UNIVERSITY OF MARYLAND EXTENSION
Sea Grant Maryland

Issue 1 Volume 7
Jan 2020

HEADWATERS

PUBLICATION OF MARYLAND SEA GRANT EXTENSION WATERSHED EDUCATORS

Inside this Issue

Dear Headwaters Readers,

Late winter greetings Headwaters readers!

We are excited to start our seventh year of Headwaters with another spectacular issue, chock full of great stories intended to educate and inform. For instance, were you aware that there have been incidents in Maryland where dogs have eaten certain mussels and it was lethal? Are you looking for a great opportunity to network and learn with fellow Extension educators about all things natural resources? We know to use salt in moderation in our diets, but did you know that too much on our roads can be a problem too? We have the latest on these and so many more topics, so don't wait any longer. Get comfortable and jump right in to this great issue that starts off season seven!

As always, if you are interested in more information about a particular topic or about our program, we'd love to hear from you, so please don't hesitate to contact us.

Sincerely,
The Maryland Sea Grant Extension Watershed Educators Team

Issue 1 Volume 7
Jan 2020

Dog Owners and Boat Owners BEWARE...of Each Other!

+ Jackie Takacs

This may sound like a weird warning but it's one that both groups should take seriously as the intersection of the two can be fatal to our furry friends - especially this time of year. Winter is the time of year that many boat owners are preparing their boats for warmer times. This typically includes hull maintenance, including the cleaning and scraping off the slime and crust that grows along the bottom of the boat which can cause drag and increased fuel use. This slime and crust, also known as fouling organisms, is actually a diverse community of plants and animals that settle and grow on hard substrates in the water.

Boat hulls are just one of many human introduced substrates these fouling communities now call home. Once attached, some of these organisms, like mussels and barnacles, can become difficult to remove. Current practices to help reduce these fouling organisms includes the use of paints that contain toxins such as heavy metals and/or biocides. These toxins can be released into the environment in two ways - slowly through leaching and more quickly through flaking, chipping, or removal during manual cleaning. This is where the intersection with our furry friends is a concern.

Over time, mussels and barnacles can accumulate these toxins in their tissues. Once they are scraped from the hulls of boats and not disposed of properly, they can be consumed by other organisms which are then exposed to the toxins.

"Current practices to help reduce these fouling organisms includes the use of paints that contain toxins such as heavy metals and/or biocides."

This issue gained attention in 2005 in the Magothy and Severn River areas with dog deaths associated with the ingestion of dark false mussels. They may have been scraped from boat bottoms and not disposed of properly or were exposed at low tide on beaches or boat docks. Deaths are attributed to acute liver failure, survival rates are 50-60%, and treatment is very expensive.

This season, two more dog deaths have been reported. The Maryland Department of Natural Resources is actively investigating the cases and is currently working with Johns Hopkins University to complete an epidemiological study to better understand which toxin is most problematic and what dog breeds might be more at risk. In the meantime:

BOAT OWNERS - dispose of your hull scrapings properly (use a garbage can)

DOG OWNERS - keep your pets on a leash and monitor what they are eating

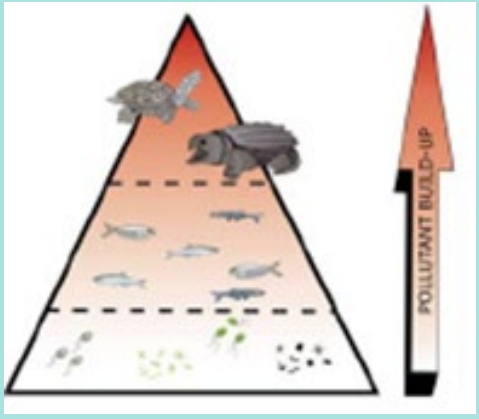
For more information on the how to be a better boating steward, go to https://dnr.maryland.gov/boating/Pages/cleanmarina/home.aspx

Issue 1 Volume 7
Jan 2020

Science Lesson

Pollutants can increase in organisms over time as a result of direct contact with its environment - for example, breathing polluted air or swimming in polluted waters. This process of concentrating pollutants is known as bioaccumulation.

