The Floating Gardener

A Publication Provided by The Magothy River Association

Fish Gotta Swim – A Letter from the Editor

As the mercury ratchets up to the 100 degree mark and the humidity races to keep up, there's no denying it's high summer in Maryland! Is it just me or does summer always feel a little anticlimactic once the sparkle of those 4th of July fireworks fades from the sky? By the calendar, however, there are still nearly six weeks until Labor Day. Between now and then your floating gardens will be doing their hardest work yet, as they take those sweltering sunny days, add some water and CO_2 (carbon dioxide) and produce O_2 (oxygen) through the process of photosynthesis. Yep, carbon dioxide, one of the villains in a global environmental drama, is actually fuel for the remarkable photosynthetic engine that produces life-sustaining oxygen as, get this, a *by-product*! Now THAT's serendipity!

Dissolved oxygen (DO) in the water is essential to the health of our rivers and the Bay. Oxygen is present in the atmosphere at about 21 percent, but less than 1 percent in water. That small percentage can be further depleted by natural factors. Cooler water can hold more DO than warm water, so as the air temperature rises, the level of DO in the water goes down. Fresh water holds more oxygen than salt water so that oxygen levels decrease as salinity increases. Oxygen is also lost through the decomposition of organic material. Of course, that occurs naturally as well, but disposal of organic matter in the form of garbage, yard waste, sewerage, etc., puts additional stress on an already delicate system. Other nutrients, like lawn fertilizer, run off into waterways and stimulate the growth of more oxygen-demanding organic matter. When oxygen's lacking, fish die, algae blooms, bacteria thrive and we need to literally test the waters before knowing whether it's safe to swim.

Emergent plants can help reduce the nutrients and add oxygen to the water, but just how much of a difference does it make? Plants can obviously work harder where they thrive. Are some plants better suited for certain locations and different salinities? What is the capacity of the plants to reproduce and be self-sustaining?

Have I succeeded in 'wetting' your appetite for some results of Anne Arundel Community College's research? It spans the last two years of the floating garden project. At the end of each season, floating gardens were returned to AACC, where students assessed specific attributes of individual plant varieties, assigning numerical values as a way to quantify their vitality with respect to the many locations in which they were growing. A summary of the project, a sample table with numbered scores and graphic representations of that data are included in this issue. Your floating gardens will undergo a similar assessment at the end of this season and add more valuable information to this ongoing research.

Upcoming Events

October 4

Magothy River Association Picnic

Gibson Island – more info TBA

Happening Now

Floating Gardens still available at the Providence Center! Contact Nathan, nullrich@providencecenter.com

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)

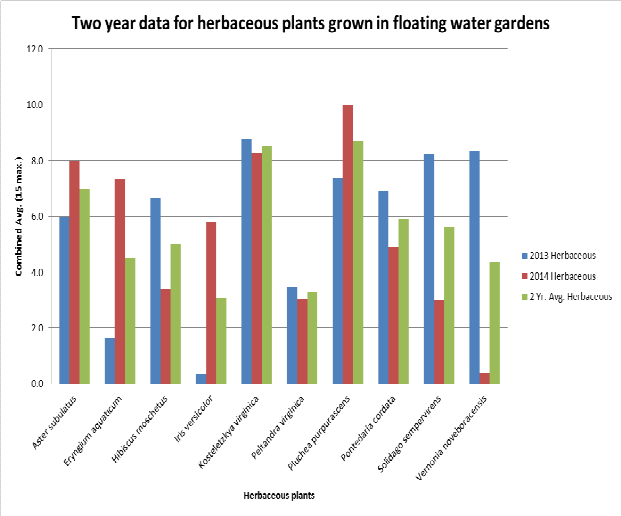
Lise Crafton - Editor, The Floating Gardener (mrafloatinggardener@gmail.com)

AACC - MRA Water Garden Project (information provided by Michael Norman, AACC)

What is a Water Garden? A water garden or 'floating garden' or is a man-made aquatic feature, deployed into a body of water, which provides adequate buoyancy for the establishment of plant communities. (Note: this definition is used in the legislative piece that proposes a tax credit for participants. See '**Clean Waterways Tax Credit Act**', included in this issue)

The water garden project has been in progress since spring of 2013 and has seen three modifications to its design. There are currently 22 plant varieties being evaluated for growth and survivorship. For the 2014 season the college produced 150 water garden baskets. Project participation has included 12 service learning* students with over 250 hrs. of combined service, 8 – 10 MRA volunteers working at the college and building floats, and three AACC faculty and staff. We had 35 study participants in 2013, with 18 of them continuing their participation in 2014. In 2014 there were new floats and baskets sold to an additional 50+ Magothy waterfront homeowners.

