Floating Wetlands Teem with Life, Clean the Water

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GreenPort Showcase Story
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Students with the Living Classrooms Foundation prepare a "floating wetland" for Masonville Cove. Photo/Bill McAllen.

In late June, the Maryland Port Administration (MPA) launched not a ship but another floating device – a "floating wetlands" ecosystem made from recycled materials.

Floating wetlands are man-made structures designed to jump-start the functions of a marshy ecosystem. That includes filtering pollutants from the water as well as nurturing habitat for fish, waterfowl, and the tiny aquatic organisms that form the base of the aquatic food web.

The latest floating wetlands were installed at Masonville Cove with help from the Living Classrooms Foundation. Masonville Cove is a restoration area adjacent to an MPA placement site for dredged material,

The Masonville plantings are companions to several other groupings that the MPA and community partners installed in 2010 and 2012 at the foot of the Baltimore World Trade Center and its neighbor, the National Aquarium.

Floating wetlands looks like small grassy islands, contained within a frame that floats on the water. The plastic planting matrix is made from recycled plastic that is non-toxic to fish. At Masonville Cove, this was topped with peat moss and dotted with starter plants.

Nothing additional is added. The roots of the growing plants penetrate the fiber mat and take up needed nutrients from the water. Floating wetlands should not need maintenance, and the plants should reseed themselves.

The MPA is supporting floating wetlands as a pilot project that could eventually contribute to a cleaner Chesapeake Bay. They could also help the MPA meet new pollution regulations, known as the Total Maximum Daily Load, that are taking effect across the region.

MPA environmental manager Bill Richardson said that floating wetlands have a high nutrient removal rating with a small footprint. That's a good thing, because an overabundance of nutrients is the major cause of poor water quality in the Chesapeake region.

"It's very cost-effective," Richardson said.

Scientists from the National Aquarium and Maryland Sea Grant have been studying the floating wetlands in Baltimore Harbor.

Laura Bankey, the Aquarium's director of conservation, said they are actively pulling nutrients from the water.

“The plants just took off, growing hydroponically, with no soil,” Bankey said. “They are getting all of their nutrients from the water column.”

Nutrient removal is even greater below the surface.

“When people look at these floating wetlands, they think plants are doing all the work but we know that’s not true,” Bankey said. “There is tons of surface area beneath the water. Natural bacteria coat that surface area and start taking up excess nutrients.”

Paddlers tow the floating wetland into place. Photo/Bill McAllen.

Researchers found approximately 12 different species of fish visiting the wetlands to school in their shade or nibble at its root system. They also discovered that the dark false mussel, another critter that filters pollutants from the water, was actively colonizing the underside.

Bankey is pleased with the findings but said that the scale of the wetlands, in terms of the overall water pollution problem in the harbor, is small.

“This is a great tool, but it can’t be the only tool in the toolbox,” Bankey said. “Floating wetlands obviously provide some great benefits and the more we have the better, but we also have to do everything we can—starting upstream and working all the way down.”

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