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Duct Tape Methods to Save the Earth: Build Wetlands from Scratch

Save coastal marshes and clean up polluted waterways with plant-covered rafts

By Rena Marie Pacella; Illustrations by Graham Murdoch Posted 06.29.2007 at 2:00 am



wetlands_485.jpg Bobbin' for Birds: The same adhesive foam that makes boats buoyant keeps these artificial ecosystems afloat.

Where: Coastal areas

Cost: \$800 million per square mile of island

The Problem

The wetlands are losing ground. Crops and condos are rapidly overtaking much of the waterlogged land-home to thousands of bird and animal species-while pollution and sea-level rises take care of the rest. With this loss comes drastically reduced water quality, increased flooding of surrounding areas and the looming specter of the extinction of many species.

The Fix

Construct archipelagos of boat-size to basketball-court-size islands out of recycled plastic and foam, plant habitat-specific vegetation, and set the islands afloat wherever natural wetlands once thrived.

Along with rainforests and coral reefs, wetlands are the most active and diverse ecosystems on the planet, serving as a home or breeding ground to one third of all bird species, 190 amphibians and more than 200 types of fish. Wetlands filter out excess nutrients and pollutants by trapping them in roots and soil where plants and bacteria break them down into less harmful substances.

To mimic wetlands, inventor Bruce Kania starts with layers of polymer mesh bonded together with adhesive foam and carpets them with sod and wetland vegetation. Plants are selected to attract insects, frogs, waterfowl, beavers or whatever wildlife is native to the area. As the plants grow, their roots weave their way through the plastic matrix to the water below. Microbes cling to the polymer fibers and colonize the root system, forming a slimy layer of "biofilm" that purifies the water and oxygenates it. (It is unclear whether the islands will help limit flooding.)

Kania first tested his "BioHavens" in algae-infested ponds on his farm in Montana. The BioHavens filtered fertilizer runoff and suppressed harmful algal blooms in the ponds. Now some 3,000 of these ready-made ecosystems are floating at trouble spots around the globe, including a chain of BioHavens in a reservoir in Singapore that absorb waterborne pollutants.

Next Steps

Kania is confident that his islands work, but he may soon receive independent data that will prove it. Consulting engineer Frank Stewart, with a two-year grant from the state of Montana, is wrapping up water-quality tests conducted on the BioHavens in huge fish tanks. They could provide the first solid evidence that the islands clean water.

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1 COMMENT



Lucoss

Li

09/24/09 at 3:16 am

Wow, the picture is really a very cool place, has mountain has Lake ,for a peaceful and quiet, hope that this island as soon as possible, to provide good bird shoals of fish habitats

<http://www.dragonflytours-japan.com>

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