Animals can also accumulate additional pollutants from feeding on other contaminated organisms. This process of concentrating pollutants through the food web is called biomagnification.



As a result of bioaccumulation and biomagnification, the life span of an organism will dictate the potential effect a pollutant can have on an individual or population.

DOG HEALTH ALERT

The Maryland Department of Natural Resources
would like to remind dog owners to properly dispose of boat scrapings.
Consumption of Dark False Mussels has been associated with canine illness events and fatalities
around the Magothy, Severn and Patapsco Rivers, but other areas may be at risk.

Native to the Bay, Dark False Mussels and Barnacles are all part of fouling community found on dock ropes, floats, boat hulls, oyster cages and piers. Their range expands during wet years when bay salinities are lower.

Dog owners are asked to keep pets away from Dark False Mussels
and also to take these preventative measures to ensure the safety of your pet.

Keep Pets Away from Boats After Being Pulled Out of Water

Clean Boats Away from Animals

Dispose of All Boat Scrapings Properly

Keep Dogs On Leash to Avoid Exposure

If you suspect your dog is sick from having eaten dark false mussels,
take them to a veterinarian immediately.

Maryland
Larry Hogan, Governor

MARYLAND DEPARTMENT OF NATURAL RESOURCES
Jeannie Haddaway-Riccio, Secretary

Maryland Department of Natural Resources
Fishing and Boating Services
Tawes State Office Building, 580 Taylor Avenue, B-2
Annapolis, MD 21401
410-260-8300 | 800-688-3467

dnr.maryland.gov/fisheries

11/2019

Issue 1 Volume 7
Jan 2020

Place-Based and Future Focused

+ Jennifer Dindinger

Are you looking for a network of educators and Extension peers who talk your talk and walk your walk? Interested in seeing what Bend, Oregon has to offer? Then the 2020 Association of Natural Resource Extension Professionals (ANREP) 11th Biennial Conference is for you!

My first ANREP conference was in 2014 in Sacramento. I had trouble choosing which sessions to attend because all of them were so relevant and interesting. For a Sea Grant Extension agent, that was a welcome surprise! Most of the conferences I had attended previously had maybe one or two sessions at most that covered watershed restoration. I have attended every ANREP conference since.

Join ANREP members in gorgeous Oregon this May.
Source: Oregon State University and ANREP

"Another benefit of ANREP conferences is the people. I meet new friends and collaborators at every conference, and I always get great programming ideas from the session speakers and posters."

Another benefit of ANREP conferences is the people. I meet new friends and collaborators at every conference, and I always get great programming ideas from the session speakers and posters.

Registration is now open and hotel rooms are available. The schedule is available on the Conference website so you can plan your sessions and maximize your learning and networking opportunities!

If you go, please be sure to check out the interesting posters such as, "Should we call a lawyer? Assessing the need for a legal education program at Maryland Sea Grant," and the information sessions such as, "Is the Chesapeake Bay Landscape Professionals training program working? Let's find out!"

