

HEADWATERS

PUBLICATION OF MARYLAND SEA GRANT EXTENSION WATERSHED EDUCATORS

INSIDE THIS ISSUE

- + CHARACTER STREAM
- + A RAIN GARDEN SIGN FOR THE FOUR SEASONS
- + OUTDOOR ETHICS FOR PATAGONIA AND YOUR LOCAL PARK
- + DOES IT NEED A BOARDING PASS?
- + BUILDING RESILIENCE FROM THE GROUND UP
- + THE GOOD, THE BAD, THE UGLY: POND MAINTENANCE

DEAR READERS:

We here at Headwaters know that news travels fast and you need the freshest ideas and content. To feed that hunger, this issue will feature a new section called "Character Stream." In this section you will find recent news, partner programs, and the freshest content about watershed restoration, community resilience, behavior change, and water quality science written by others- in easily digestible 140 character newsbites! We hope you will enjoy this new offering and consider following **@shesashinyotter**, **@lefthandjen**, and **@cleanwatermd** where you can find this content and much more from the Watershed Protection and Restoration Team.

For more information on how we support Chesapeake Bay restoration, please visit our website, www.extension.umd.edu/watershed.

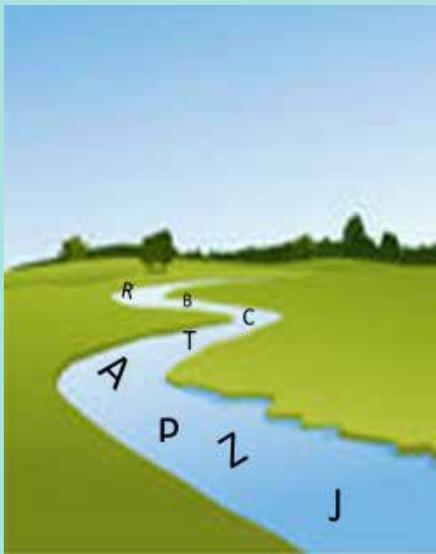
Sincerely,

The Maryland Sea Grant Extension Watershed Educators Team





CHARACTER STREAM



Newsbites about watershed restoration, community resilience, behavior change, and water quality science in 140 characters or less! Follow [@shesashinyotter](#), [@lefthandjen](#), and [@cleanwatermd](#) for hot topics and trends in the world of water.

Scientists have “reached point where we can look for human influence on climate in weather events, and ... find it.” <http://go.umd.edu/wwr>

Sea Level Rise Swallows 5 Whole Pacific Islands. <http://go.umd.edu/wwj>

Scientists give Chesapeake Bay ‘C’ grade for first time since 2002. <http://fw.to/anLcINE>

Anna Glenn, Baltimore County Extension phenom, invites you to the Urban Homesteading series: <http://go.umd.edu/wog>

It is important to prepare your property for clean water in spring! <http://go.umd.edu/3zh>

Baltimore’s new #neighborhoodgrowcenter opened April 2nd! Gardening & stormwater workshops! <http://go.umd.edu/38d>





A RAIN GARDEN SIGN FOR THE FOUR SEASONS

+ KRISZTIAN VARSA

+ NEW RAIN GARDEN SIGN INSTALLED AT BALTIMORE COUNTY MASTER GARDENER DEMONSTRATION GARDEN



Visitors to the Master Gardener Demonstration Garden at the Baltimore County Ag Center will be welcomed by new signage in 2016. The new rain garden sign is unique in that it was conceived, designed, and written in-house by local talent in Baltimore County.

Extension Horticultural and Watershed Restoration Programs, and Graphic Designer for Baltimore County Trish Moore, the Baltimore County Master Gardeners' new sign accurately depicts the life of the rain garden through the four seasons. The prominent sign, installed in May 2016, uses easy to read language and effective callouts for details. The sign

Working collaboratively with the University of Maryland





“The new rain garden sign is unique in that it was conceived, designed, and written in-house by local talent in Baltimore County.”



also features QR codes directing visitors to resources for installing their own rain gardens and the significance of using native plants in their landscape.

The Master Gardeners hope that the sign will set a precedent for high quality interpretive signage in the Demonstration Garden and beyond. 💧





OUTDOOR ETHICS FOR PATAGONIA AND YOUR LOCAL PARK

+ AMANDA ROCKLER

+ THE GREAT AIM OF EDUCATION IS NOT KNOWLEDGE, BUT ACTION



In May, I took some time off to trek in Chile’s Torres Del Paine National Park in Patagonia. Torres del Paine National Park lies at the Southern tip of the Andes Park, and is one of the most awesome sights in the Southern Hemisphere. With about 175,000 visitors each year, and a 35% increase in tourism last year alone, the park’s vegetation, soil, water and wildlife resources have never been so threatened. Currently, the Chilean government is examining an extensive public planning process to develop a weighted lottery permit system to limit

the impact on the park. However, education is also a key part of reducing impact on the park. English philosopher, Herbert Spencer, said “the great aim of education is not knowledge, but action,” and I believe that social and environmental responsibility can be taught through action. One of the mechanisms for individual stewardship action is practicing the “leave no trace” ethic. The Leave No Trace Center for Outdoor Ethics (<https://lnt.org/learn/7-principles>) has seven guiding principles:





