

HEADWATERS

PUBLICATION OF MARYLAND SEA GRANT EXTENSION WATERSHED EDUCATORS

Inside this Issue

- + Personal Care and Environmental Impacts
- + Bibliotherapy?
- + Mistaken Identity
- + Southern Maryland Community Becomes Model for Stormwater and Stewardship
- + Welcome Calvert County WSA!
- + Water Education Summit Goes Virtual, Exceeds Attendance Goals



Fall's beautiful colors. Image source: A few seeds, a little sunlight, lots of soil, some rain, Mother Nature, and Eric Buehl's smart phone.

Greetings Loyal Headwaters' readers:

If your email inbox is like mine, every time you turn your back it's filled up again with new messages for another Zoom meeting or Doodle Poll. I'm sure we all could go on for hours about how 2020 has been a challenging year, so our Team hopes you'll take a few minutes from your hectic schedule to look over this issue of Headwaters.

In it you will find information about the growing concern over pharmaceuticals and personal care products that end up in our waterways, how regular reading enriches both the mind and attitude, and a real life 'who done it' for fall allergies. You can also learn about how one community is moving forward with projects to improve their local environment, find out about the newest Watershed Stewards Academy in Maryland, and the cool ways that online conferences are enhancing the virtual experience for attendees.

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





Personal Care and Environmental Impacts

+ ANDY LAZUR

Pharmaceutical and personal care products (PPCP) are one of several groups of compounds termed contaminants of emerging concern or CECs. The last issue of [Headwaters](#) introduced these chemicals and their environmental risks. PPCPs are a diverse group of chemicals including prescription and over-the-counter drugs, non-medicinal care or cosmetic products including lotions, fragrances/musks, soaps, supplements, sunscreen, vitamins, etc. PPCPs are increasingly receiving attention due to widespread environmental contamination, and results from studies provide evidence that many PPCPs are present in our ground and surface water.



PPCPs enter the environment by excretion from the body, release from skin by washing, disposal in trash or drains, and even animal carcasses that may accumulate contaminants. In the case of drugs, they are not entirely broken down and absorbed by our bodies, and are excreted and passed into wastewater. Wastewater treatment is the primary manner in which these compounds enter the environment, and it is important to note that although treatment breaks down





"It is important to note that although treatment breaks down many of these contaminants, some are resistant, or the resulting byproducts can be more toxic than their parent components"

many of these contaminants, some are resistant or the resulting byproducts can be more toxic than their parent compounds. Once entering the environment, they may persist for long periods. Despite increased attention and research of PPCPs, the full scope and consequences of their presence in aquatic environments is not well understood. The effects of PPCPs may be subtle because they generally occur at low concentrations in the environment, but these compounds are continually being used so their concentrations may increase and the effects become more significant. Two major concerns with PPCPs include resistance to antibiotics and endocrine system disruption. The feminization of several species of fish by endocrine disrupting compounds (EDCs), i.e. hormones, is one of the more publicized environmental impacts.



Although wastewater treatment plants can break down some contaminants, they are not effective at treating them at all. Image source: Chesapeake Bay Program