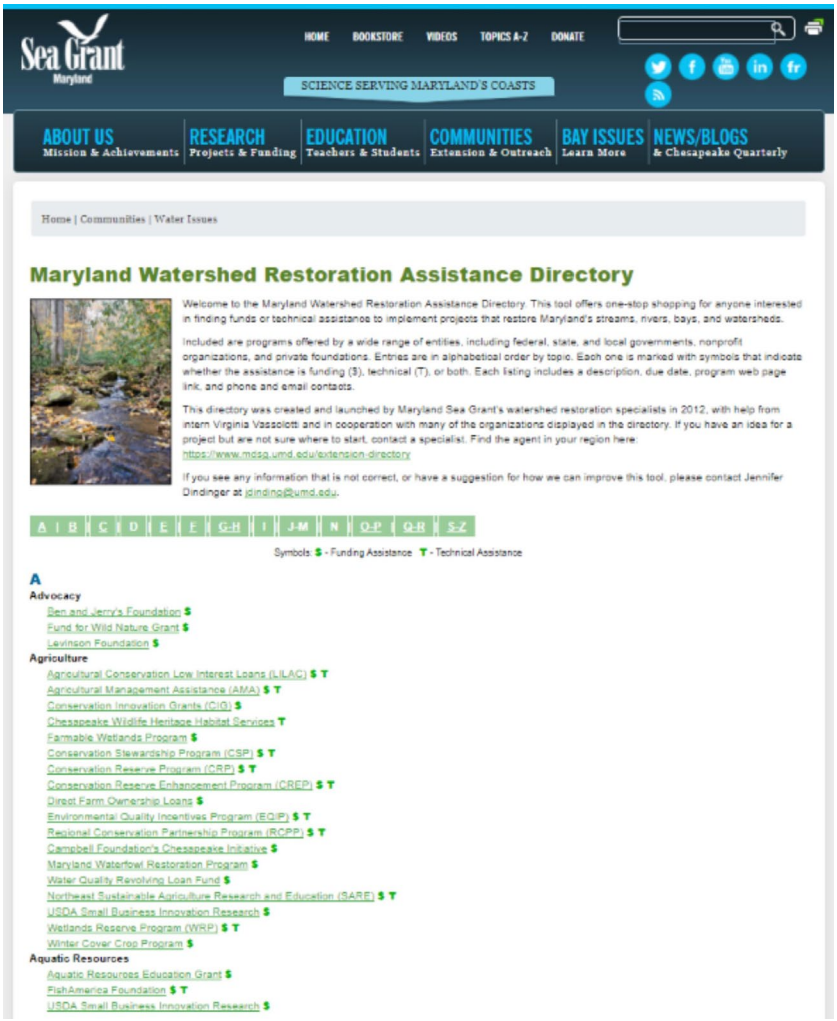
See you in Oregon!

Issue 1 Volume 7
Jan 2020

Watershed Restoration Assistance Directory

+ Kelly MacBridge Gill

Do you have a restoration project that you'd like to tackle and you're on the hunt for funding? Have a stormwater issue and need to connect with an expert about where even to begin? The Maryland Watershed Restoration Assistance Directory is the place to go for anyone interested in finding funds or technical assistance to implement projects that restore Maryland's streams, rivers, bays, and watersheds.



Sea Grant Maryland

HOME BOOKSTORE VIDEOS TOPICS A-Z DONATE

SCIENCE SERVING MARYLAND'S COASTS

ABOUT US Mission & Achievements | RESEARCH Projects & Funding | EDUCATION Teachers & Students | COMMUNITIES Extension & Outreach | BAY ISSUES Learn More | NEWS/BLOGS & Chesapeake Quarterly

Home | Communities | Water Issues

Maryland Watershed Restoration Assistance Directory

Welcome to the Maryland Watershed Restoration Assistance Directory. This tool offers one-stop shopping for anyone interested in finding funds or technical assistance to implement projects that restore Maryland's streams, rivers, bays, and watersheds.

Included are programs offered by a wide range of entities, including federal, state, and local governments, nonprofit organizations, and private foundations. Entries are in alphabetical order by topic. Each one is marked with symbols that indicate whether the assistance is funding ($), technical (T), or both. Each listing includes a description, due date, program web page link, and phone and email contacts.

This directory was created and launched by Maryland Sea Grant's watershed restoration specialists in 2012, with help from intern Virginia Vassiliotti and in cooperation with many of the organizations displayed in the directory. If you have an idea for a project but are not sure where to start, contact a specialist. Find the agent in your region here: https://www.mdsg.umd.edu/extension-directory

If you see any information that is not correct, or have a suggestion for how we can improve this tool, please contact Jennifer Dindinger at jdindin@umd.edu.