“Dispose of waste properly (Pack it in, Pack it out)”



1. Plan ahead and prepare
2. Travel and camp on durable surfaces
3. Dispose of waste properly (Pack it in, Pack it out)
4. Leave what you find (losses to invasive species are roughly \$120 billion annually in the US alone)
5. Minimize campfire impacts
6. Respect wildlife
7. Be considerate of other visitors

individual impact on nature, and help conserve natural resources, allowing future generations to enjoy them.

I followed the seven principles on my recent trip to Patagonia as you can see from some of the gorgeous pictures.

Side note: the armadillo could have followed number six and seven a little closer. 🐾💧

Whether you are traveling to remote corners of the earth, or in your local watershed, following these simple principles can reduce your





DOES IT NEED A BOARDING PASS?

+ ERIC BUEHL

+ WHAT'S ALL THE STINK ABOUT?



Truth in advertising, the Brown Marmorated Stink Bug earns its name. Image by Brandon Woo, courtesy of www.marylandbiodiversity.com.



Looking like a cross between an Army tank and an extinct dinosaur, the Brown Marmorated Stink Bug has made quite a name for itself since its arrival in western Maryland in 2002. To many of us, it's a common household pest that, when disturbed, lives up to its name. But to those who make their living off the land, it's a serious threat to fruit and vegetable crops. Since first being identified in Pennsylvania in 2001, this invasive species from Asia

has now been identified in 42 states and 2 Canadian Provinces.

How did it spread so fast? The stinkbug was already in some of these locations and people finally identified the bug. However, that is just part of the story. It is also due to the inter-connected world we live in.

For example, in early October 2015 I went to Oregon for a conference. When I returned





“I had just helped move the bug 2,900 miles in a few hours! ”



The October flight path of the Brown Marmorated Stink Bug. Map courtesy www.invasive.org.

home after a short layover in Dallas, Texas, I found a Brown Marmorated Stink Bug in my luggage! Wanting to blame Texas, I soon discovered that parts of Oregon were experiencing a larger problem with this non-native invasive insect. I had just helped move the bug 2,900 miles in a few hours! Further, my luggage moved through a currently uninvaded location in Texas- the stinkbug’s introduction could have been my fault!

The Stinkbug is an invasive species to add to the list of plants, animals, and pathogens like the Snakehead fish, Asian Tiger Mosquito, and West Nile Virus which impact our forests, waterways, homes, and health.

So why do we care about invasive species when our job is to focus on watershed restoration? The answer is simple: When invasive plants and animals invade an area





“Ultimately, invasive species negatively affect habitat and water quality.”

and begin displacing native plants and animals, they can impact plant pollination, nutrient cycling, changes in soil chemistry, and soil moisture. Ultimately, invasive species negatively affect habitat and water quality.

Education is key to controlling the introduction and spread of non-native species, so if you want to learn more about

the Brown Marmorated Stink Bug, be sure to visit the University of Maryland Extension’s Home and Garden Information Center website at <https://extension.umd.edu/hgic/invasives/brown-marmorated-stink-bug> or for information about other non-native invasive species, visit <https://www.invasivespeciesinfo.gov/index.shtml>💧





BUILDING RESILIENCE FROM THE GROUND UP

+ JENNIFER DINDINGER

+ PREPARING THE PEOPLE
AND PLACES WE LOVE
FOR THE FUTURE



Much of the work of the Watershed Protection and Restoration team focuses on helping communities manage stormwater through restoration or retrofit projects. But the team is also expanding its work to include the potential impacts of climate stressors on both stormwater practices and the communities they serve.

In the coming years, Maryland will experience higher temperatures, more intermittent and intense rainfall events, and an increased likelihood of summertime drought¹. Just as the projects need to adapt to these changes by being built to capture more water or tolerate more drought, communities and people need





“Several thought-provoking questions arose that are helpful to consider for anyone embarking on this work.”

to have resources to be able to adapt as well.

To develop services for this work, UMD Sea Grant Extension is participating in the “Eastern Shore Coastal Community Resilience Facilitated Community of Practice” (FCoP). Supported by the Town Creek Foundation and convened by Eastern Shore Land Conservancy and Antioch University’s Center for Climate Preparedness and Community Resilience, the FCoP process will help participants focus on their own locally relevant research and planning questions with respect to coastal resilience. Members represent county and municipality planning and emergency management staff as well as local, state, and federal service providers such as Maryland DNR, Sea Grant Extension, NOAA, and others. Through facilitated discussions, the group is working to

understand what challenges exist for Eastern Shore communities that want to become climate resilient and what training and resources are needed to overcome those challenges.