2014 Volunteer float combined averages for 2013, 2014, and the two year average				
Plant Type	Plant Name	2013 Average Combined Score	2014 Average Combined Score	2 year Average Combined Score
G	***Acorus calamus***	6.4	6.0	6.2
G	***Panicum virgatum***	9.7	6.0	7.8
G	***Scirpus americanus***	4.7	4.8	4.7
G	***Scirpus robustus***	8.7	2.9	5.8
G	***Spartina alterniflora***	6.3	6.6	6.5
G	***Typha latifolia***	5.9	6.7	6.3
H	***Aster subulatus***	6.0	8.0	7.0
H	***Eryngium aquaticum***	1.7	7.3	4.5
H	***Hibiscus moschetus***	6.7	3.4	5.0
H	***Iris versicolor***	0.4	5.8	3.1
H	***Kosteletzkya virginica***	8.8	8.3	8.5
H	***Peltandra virginica***	3.5	3.1	3.3
H	***Pluchea purpurascens***	7.4	10.0	8.7
H	***Pontedaria cordata***	6.9	4.9	5.9
H	***Solidago sempervirens***	8.3	3.0	5.6
H	***Vernonia noveboracensis***	8.3	0.4	4.4



These gardens are modified hydroponic systems which differ from a typical hydroponic design by relying on available nutrients in a body of water rather than from a prepared mineral nutrient solution.

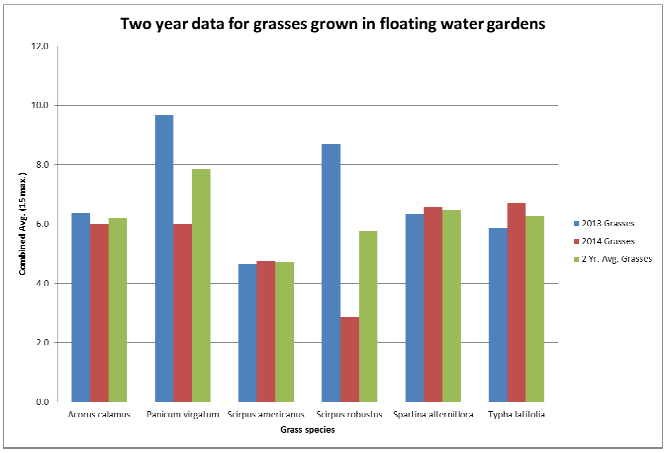
Floating gardens are most often planted with native aquatic plant varieties.

They provide important environmental services such as the reduction of nutrients in surface waters, increased oxygen levels, added biodiversity, and habitat for wildlife.

Finally, these systems have aesthetic value and allow for increased citizen participation and environmental education opportunities.

The AACC students benefit from the project as well. *Service-learning combines academic studies with community volunteer service, enhancing student learning through a hands-on experience that meets a community need. Students get a "real world" experience, learn new skills, explore potential career opportunities and interact with people in the community from different backgrounds.

These are but 3 examples of the kind of data generated via end of season analysis of the floating gardens over the last two years. If you are interested in reviewing additional data that was collected or you would like a more detailed explanation of the information presented here, please send an email to either mrafloatinggardener@gmail.com or cmnorman@aacc.edu



Clean Waterways Tax Credit Act – SB85

Senator Bryan Simonaire is the lead sponsor of the Clean Waterways Tax Credit Act, proposed during Maryland's 2015 legislative session. The following is an excerpt from that bill:

This bill creates a nonrefundable tax credit against the State individual income tax for100% of the purchase price of equipment purchased during the taxable year that is used to install or maintain floating gardens. A floating garden is a device that is a man-made aquatic feature that is deployed into a body of water, provides adequate buoyancy for the establishment of plant communities, is planted only with native aquatic plants, relies on available nutrients in a body of water rather than a prepared mineral nutrient solution, and provides environmental benefits. The credit may not exceed the lesser of $500 or the individual's State income tax liability. Any unused amount of the credit may not be carried forward to another taxable year.

The bill takes effect July 1, 2015, and applies to tax year 2015 and beyond.

If you'd like to read the bill in its entirety, here's the link. http://mgaleg.maryland.gov/2015RS/fnotes/bil_0005/sb0085.pdf

I contacted Senator Simonaire to ask about the status of this bill and whether it would, in fact, take effect this year. Here is his response.

"Thank you for contacting me. Yes, I was a supporter of the tax credit for Floating Gardens, in fact, I was the lead sponsor of the bill. We had wonderful testimony from your community and around the county. The National Aquarium's floating garden program was also presented and received well. This is the second year I submitted the legislation and we are making progress. I thought we had the votes for the bill this year, but we ran out of time and a vote was not taken. I am hopeful we can pass this in the next session. Any participants in the floating garden efforts would be welcomed for next year's hearing to present real life experiences."

Grateful for his invitation, I have requested that Senator Simonaire's office provide advance notice of the hearing on this bill next year. If you are interested in participating, please send your name and contact info to mrafloatinggardener@gmail.com so I can notify you.

Underwater Grass (SAV) Trays

Back to the Future!

