steal them and sell them," Mr. Mankiewicz said. "We want them for habitat, not edibility."