A | B | C | D | E | F | G-H | I | J-M | N | O-P | Q-R | S-Z

Symbols: $ - Funding Assistance T - Technical Assistance

A

Advocacy
- Ben and Jerry's Foundation $
- Fund for Wild Nature Grant $
- Levinson Foundation $

Agriculture
- Agricultural Conservation Low Interest Loans (LILAC) $ T
- Agricultural Management Assistance (AMA) $ T
- Conservation Innovation Grants (CIG) $
- Chesapeake Wildlife Heritage Habitat Services T
- Farmable Wetlands Program $
- Conservation Stewardship Program (CSP) $ T
- Conservation Reserve Program (CRP) $ T
- Conservation Reserve Enhancement Program (CREP) $ T
- Direct Farm Ownership Loans $
- Environmental Quality Incentives Program (EQIP) $ T
- Regional Conservation Partnership Program (RCPP) $ T
- Campbell Foundation's Chesapeake Initiative $
- Maryland Waterfowl Restoration Program $
- Water Quality Revolving Loan Fund $
- Northeast Sustainable Agriculture Research and Education (SARE) $ T
- USDA Small Business Innovation Research $
- Wetlands Reserve Program (WRP) $ T
- Winter Cover Crop Program $

Aquatic Resources
- Aquatic Resources Education Grant $
- FishAmerica Foundation $ T
- USDA Small Business Innovation Research $

"...the directory includes programs offered by a wide range of entities, including federal, state, and local governments, nonprofits organizations, and private foundations."

Created by Maryland Sea Grant's Watershed Restoration Specialists with help from intern Virginia Vassolotti in 2012, the directory includes programs offered by a wide range of entities, including federal, state, and local governments, nonprofit organizations, and private foundations. Directory entries are grouped by topic, such as Public Policy, Residential, or Wetlands. To find programs, simply look for the topic you are interested in. Entries are marked by a dollar sign (for funding assistance), a T (for technical assistance), or both, to help direct you to the right match. From there, just click on the links to learn more about what each program offers.

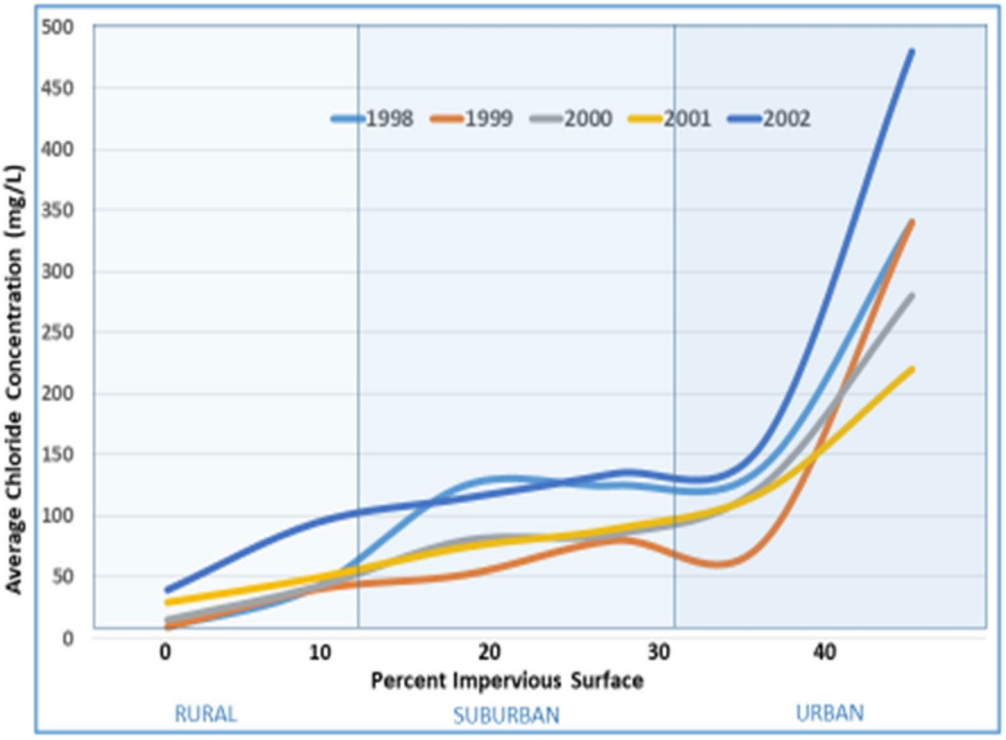
The directory is ever-evolving. If there is a new program you think we should add, let us know. If you are looking for help on a project and can't find it, let us know! To start exploring, visit https://www.mdseagrant.org/wra/