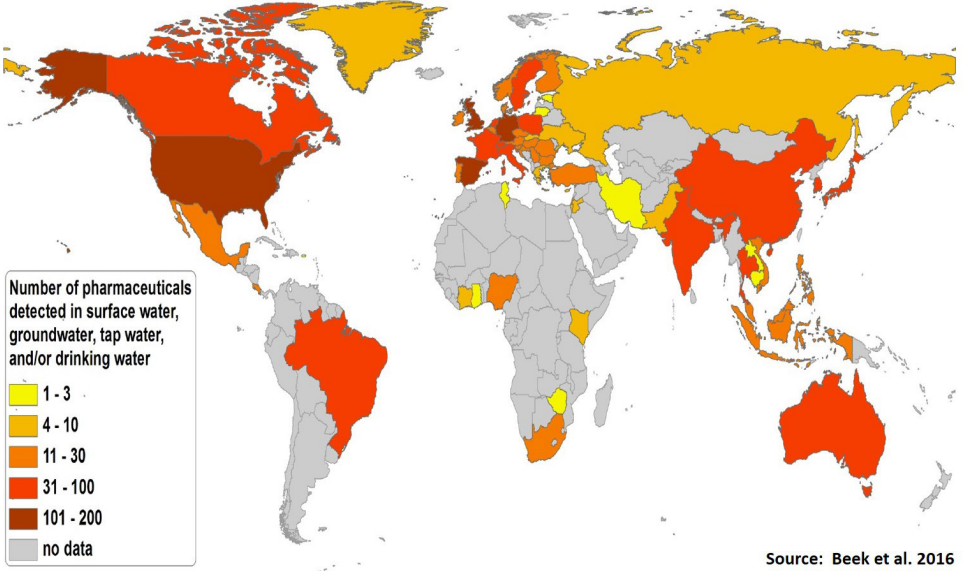
Studies to date have not found evidence of adverse human health effects. Most pharmaceuticals have been observed at concentrations in the low parts per billion (ppb), whereas musks have been detected in the low parts per million (ppm). In studies on wastewater treatment including septic systems,





"sucralose, a common sugar substitute, is used as an environmental tracer in wastewater impact studies due to its unique association with human wastewater and persistence in the environment."

the removal efficiency of PPCPs varied depending on both the type treatment and the compound. For example, caffeine and acetaminophen were completely removed, whereas sulfamethoxazole and erythromycin (antibiotics) were only partially removed. Other compounds such as carbamazepine (anti-seizure drug) and sucralose were resistant to breakdown. Interestingly, sucralose, a common sugar substitute, is used as an environmental tracer in wastewater impact studies due to its unique association with human wastewater and persistence in the environment.



Given the widespread use of PPCPs and increasing awareness of the environmental and future potential human health impacts, as their concentrations accumulate, how do we respond? Maintaining our health certainly is important





"Proper use and disposal will reduce our exposure to these chemicals and can help reduce the concentrations in aquatic habitats and groundwater, which are used as drinking water sources."

and using medications and personal care products wisely is understandably warranted. Moreover, there are practices we can employ to reduce the environmental and health risks. These focus on the proper disposal of unused and unwanted PPCPs. Proper use and disposal will reduce our exposure to these chemicals and can help reduce the concentrations in aquatic habitats and groundwater, which are used as drinking water sources. Taking unused care products to recycling centers is the best practice. To dispose of prescription drugs, take advantage of permanent drop-off or pharmacy take-back programs. If a collection event or take-back option is not available, disposal in household trash mixed with coffee grounds or cat litter is preferred over flushing. Being thoughtful in the products we buy and use, along with making a commitment to adopt these stewardship practices, helps reduce the impact of these compounds.





Bibliotherapy?

+ AMANDA ROCKLER

Do you feel like you never have enough time to read? You are in good company. A majority (51%) of Americans feel that they don't have enough time to read and that number is probably even higher in a global pandemic! Time is at a premium (although I usually trade off sleep to watch *Below Deck* and the *Bachelorette*) and researchers support this. Time, not money, is a key to happiness (Macchia & Whillans 2020). Research also shows us that reading can make people feel smarter, less stressed, more accomplished, and happier (Bavishi et al 2016, Harris Poll 2019, Kindle 2019).



"Reading" by [be creator](#) is licensed under [CC BY 2.0](#)

In order to become a better, smarter, happier human, I decided to spend some time reading. My calendar now includes a reminder to do 15-30 minutes of reading daily. After about a month, I can't say that I am the world's best, brightest, and





“Sometimes I wish I could photosynthesize so that just by being, just by shimmering at the meadow's edge or floating lazily on a pond, I could be doing the work of the world while standing silent in the sun” From *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants* by Robin Wall Kimmerer

happiest human, but I do feel a bit more hopeful and a little more accomplished on days when the reading gets done. Want to see if adding reading time to your schedule makes you happier? Join me in dedicating at least 15 minutes a day to reading. To get you started, I made a quick list of some reads that I found interesting. And please feel free to send me your recommendations and I will include them in a future Headwaters! Happy reading!

