

The Floating Gardener

A Publication Provided by The Magothy River Association

Rising to the Challenge of A Rising Tide – A Letter From The Editor

As our planet's climate continues to warm and people across the globe cope with rising temperatures and the accompanying rise in sea level, Earth's residents have risen to the challenge in a number of creative ways. For some, their very survival depends on adapting their way of life to contend with the changing environment, including figuring out how to live and even grow crops on land that is now routinely inundated with water. Although lives and livelihood in our community haven't been dramatically impacted by rising seas yet, it's getting easier for us to imagine a time when they will be. A high tide that would have been remarkable only a few years ago has become almost commonplace and we're no longer surprised when a pier that was built to be well above the water line at mean high tide disappears below the surface when a particularly high tide flows in.

Those of us who have launched floating gardens do so for a variety of reasons. For some, the prospect of having an attractive and interesting collection of emergent plants alongside the pier has aesthetic appeal. For the environmentally conscious, the idea of contributing to the good health of the Magothy, the Severn and the Bay, even if in a small way, is personally satisfying. Plants in a floating garden make a sustainable green engine, filtering nutrient run-off, using the excess nitrogen and phosphorus to grow and flower, and returning oxygen to the water that's necessary for the survival of aquatic life. In Anne Arundel County, we're lucky to live in close proximity to several large and important bodies of water. Locally, we concern ourselves with sustaining our good quality of life, which in part means maintaining the quality of our local waterways so we can enjoy boating, swimming, fishing, crabbing, etc. Globally, however, there are many who use floating gardens and wetlands to sustain not only their quality of life, but life itself. Necessity is, of course, the mother of invention and many of our earthly neighbors have taken the floating garden concept and adapted it in a way that ensures the survival of their families and communities.

In this issue, be sure to take a look at the many creative variations of floating gardens found throughout the world - there are lessons we can learn from each. As we continue to "build a better mousetrap", taking cues from other designs can give us ideas for future construction. Over the course of several years the MRA has adapted its original floating garden design, each iteration offering an improvement over its predecessor. We've had input from MRA members, non-members, college and high school students for design and material enhancements that have proven valuable. Check out the design that the STEM students from South River High School came up with in the next article.

If you have ideas for how we might improve the current floating garden design and/ or a suggestion for material substitutions that could reduce the cost of construction, please send them to mrafloatinggardener@gmail.com. We look forward to hearing from you!



Upcoming Events

September 20

MRA Monthly Meeting
Berrywood Community Clubhouse
7:30 PM

October 7

Cape Conservation Corps
Native Plant Sale

9 – 12 AM

Located in the field behind the
Cape St. Claire Clubhouse

Contacts:

Paul Spadaro - President,
Magothy River Association
(president@magothyriver.org)

Michael Norman - Anne
Arundel Community College
(cmnorman@aacc.edu)

Nathan Ullrich – The
Providence Center
(nullrich@providencecenter.com)

Lise Crafton - Editor, The
Floating Gardener
(mrafloatinggardener@gmail.com)

South River High School – STEM Floating Wetland Project

In the spring of this year, STEM (science, technology, engineering and mathematics) students from Eleonor Nulud's AP Environment and Society class at South River High School loaded up a yellow school bus with newly constructed floating wetlands, plants, ropes and other materials needed for installation and traveled to 3 locations throughout the county to launch them. The floating gardens the MRA currently build and distribute as part of the Magothy River Association's floating garden initiative have been constructed using Styrofoam as the floatation device. Styrofoam was never an optimal choice – the material is not sustainably produced, nor is it easily recycled. Also, it tends to disintegrate with continued exposure to sun and weather, not to mention the sporadic nibbling of ducks and fish. The

wetlands designed and built by South River students as part of a semester-long class project won't have the same Styrofoam issue. The class adopted a simple but effective method for wetland construction. Drain pipes were shaped into a six-foot-long oval, and then sandwiched between hardware cloth. For buoyancy, the pipes were filled with capped recycled plastic bottles, which the students collected from their classmates at lunch time. The wetlands were then lined with coconut fiber, intended to serve as an anchorage for the roots of two native emergent plants; smooth cordgrass (*Spartina alterniflora*) and seaside goldenrod (*Solidago sempervirens*). Details of the initial launch were covered by Rachael Pacella of the Annapolis Capital Gazette, whose photos appear in this article.

<http://www.capitalgazette.com/news/environment/ph-ac-cn-south-river-0515-20170514-story.html>



The students conceived the idea for floating wetlands as a result of research conducted in the school's AP Environment class, a prerequisite for Environment and Society. The Howard County Public School System provides the curriculum for a Statewide Watershed Report Card (WRC), a project led by the Howard County Conservancy in partnership with the Maryland Department of Natural Resources (DNR). Teachers in all Maryland counties can use this curriculum to support students in collecting and using stream data to create and implement stewardship projects.

South River students observed high levels of phosphates and nitrates, which contribute to the poor water quality in local rivers. The solution, multiple floating wetlands, was proposed, led and executed by the environmental students. They were subsequently invited to present their findings to state delegates, senators, and environmental officials at the Maryland Watershed Summit, held at the Miller Senate House in Annapolis on May 10. South River's floating wetlands idea was unique among the many native planting projects other schools presented this year. Here's a link to the WRC that includes a short video clip of the summit.