Issue 1 Volume 7
Jan 2020

Road Salts - Good for Public Safety, but Not for Water Quality

+ Andy Lazur

The connectivity of our water and our everyday actions can affect water quality. This includes deicing roads by use of salts, which is of increasing concern to aquatic environments and groundwater quality. Salt, sodium chloride, is the main tool for deicing roads with 22 million tons applied to roads in the US with over 91,000 tons in Maryland used during the 2017-18 winter. Since we expect to drive anytime and anywhere we want during the winter, this use may not mean much to us, but a substantial base of research shows it has serious consequences on aquatic life and drinking water quality.



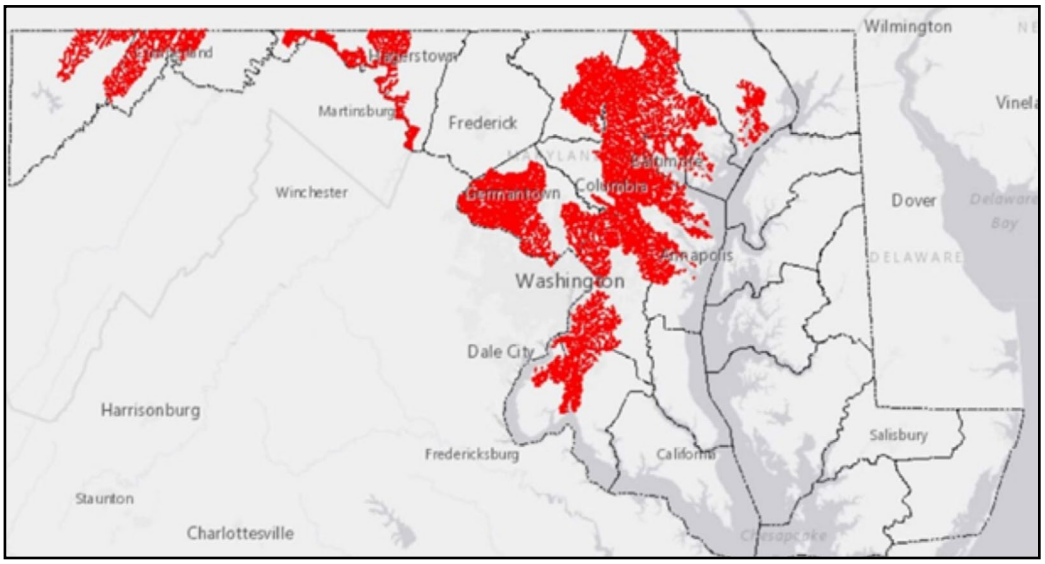
Trend of stream chloride concentration and percent impervious surface in Baltimore area watershed (adapted from Kaushal et al. 2005).

"Increasing chloride levels can increase the corrosion potential in plumbing resulting in increased heavy metal leaching."

Even low concentrations of chloride can produce harmful effects in freshwater ecosystems inhibiting growth and reproduction of numerous aquatic species. A national study showed that 40 percent of urban streams have chloride levels that exceed the safe guidelines for aquatic life. Increasing chloride levels can increase the corrosion potential in plumbing resulting in increased heavy metal leaching. Lead in particular can be leached from older pipe and plumbing fixtures potentially resulting in toxic levels. The infamous Flint Michigan water crisis is an example of lead toxicity due to a water treatment change that increased the corrosiveness of the water supply.

