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Credit Valley Conservation

Sustainability

Fake floating islands help clean up ponds

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In a pond in Brampton, Ont., are half a dozen oblong islands that weren't there last summer.

These floating green additions are helping treat the water in these wetlands. Each around 1,000 square feet in size, they float in a storm-water pond operated by Credit Valley Conservation, the local environmental authority, which catches runoff from the streets, lawns and parking lots of Brampton.

The floating islands, made and installed by C&M Aquatic Management Group Ltd of Owen Sound, Ont., have two roles: to help filter out some of the pollutants in the runoff water and to lower the temperature of the water.

During the summer, sunlight hitting ponds like the one raises water temperatures by around five degrees, explains Phil James, a water resource engineer with Credit Valley Conservation. Hotter water retains less oxygen, which is bad for fish. The floating islands shade the water under them and lowers its temperature.

In addition, storm water contains all kinds of contaminants. When residents fertilize their lawns heavily, Mr. James says, nutrients from the fertilizer end up in the ponds, causing algae blooms. Chemicals used to clean swimming pools also get into the water, and sometimes used motor oil is dumped into storm grates. The islands help to clean up these contaminants.

Floating Island International of Billings, Mont., pioneered the idea. Founder Bruce Kania was concerned about the quality of water on his rural Montana property, and decided to design something that would mimic the behaviour of natural peat bogs in the area, says Anne Kania, the company's chief executive. Their islands are made from a recycled plastic base buoyed with marine foam, covered with soil and seeded with native wetland plants.

The roots of the plants on the floating treatment wetlands hang down into the water, and many of the pollutants will adhere to these roots, as well as to the material of the islands themselves, forming biofilms, a type of slime that naturally occurs in wetlands.

The islands can be made from recycled plastic bottles, and cost about \$32 per square foot to produce, not including installation, says Arlys Freeman, president of Midwest Floating Island LLC, in Saint Paul, Minn. The largest floating islands to date are about an acre in size, but most are between 25 and 250 square feet.

This summer, Ontario Place in Toronto installed a 150-square-foot floating island outside its new Eco-Learning Centre. The island provides a habitat for birds and small animals on its surface, and for fish in the root system underneath, says Jaime Carnevale, Eco-Learning Centre programmer. It also serves as an example of how recycled material can be used to benefit the environment.

BC Hydro has also built similar islands as part of a project to restore a loon habitat in Neilson Lake in the southern British Columbia interior.

Midwest Floating Island supplied seven islands that the Minnesota chapter of the American Society of Landscape Architects (ASLA) recently installed in Spring Lake, a "severely impaired" two-acre lake in a major freeway corridor in Minneapolis.

Given to the Minneapolis Park and Recreation Board in 1893, Spring Lake has been partly filled in to build the freeway and has suffered badly from runoff and invasive species over the years, says Craig Wilson, president of the ASLA Minnesota chapter.

Like the Brampton project, the Spring Lake one is new and it's too early to say how well it will work. Ms. Kania says at least four articles in peer-reviewed journals have shown the islands are effective.

Case studies posted on Floating Island International's website report significant reduction in levels of nitrogen, phosphorus, ammonia and other contaminants in various floating treatment wetland projects around the world, as well as some successes in using the islands to provide a wildlife habitat.

Barry Warner, chair of the Department of Earth and Environmental Sciences at the University of Waterloo, has a particular interest in wetlands but is skeptical about floating islands. They have mostly

been tried in warmer climates, he says: "This technology has not been used very much in this country." Storm water ponds in particular are tough environments, often contaminated with oil and grease.

"Those are the kinds of contaminants that wetlands and wetland plants may have to work a little harder to deal with," he explains. The idea has potential, he says, but is not fully understood yet.

Mr. James isn't denying that the jury is still out. The Brampton project is designed largely to see how well floating treatment wetlands will work, and in a few months Credit Valley Conservation hopes to have enough data to start answering that question. Depending partly on those results, the authority may install more floating wetlands treatment this fall or early next spring.

These manufactured islands aren't intended to be a magic solution to water pollution. At best, they will work in conjunction with other technologies and with attempts to educate the public to be more careful about the contaminants they dump. "There's not one specific measure that's going to solve all the problems," says Mr. James. "Each measure will build on the next, and the cumulative effect is what we're looking for."

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Editor's note: The previous version of this story did not cite C&M as the makers of the Brampton islands. This version has been corrected.

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