New this year is a revitalization of the effort to grow underwater grasses, also known as SAV's (submerged aquatic vegetation). The June issue of The Floating Gardener supplied some history about an earlier attempt at underwater grass gardening that was ultimately thwarted by lack of available seedlings. This project is being conducted on a pilot scale with a limited number of "trays" deployed. The high tech system utilizes PVC pipe, laundry baskets, milk crates and a custom wire cover that prevents ducks and geese from eating the developing seedlings, which include *Ruppia* and *Redhead,* both species of aquatic plants that are common in the Chesapeake Bay.

Emergent plants need shallow water and a natural shoreline in which to anchor their roots. They cannot grow successfully where bulkheads have replaced gradually sloping shorelines. Underwater grasses, however, are *submerged* aquatic vegetation and thus have more flexibility. Where conditions are right, underwater grasses can thrive in deeper water so that a bulkhead and a healthy crop of SAV's need not be mutually exclusive. Because bulkheads predominate in the highly populated areas locally, a successful reintroduction of native underwater grass varieties could be hugely beneficial. Underwater grasses provided the filtration, oxygen and critter cover in the past that translated to soft crabs in our creeks. Now they may be our best hope as the filter of the future - an environmentally friendly and cost efficient way to secure long term health for the Chesapeake Bay and its tributaries.



Float photos by Lise Crafton

Emergent Botany 101!

Here are two more of the plant varieties you may find in your floating garden. To further investigate these or other varieties in which you're interested, please feel free to explore via the two reference sites. http://plants.usda.gov/java/ & http://www.wildflower.org/explore

Photo courtesy of the Lady Bird Johnson Wildflower Center

Plant Profile

Scientific Name: *Kosteletzkya virginica*

Common Names: Seashore mallow, Virginia saltmarsh mallow, Virginia Fen-rose.

Description: Seashore mallow is an obligate wetland perennial native to coastal brackish marshes of the Atlantic and gulf coast regions. Although a perennial, this plant has a relatively short life cycle and will reach full maturity in about five years then decline; ample time for it to re-seed itself. It has a coarse upright habit that forms and attractive 4 - 6' shrub with open hairy branches of bright green, triangular to ovate leaves. *K. virginica* grows best in full sun under swampy conditions or regions of regular inundation. It prefers acidic soils and higher salinities but tolerates a wide range of soil conditions, and salinities from 0 – 15 ppt. Seashore mallow puts out an impressive bloom from July – September of 3" light pink flowers with bright yellow fused stamens. The flowers are attractive to both bees and hummingbirds. The numerous dark brown capsules that form on the plant throughout the season provide food for wildlife and give this plant an attractive winter form in the landscape.

Photo by Michael Norman

Plant profile

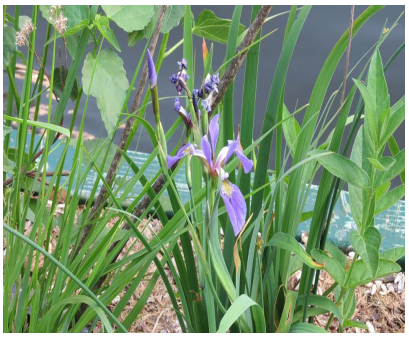
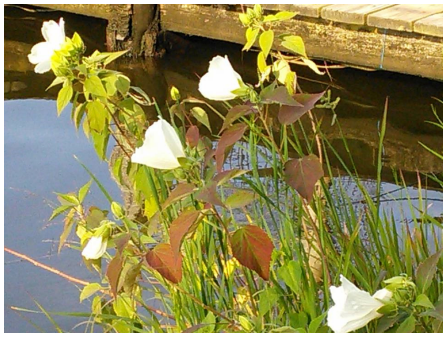
Scientific name: Spartina alterniflora

Common names: Smooth cordgrass, Saltmarsh cordgrass

Description: Spartina alterniflora is an obligate warm season perennial grass that grows 4 – 7 feet tall. It prefers full sun and is tolerant of salinity conditions from brackish to highly saline. Spread from this plant is rapid through an extensive vegetative rhizome system. The flower is a spike 10 -12" long borne on taller spongy stems from September through October. Considered the dominant grass growing in coastal marshes along the Atlantic and Gulf coast smooth cordgrass plays an important role in the vast brackish and salt marshes along the eastern seaboard from New Foundland to Texas. Growing most often in the intertidal regions, this plant is highly effective at dissipating wave energy, stabilizing sediments, absorbing nutrients, and providing food and habitat in both natural and man-made wetlands.

Gardeners' Forum:

This month featuring images of floating gardens in all their summer glory! Do you have photos or observations to share about your floating gardens that you'd like to see included in next month's issue? Please send them to mrafloatinggardener@gmail.com

Iris photo by Kitty Cook Chatelain. Milkweed and hibiscus photos by Sandy Spadaro

Coming Next Month:

The Providence Center – A partnership that's 'growing'!
Progress Report – Underwater Grasses (SAV) garden project
Emergent Botany 101 (continued)
Gardener's Forum