

Artificial Floating Wetlands for Nutrient Removal

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Artificial floating wetlands (AFWs) offer a unique way to reduce the amount of nitrogen and phosphorous in a water body using natural microbial action and obligate aquatic vegetation. Planted with the same species of macrophytes that might be grown in a land based constructed wetland, we extend the range of the vegetation out into deeper waters of a lake or pond. Using an artificial substrate, AFWs are anchored offshore in water depths that exceed the normal habitat requirements of the plant material and yet are able to continue to provide the same water treatment ecosystem services as their land based counterparts. Microbiological activity plays a major role in nutrient removal in wetland systems and the large surface area of the woven floating wetland material provides a tremendous amount of substrate for the growth of bacteria. The drawback to using AFWs is that the expense of the commercially available products makes it unlikely that they would be purchased without the funding of grant, municipal or corporate dollars. To this end, we've engineered a lower cost Do-it-Yourself floating wetland using layers of commercial outdoor pond biological filter media, marine foam floatation and native obligate wetland plants. This poster describes the design, materials and tools we use, and provides pond owners the information to build and install their own artificial floating wetland.



Cut three 10ft sections from a 5ft x 90ft roll of Poly-flo pond Filter material.



Forming the base by zip tying 3 layers of Poly-Flo filter material together.



Mixing and pouring 2-part marine grade floatation material into filter material. Flows into material starting as liquid and expands into closed cell foam. Also aids to glue filter sheets together.



Bottom of wetland with extra foam.



On site, drilling 2in holes for plant material.



Plant holes are filled ¾ with peat moss.



Six species of obligate and facultative wetland plant species selected.



2 in plant plugs were planted into the fill of peat moss.



Assembling artificial floating wetlands on location.



Towing artificial floating wetland to anchoring location.



Artificial floating wetland anchored using two concrete blocks. To test for avian predation effects, 1/2 is protected with fencing and the other half is open.



Artificial floating wetland 6 weeks after installation showing healthy flowering plants. The plants, along with large amounts of bacteria colonizing the filter material, remove nutrients from the pond water.