<http://hccranger.wpengine.com/statewidewrc/>



Floating Gardens From Around the World

There are a wide array of designs used to create floating gardens in different parts of the world, each adapted to local conditions and available materials. In southeast Asia, lashed bamboo is often used as a raft for plants, while in the Pacific northwest cedar logs provide multiple benefits – they're quite buoyant and resistant to both insects and decay.



Farmers in places like Bangladesh have employed floating beds, or baira, for years using the basic method described in the accompanying diagram, but they're currently facing a new challenge. As sea levels rise, sea water is entering rivers, increasing the salinity. Water hyacinth, which was traditionally compacted to make a base for the floating garden beds, cannot survive in salty water. Researchers are looking for a viable alternative, but with only limited success so far.



How floating gardens are created

Still water protected from strong waves in canals, ponds, rivers, lagoons and wetlands is a good place for floating beds or baira

6 Winter crop
When floodwater recedes in late autumn, the platforms are broken, mixed with soil and gardening plots are prepared on land

5 Vegetables are harvested, while seedlings are used for early cultivation of the winter crop

1 Bed preparation
During monsoon, water hyacinth is gathered and compacted into rafts. At intervals of 8-10 days, more layers are built using water lettuce, duckweed and salvinia. In some places coconut husk or soil is spread over the bed. Top layer provides the compost

2 The organic bed is allowed to rot for 15 to 30 days. It is then anchored by placing bamboo poles around it

4 After a week, when the seedlings are 15 cm long, the balls are transferred to the raft. In some areas, seeds are sown directly in the coconut husk spread over the rafts. Vegetables grown are okra, cucumber, gourds, amaranth, red amaranth, egg plant, pumpkin, spinach

3 Vegetable cultivation
Seeds are placed inside small balls made of aquatic plants like creeping grass *durali* and salvinia fern. These plants are dried and moistened before making balls

ILLUSTRATION: TARIQUE AZIZ / CSE

Floating gardens can be adapted to urban environments too.

Sometimes even an old tire can be drafted into service as a garden float, as the Gowanus Canal Conservancy in New York has found.



Here are just a few more creative examples to float your boat, er, I mean garden.



Myanmar



Wagga Wagga, New South Wales, Australia



Location unknown



Location unknown

Summer's Last Hurrah

There are only a few weeks left until summer steps aside and autumn moves in. Days are shorter and cooler, but nature's response is fiery. Red, orange and yellow are already replacing summer's shades of green. A few of our summer natives, like Hibiscus and Kosteletzkyia (saltmarsh mallow), pictured on the right, are still producing white to pink flowers, but now the fall bloomers are starting to kick in.



As of the summer's abundant food and nectar sources become scarce, fall flowering plants play a critical role for both migratory species and other wildlife that will overwinter locally. Marsh fleabane (*Pluchea odorata*) is in full bloom now, its clustered pink flowers are popular with foraging native bees. The bees are also buzzing about New York ironweed (*Vernonia noveboracensis*), whose loose purple blooms stand tall, putting them within easy reach of butterflies too. Delicate seed heads are forming on *Panicum*, commonly known as switch grass. They are both lovely to look at and double as bird food. Soon solidago (seaside goldenrod) and salt marsh aster (*Symphyotrichum tenuifolium*), pictured at left, will start to bloom. The native emergent plants of autumn are truly something to celebrate. Huzzah!



The yellow-spiked heads of goldenrod are a particular favorite of migrating Monarch butterflies – it's one of their primary food sources in the fall. Often confused with sneeze-inducing ragweed, goldenrod is sometimes removed by homeowners who have misidentified this beneficial native plant and are looking for relief from their allergies. Use these photos to see the difference between the two before you pull out the wrong culprit. This YouTube video might also help: <https://www.youtube.com/watch?v=cq4eeQHq7I>



Solidago (seaside goldenrod)



Ragweed



Goldenrod



Common ragweed (Ambrosia artemisiifolia)

To access additional information about any of the emergent plants described above, the MRA's Emergent Plant Guide may be found in the April/ May 2016 issue of The Floating Gardener. <http://www.magothyriver.org/wp/wp-content/uploads/2016/01/Floating-Gardener-May-2016.pdf>.

For a more comprehensive list of native emergent plants in Maryland, please refer to the DNR's website information at <https://www.nps.gov/plants/pubs/nativesmd/lists.htm>

Finally, for more information on floating gardens and back issues of The Floating Gardener, please refer to the MRA's website at <http://www.magothyriver.org/projects/floating-gardens/>

Late Season Floating Garden Maintenance

"So what should I do with my floating garden now that it's the end of the growing season?" There are several options. You may:

1. Pull the float out of the water and remove the plant baskets. Allow the plants to die back naturally, then put them in a protected area outside to over-winter. If possible, store the float out of the weather – it will probably last longer that way.
2. If you elect to leave your floating garden in the water for the winter, trim the plants back to their base and compost the cuttings. Leaving them in the pots makes a mess and adds unnecessary weight to the floats over the winter. A benefit to this method is that you'll have a head start when the plants begin to re-grow in the spring.
3. Same as #1., except you can return your plants and baskets to the Providence Center greenhouses in Arnold to be recycled. Your basket will be refilled for \$10.00 in the spring. You can also elect to purchase new, filled plant baskets for \$15, without an exchange. Contact Nathan Ullrich at nullrich@providencecenter.com

Contact Us:

To send questions, comments and photos, or to unsubscribe email: mrafloatinggardener@gmail.com