The cost of corrosion to public water supply infrastructure was estimated at $22 billion annually in 2002, and there are significant damages to transportation systems. The cost for repairs to private homes is estimated to cost 2-20 times higher than public supplies, and in many cases new wells are required or installation of expensive whole house water treatment systems such as reverse osmosis filtration. Of additional concern is that elevated chloride levels can increase the mobilization of other heavy metals (e.g. cadmium, chromium and mercury) and radionuclides (e.g. radon and radium) in soils leading to higher concentrations in waters.

"Mitigation efforts of chloride in the environment has not been shown to be effective, indicating that reduction of use is the only effective road-salt-runoff management strategy."



Maryland Department of the Environment database figure showing extent of chloride impaired streams. Source: MDE

One factor of chloride that makes it extremely difficult to manage in the environment is that it is highly mobile in soils and in groundwater, leading to increasing concentrations in both surface and groundwater. Mitigation efforts of chloride in the environment has not been shown to be effective, indicating that reduction of use is the only effective road-salt-runoff management strategy. Efforts to reduce use have been made, particularly by state and some county transportation agencies, yet a challenging dilemma exists - balancing public safety needs and minimizing environmental impacts. Reduction options include enhanced voluntary adoption of proven salt reduction practices, or regulations to require said practices, and engagement of the entire community including homeowners (click here for homeowner salt stewardship tips) involved in deicing activities.

Issue 1 Volume 7
Jan 2020

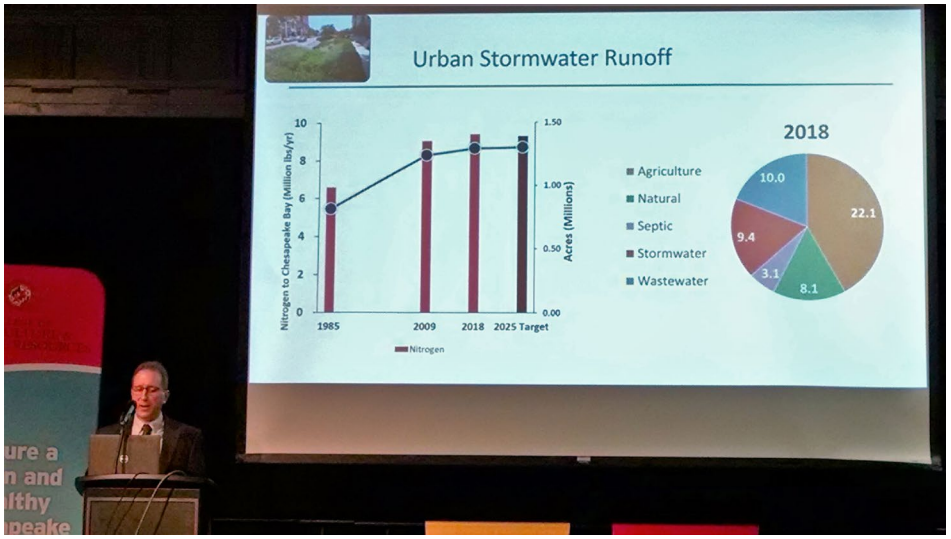
Cornerstone Event Focuses on Chesapeake Bay

+ Eric Buehl

Starting in 2017, Dr. Craig Beyrouty, Dean of the College of Agriculture and Natural Resources and Director of Extension, worked closely with faculty, staff, and partners to identify key areas we work in which resulted in five Strategic Initiatives: "As the University's cornerstone college, we embody the land-grant mission with a commitment to eliminate hunger and malnutrition, preserve our natural resources, improve quality of life, and empower the next generation through world-class education." (UMD AGNR) One of the five initiatives that hits close to home to those of us on the Watershed Protection and Restoration Program Team is "Ensure a Clean and Healthy Chesapeake Bay." This Initiative identifies ways to accomplish this:

- *Design land use management strategies to minimize negative environmental impact.*
- *Develop storm water management technologies to improve water quality.*
- *Safely apply fertilizer, manure and other nutrients to protect soil health and water quality.*
- *Evolve in the face of climate change to address sea level rise and extreme weather.*
- *Create environmentally aware communities and promote increased interest and participation.*

"...there is beginning to be a shift in the Bay ecosystem which is becoming healthier and more resilient."