Books:

Kimmerer, R. W. (2013). *Braiding sweetgrass: Indigenous wisdom, scientific knowledge, and the teachings of plants*. Minneapolis, MN: Milkweed Editions.

AKR - This is one of my favorite books and I have read it several times. This time I listened to it as an audiobook on OverDrive (free library app).

Lorr, B. (2020). *The secret life of groceries: Stories of love and greed from the American supermarket*. New York, NY: Avery, an imprint of Penguin Random House.

AKR - This is a deep and interesting dive into the complexity of getting food to your table.

Science articles:

Berman, K. (2020, September 12). Commentary: How a vacation-or a pandemic-can help you adopt better habits now. Retrieved from <https://fortune.com/2020/09/12/changing-habits-environmental-cues-moving-vacation-covid-19/>

AKR - Have you ever wanted to change a habit? It is tough, but it can be done.

Oster, E. (2020, October 11). Schools Aren't Super-Spreaders. Retrieved from <https://www.theatlantic.com/ideas/archive/2020/10/schools-arent-superspreaders/616669/>





All the things by Brown University's, Emily Oster (<https://emilyoster.net/>) are interesting reads.

AKR - She uses data to write about parenting (and other things).

Sokol, S. (2020, August 20). The Worst Animal in the World. Retrieved from <https://www.theatlantic.com/health/archive/2020/08/how-aedes-aegypti-mosquito-took-over-world/615328/>

AKR - This is a great piece on how Aedes Aegypti became the disease vector it is today.

Research publications:

Chalmin-Pui, L. S., Roe, J., Griffiths, A., Smyth, N., Heaton, T., Clayden, A., & Cameron, R. (2021). "It made me feel brighter in myself" - The health and well-being impacts of a residential front garden horticultural intervention. *Landscape and Urban Planning*, 205, 103958. doi:10.1016/j.landurbplan.2020.103958

Hostetler, M. (2020). Cues to care: Future directions for ecological landscapes. *Urban Ecosystems*. doi:10.1007/s11252-020-00990-8

Macchia, L., & Whillans, A. V. (2020). Leisure beliefs and the subjective well-being of nations. *The Journal of Positive Psychology*, 1-9. doi:10.1080/17439760.2019.1689413

Roman, L. A., Conway, T. M., Eisenman, T. S., Koeser, A. K., Barona, C. O., Locke, D. H., . . . Vogt, J. (2020). Beyond 'trees are good': Disservices, management costs, and tradeoffs in urban forestry. *Ambio*. doi:10.1007/s13280-020-01396-8

What is next:

Colwell, R. R., & McGrayne, S. B. (2020). *A lab of one's own: One woman's personal journey through sexism in science*. New York, NY: Simon & Schuster.

Miller, L. (2021). *Why fish don't exist: a story of loss, love, and the hidden order of life*. New York, NY: Simon & Schuster.





Mistaken Identity

Like picking the wrong person out of a police line-up, there's a plant that gets a bad rap in the late summer and ends up being a victim of mistaken identity. The victim? Goldenrod. The real culprit? Ragweed.