One exciting outcome of the FCoP was the opportunity for participants to attend the recent 2016 Local Solutions: Eastern Regional Climate Preparedness Conference in Baltimore. During the conference, several thought-provoking questions arose that are helpful to consider for anyone embarking on this work.

Questions to consider when engaging communities around climate resilience:

- What do your stakeholders value? Where are their emotions and interests? What drives their sense of place and belonging?





“When individuals and communities do not govern self, they risk being ruled by external forces that care less about the well-being of the village².”

- Are you approaching the issue or solution equitably? Have you examined your potential biases toward a certain group, neighborhood, ethnicity, resilience measure, etc.?
- Is there a local group with which you can build a long-term trusting relationship that benefits both of you? Are you taking time to learn the history of the community?
- Are your outreach or listening session opportunities allowing for authentic public participation? Do your proposed solutions or programs meet the expressed needs of the community?
- Are you telling a story, or just presenting charts and graphs? Are you showing changes at a scale and in a way that people can understand?

communities to take necessary steps now to prepare themselves for the future. One of the presenters at the climate conference used a quote from T.F. Hodge to sum up the consequences of waiting too long to plan:

“When individuals and communities do not govern self, they risk being ruled by external forces that care less about the well-being of the village².”

¹ Boesch, D.F. (editor). 2008. *Global Warming and the Free State: Comprehensive Assessment of Climate Change Impacts in Maryland. Report of the Scientific and Technical Working Group of the Maryland Commission on Climate Change.* University of Maryland Center for Environmental Science, Cambridge, Maryland. This report is a component of the Plan of Action of the Maryland Commission on Climate Change, submitted to the Governor and General Assembly pursuant to Executive Order 01.10.2007.07.

² T.F. Hodge, *From Within I Rise: Spiritual Triumph Over Death and Conscious Encounters with “The Divine Presence.”*

Overall, the FCoP is helping





The Good, the Bad, the Ugly: Pond Maintenance

+ JACKIE TAKACS

+



It's spring and everything around us is coming back to life. The grass needs mowing and my strawberries are ready for the picking. But when it comes to ponds, not all green growth is treated with the same excitement. Too often, ponds are taken over by plants and algae that can detract from its look and interfere with its uses. Many of the ponds that we find in Maryland today were built

with a purpose of capturing sediments from stormwater runoff during the construction of homes and neighborhoods. However, stormwater contains more than just sediment. Nutrients (including fertilizer) also find their way to stormwater ponds and cause increased growth of aquatic life.

Addressing undesirable aquatic weeds: Prevention





“Maintain control of the situation before problems begin.”



First, maintain control of the situation before problems begin. Ponds should be maintained like all other aspects of your landscape. To help your pond’s health, engage in landscape practices that help remove nutrients from stormwater before it gets to the pond, and eradicate pest plants when they first appear.

restoration stage – you can take one of two approaches: **Mechanical removal:** Tug, pull, yank, dig or skim out unwanted aquatic vegetation. There are many ways to physically remove plants from a pond, some traditional (a rake), and some creative (two tractors and a fish net). Consider:

Addressing undesirable aquatic weeds: Restoration

If you find yourself past the prevention stage and into the

- Aquatic weeds are heavier than terrestrial weeds – exercise caution if lifting.
- Some plants grow from a bulb. The bulb must be removed to stop growth.





“Select the right herbicide for the right plant.”

- Remove all parts and pieces of plants – some plants can re-root themselves which could cause “floaters” to set up residence elsewhere in your pond.

Chemical removal: When carefully applied, aquatic herbicides can have a place in a pond maintenance program. Following 12 basic steps will help ensure success:

1. **Identify the problem.** Identify the plant. Select the right herbicide for the right plant.
2. **Determine the water usage.** What is the pond water used for? Most herbicides have use restrictions after application.
3. **Pick the proper herbicide.** The herbicide must be labeled for aquatic use and for the appropriate target plant.
4. **Obtain permits.** Before applying any herbicide to a body of water (even if

it is your pond) you must obtain a permit from the Maryland Department of the Environment.

5. **Read and reread the label.** Understand all the safety requirement associated with the herbicide.
6. **Monitor water quality.** Some herbicides perform better or worse under different water quality parameters (i.e., copper sulfate can be toxic to fish when alkalinity is low).
7. **Determine appropriate timing.** Consider the daily and seasonal timing of herbicide application.
8. **Determine the area to treat.** Knowing your treatment area is critical to determining the application amount. The target plant pest will determine whether you will have to treat an entire pond or just a portion of a pond.
9. **Prepare herbicide.** Determine granular or liquid application. Use the





“Plants are the major source of oxygen for fish and other aquatic organisms.”

proper formulation for the target plant.