Lee Currey sharing information about pollution sources and trends in Bay water quality.
Source: Eric Buehl

This past October, an event was held in College Park with presentations and breakout sessions that shared information about the significance of the Chesapeake Bay, the current status of Bay restoration efforts, and work being done by a myriad of partners. One of the opening speakers, Lee Currey, Director of Maryland Department of the Environment's Water and Science Administration, pointed out that what we do on the land shows up in our water and urged that science must inform policy decisions. Of interest was his comment that there is beginning to be a shift in the Bay ecosystem, which is becoming healthier and more resilient. Positive comments such as this were well-received by attendees and the kind of motivation our Team loves to hear; that there is still work to be done, but from all the efforts to improve Bay water quality, indications are that it is headed in the right direction.

Dean Beyrouty welcoming attendees to the AGNR Cornstone Event. Source: Eric Buehl

Amanda Rockler showing attendees that it takes partners, and lots of them, to meet Bay cleanup goals. Source: Eric Buehl

Issue 1 Volume 7
Jan 2020

To Take Down, Or Not to Take Down - That Is the Question

+ Kelsey Brooks

Compared to some other stormwater Best Management Practices, rain barrels can be relatively easy to install and maintain. Maintenance primarily consists of: ensuring the rain barrel's parts are not broken or clogged; being thoughtful about water use and draining the rain barrel on a regular basis; checking to make sure there are no areas of standing water; and disconnecting the rain barrel during the winter. When we do rain barrel workshops a common questions is, "But do I really need to take down my rain barrel in the winter?"

A cold, rainy December day in Baltimore. Source: Kelsey Brooks

"Exposure to cold, ice, and snow can still damage a plastic rain barrel, but a full or partially full rain barrel that freezes is more likely to crack or break."

Being from the upper Midwest, the concept of winter rain storms is still pretty strange to me. Winter precipitation in Michigan is all snow (so is most fall precipitation and a lot of spring precipitation). Exposure to cold, ice, and snow can still damage a plastic rain barrel, but a full or partially full rain barrel that freezes is more likely to crack or break. As we all know, water expands as it solidifies.

This is on my mind because we have been having a relatively rainy December in the Baltimore area, including some heavier events. According to the Weather Underground, we received about .84 inches of rain in the city on December 10, 2019. The following evening, a cold front moved through the region and temperatures dipped to below freezing (27 °F). We have had rain on and off since then during the day and temperatures around or just below freezing at night.

While taking down your rain barrel can seem like a hassle, it may be more inconvenient (and expensive!) to replace it if it cracks. For more information on winterizing your rain barrels (and rain gardens), take a look back at the November 2016 issue of Headwaters.

Issue 1 Volume 7
Jan 2020

Turning a New Leaf

+ Amanda Rockler

Did you know that Arrowwood Viburnum is a super food for birds? Do you know the historical underpinnings of ecological design or how to create a nature play space? These are just some of the terrific talks that were part of the Turning A New Leaf Conference, hosted in early December in Harrisburg, PA by the Chesapeake Conservation Landscaping Council (CCLC). There were three major tracks this year A: Streams and Surrounding Landscapes B: Landscapes in a Changing Climate C: Designing with Plant Communities.

Arrowwood Viburnum (Virurnum dentatum), bird super food! Photo courtesy of Creative Commons, source: Clayton Natives

"The front lines of the battle for nature are not in the Amazon Rainforest or the Alaskan Wilderness; the front lines are our backyards, medians, parking lots, and elementary schools."

Thomas Rainer, Principal at Phyto Studio in Washington D.C. gave an inspiring opening plenary about designing for biodiversity and ecological enhancement. If you are not familiar with Rainier's work, it can be found here https://phytostudio.com/.

