



“WET & WILD” FLOATING TREATMENT WETLANDS

(Author’s Note: This is the twenty-fourth in a series of articles by members of the City of Sanibel Vegetation Committee dealing with vegetative matters of concern to island residents. Members of the Vegetation Committee are Sanibel residents appointed by City Council for one-year terms. To be considered for appointment, contact the City Manager’s Office at (239) 472-3700.)



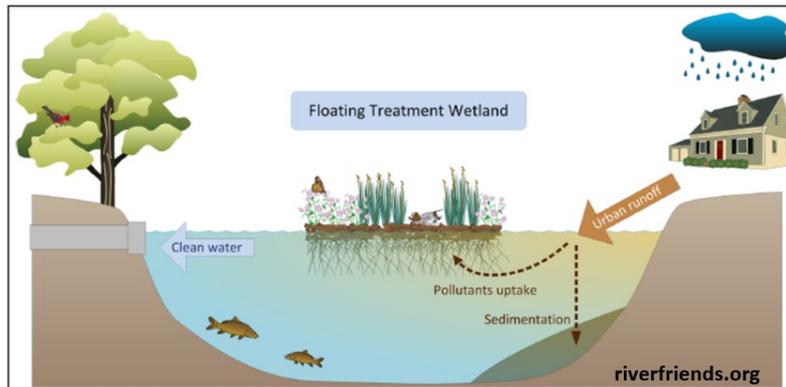
So, what is that happy place for this great egret, sunning on its own private island? It’s a floating treatment wetland!

What is a floating treatment wetland?

A floating treatment wetland (FTW) is a platform for plants that can float on the water's surface. A FTW can be placed in any waterbody regardless of depth. The FTW allows plant roots to grow directly into the water column of a nutrient-rich waterbody, helping to remove excess nutrients (nitrogen and phosphorus) to improve water quality. A FTW enables wetlands to be used where it would otherwise be impossible, such as developed neighborhoods. FTWs are a best management practice that provides a passive approach to improving water quality through natural process of plant nutrient uptake.

What is the benefit of a floating treatment wetland?

Nitrogen and phosphorus are nutrients that are essential for plant growth. Fertilizers containing both are used for agriculture and ornamental landscapes. When these nutrients enter the aquatic environment through runoff, they can cause nutrient pollution problems, which can lead to algae blooms and fish kills. Installing FTW's in waterbodies will absorb the excess nutrients from the water, thereby improving water quality.



Can I make my own floating treatment wetland?

Yes! There are a number of different materials and methods for assembling a floating treatment wetland. We are continuing to experiment with different materials for the platforms as well as using a variety of plants to see which plants provide the greatest benefit for improving water quality. The materials and tools used to construct our FTW's are easily obtained. Most are available locally, while some are found more readily online. The following application was used in our Sanibel community lake:

- Foam flooring mats, 2x2 feet each
- Aquatic plant baskets, 10x10 inches
- Coir (coconut fiber) sheet, preferably not latex-treated, cut to 18x18 in. for each basket; or pre-formed plant basket liners
- Cable ties:
 - 8-inch (for attaching baskets to mats)
 - 11-inch (for joining mat units)
 - 14-inch (for anchoring top-heavy plants, if needed)
- Electric knife (for cutting foam mat and coir sheet)
- Hollow punch drill bits (for creating guide holes in mats)
- Power drill
- Nylon rope
- Anchor weight (if needed)

Cut an “X” in the center of a mat, keeping the cuts slightly smaller than the basket dimensions to ensure a snug fit (Step 1). An electric knife makes quick work of this task, but heavy shears or a slender hand saw can also be used. First drilling a pilot hole at the mat's center point is helpful; it is much easier to create holes using a power drill equipped with hollow punch bits than with a hand-operated punch.