- 10. **Apply the herbicide.** Apply the amount recommended – more is not necessarily better – but it is more expensive.
- 11. **Keep records.** Keep a written record of all herbicide applications.
- 12. **Monitor effectiveness.** If you are not getting the results you expected, chances are you erred in one of the first 10 steps.

Plants are the major source of oxygen for fish and other aquatic organisms. They also stabilize the pond bottom and help remove nutrients. Lastly, many plants are lovely and provide a beautiful addition to the landscape. 💧

For more information on pond management <http://www.mdsg.umd.edu/topics/stormwater-pond-management/pond-management>

Be careful! Many aquatic plants are good. Aquatic plants provide food and habitat for all the critters that rely on the pond.



HEADWATERS

PUBLICATION OF MARYLAND SEA GRANT EXTENSION WATERSHED EDUCATORS

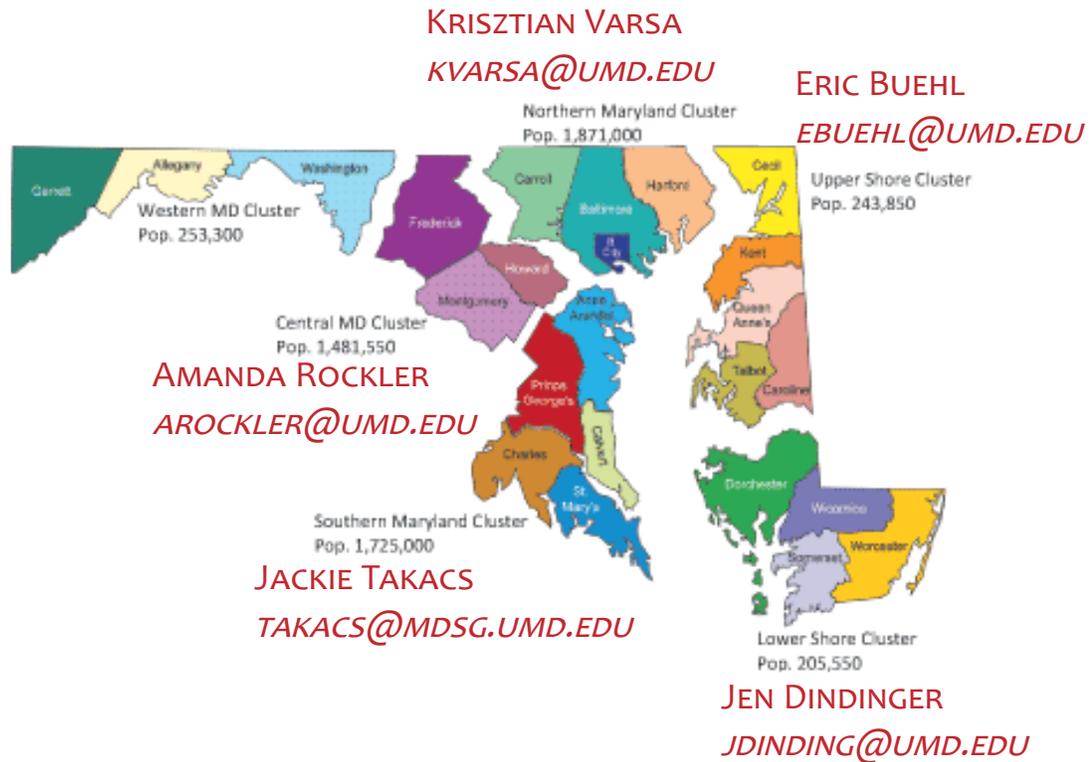
Headwaters is a publication providing information and resources for Extension and watershed protection professionals. It is a joint production of the University of Maryland Extension and Maryland Sea Grant Program. If you have any comments, questions, or ideas for Headwaters, please contact the Editor:

kvarsa@umd.edu

Headwaters
Sea Grant Extension Program
7998 Regents Drive
College Park, MD 20742

Special thanks to our Production Supervisor, Rhonda Barnhart, for her ongoing support to layout and design Headwaters every quarter!

WHO'S YOUR WATERSHED SPECIALIST?



For more information on related publications and programs, visit extension.umd.edu/watershed. Please visit <http://extension.umd.edu/> to find out more about Extension programs in Maryland.

The University of Maryland Extension programs are open to any person and will not discriminate against anyone because of race, age, sex, color, sexual orientation, physical or mental disability, religion, ancestry, national origin, marital status, genetic information, political affiliation, and gender identity or expression.