"The front lines of the battle for nature are not in the Amazon rain forest or the Alaskan wilderness; the front lines are our backyards, medians, parking lots, and elementary schools. The ecological warriors of the future won't just be scientists and engineers, but gardeners, horticulturists, land managers, landscape architects, transportation department staff, elementary school teachers, and community association board members. Anyone who can influence a small patch of land."- Thomas Rainer

Other conference highlights included:

- Jim Edward, Deputy Director for EPA's Chesapeake Bay Program, gave an informative talk about the past, present, and future of the Chesapeake Bay and provided an update on meeting the 2025 total maximum daily load (TMDL) for the Bay.

- Nancy Striniste of *Earlyspace* rounded out the day talking about how to create nature play spaces. If you are interested in creating magical ecological play spaces for kids and/or adults who used to be kids, her recent book, *Nature Play at Home* is available for purchase.

- Dave Hirschman was awarded the Marcy Damon award for his dedication and leadership in improving water quality and enhancing the professional development of stormwater and landscape professionals.

- And last but not least, Beth Ginter, our amazing partner and *Chesapeake Bay Landscape Professional* (CBLP) program director was appointed as the new Executive Director for the Chesapeake Conservation Landscaping Council.

The next Turning a New Leaf conference will be held in 2021. Become a sustaining member or find out more about CCLC at https://www.chesapeakelandscape.org/

UNIVERSITY OF MARYLAND EXTENSION
Sea Grant Maryland

Issue 1 Volume 7
Jan 2020

HEADWATERS

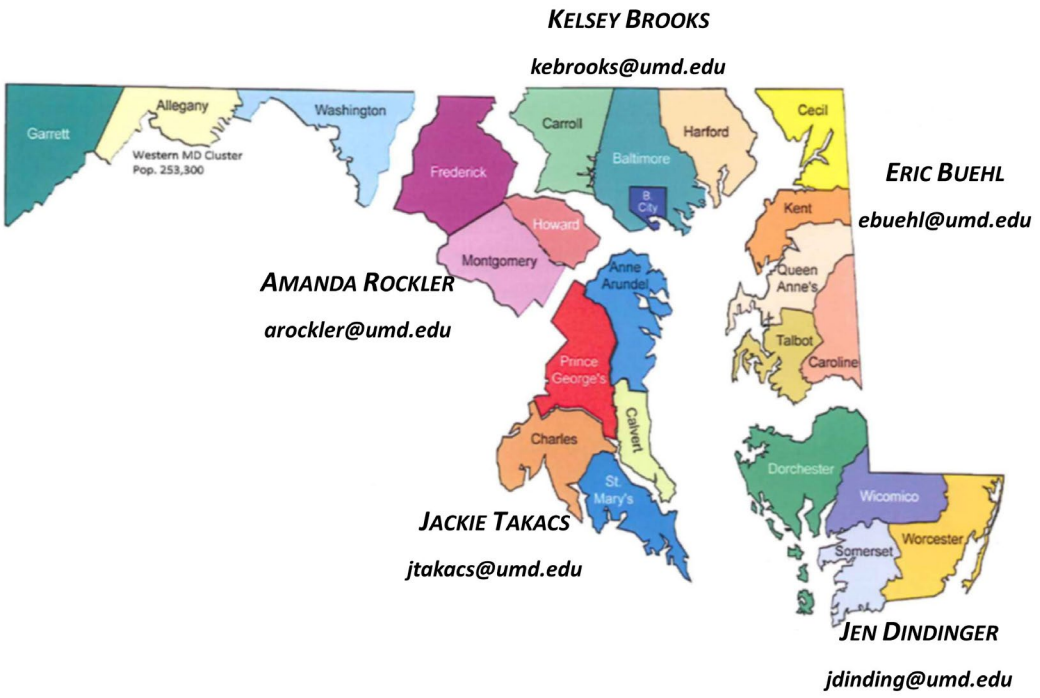
PUBLICATION OF MARYLAND SEA GRANT EXTENSION WATERSHED EDUCATORS

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: Eric Buehl
ebuehl@umd.edu

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

Special thanks to our Production Supervisor, Angela Preston, 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.