Next, using a small hollow punch bit, drill two holes, about 1½ inches apart, in each of the flaps created by the “X” cuts (Step 2). Ease an aquatic plant basket through the “X” until the rim makes good contact with the mat surface (Step 3). Then, thread an 8-inch cable tie through the holes and basket on each side, securing firmly to hold the basket in place (Step 4).

Using an electric knife or heavy shears, cut an 18x18-inch square of coir sheet and use it to line the interior of the aquatic plant basket (Step 5). For thick material, it may be necessary to snip it deeply and overlay the flaps so that the cut sheet lays neatly within the basket. Alternatively, a commercial coconut fiber basket liner, which is typically much thinner, can be used without the need for cutting.

A basic “mat unit” is constructed of a single foam mat and one aquatic plant basket. Units can then be joined to create a larger surface that will support multiple plants; we find that combining four units into a 4x4 foot square is small enough for two people to handle once planted. To join mat units, place them in the desired configuration, connecting any interlocking edges to keep them close together. Drill three evenly spaced pairs of holes along each joining edge; thread an 11-inch cable tie through each pair of holes, securing firmly.

Now comes the truly fun part: planting! The choice of plants can generally be guided by light and salinity levels, but don't be afraid to experiment! Not sure where to begin? Observe the native plant life growing well around the edges of waterbodies and in wet areas in your community. Those plants, or related varieties or species, are a great place to start.

Place one or more plants in each basket, using firmly-tamped soil and leaving some growing room. While most plants will not need to be secured further, taller ones may benefit from being anchored. If needed, loop long cable ties between opposing sides of the basket, passing through the plant base and forming an “X” over the soil surface of the planting; we link two 14-inch cable ties, which are sufficiently slender, to create each of these two loops. We also avoid plants anticipated to measure more than about 24 inches in height, as they may prove too top-heavy in significantly windy conditions. Particularly for larger FTW's, which may be heavy once completed, it is helpful to finish the planting close to the launch site.

The FTW is now ready for launch! Any number of locations may be utilized. FTW's may be secured to a dock or other structure, or they may be placed further out within a body of water. We attach our FTW's to a cinder block anchor using heavy nylon rope.

FTW's periodically need some inspection and maintenance, but the time commitment is fairly minimal. Plants which do poorly or fail should be replaced with other varieties better suited to the local environment. Once constructed and established, these islands only require annual harvesting to keep the dying material from the waterway, but are otherwise maintenance free. Harvesting and replacing the plants is one of the most important steps in maintaining your FTW. Mature plants are filled with nutrients absorbed from the waterbody, so removing the plant removes the nutrients from the waterbody. Installing new plants on the FTW resets the nutrient removal cycle.

Our community's water body has responded, in part to the installation of FTW's, with improved water clarity and a notable increase in wildlife visitors, including waterfowl, osprey, fish, and turtles. Ongoing experiments and design adjustments are aimed at incorporating additional plants species (hopefully turtle-resistant, since these creatures find many of the roots quite tasty) and providing the plant roots with protected space in which to grow. We are also continuing to follow water quality metrics obtained by the City of Sanibel and the Sanibel-Captiva Conservation Foundation (SCCF), in hopes of seeing measured improvements.

The water pollution solution is a team effort. Have questions? Need more information? Contact the City of Sanibel's Natural Resources Department for more information: (239) 472-3700.

Where can I learn more about native plants on Sanibel? The Vegetation Committee hosts free plant walks from November to April at City Hall to view and discuss the use of native plants. Everyone and their questions are welcome!

Go native with the right help!

To view pictures of the Invasive Exotic Plants "Worst of the Worst" or the City's "The Alien Invasion" brochure, visit the City's website at <http://www.mysanibel.com/Departments/Natural-Resources/Vegetation-Information/Exotic-Vegetation/Other-Invasive-Exotic-Vegetation> or contact the City's Natural Resources Department at 472-3700.

To read other Vegetation Committee articles in this series please visit the City of Sanibel's Natural Resources Department website: <http://www.mysanibel.com/Departments/Natural-Resources>