+ ERIC BUEHL

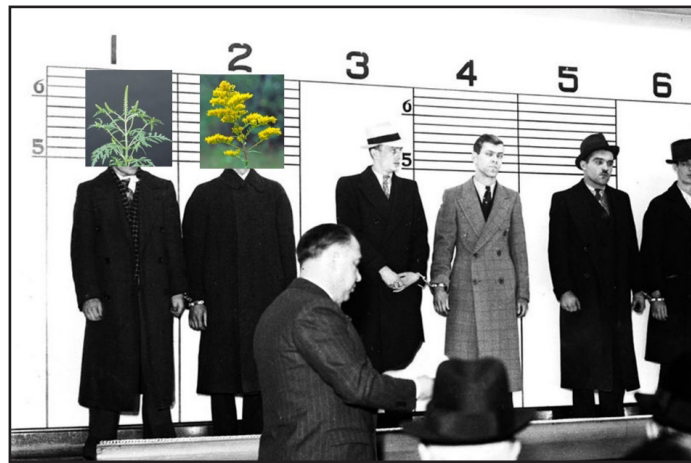


Image sources: <https://www.chicagotribune.com>, www.nazinvasiveplants.org, and www.mountauburn.org.



For many seasonal allergy sufferers, there are two “general” seasons: springtime, when most trees and flowers share their pollen in abundance; and then fall, when certain grasses and late season wildflowers do the same. But it's the fall season in which a showy and very beneficial group of wildflowers are wrongly accused of runny noses, sneezing, watery eyes, and coughing. Yes, the family of Goldenrod (*Solidago spp.*) species, because of its brilliant yellow flowers, gets the blame for allergy sufferers' woes when in reality, it's actually a somewhat plain looking weed that is the real source of the pollen, Rag-





“approximately 118 species of “butterflies and moths use this as a caterpillar host plant [Goldenrod]” in our area”

weed (*Ambrosia spp.*).

As part of the Aster family of plants, it is estimated that there are over 130 different species of Goldenrod worldwide with 120 being native to the US and Canada.



Ragweed (left) versus Goldenrod (right). Sources: www.nazinvasiveplants.org and www.mountauburn.org.

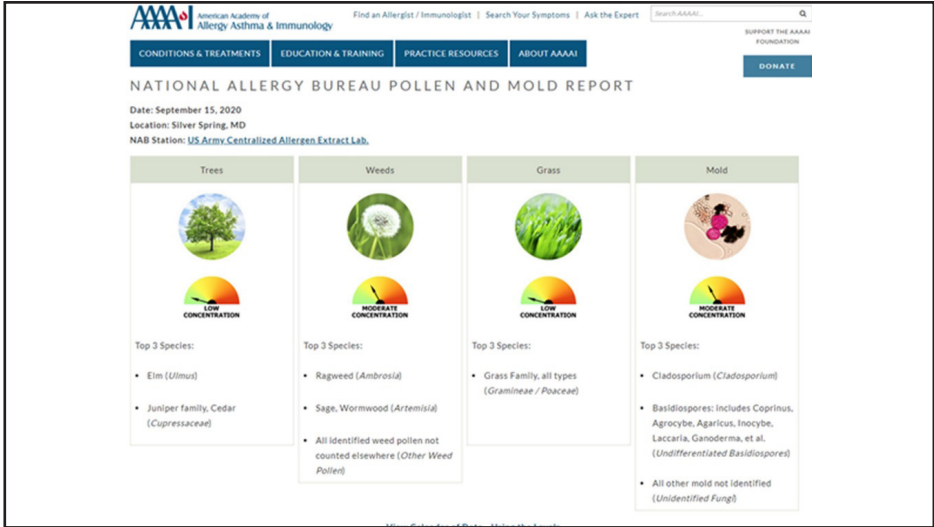
According to the National Wildlife Foundation, approximately 118 species of “butterflies and moths use this as a caterpillar host plant [Goldenrod]” in our area, definitely a plus for this maligned plant. As far as its pollen, in a 2009 synthesis of research on various weed pollens by Dr. Harris Steinman of Allergy Resources International, it was noted that, “As Goldenrod is insect-pollinated, the pollen grains are much heavier than those of ragweed and other plants that have airborne pollens associated with allergic symptoms.” In contrast to Common Ragweed (*Ambrosia artemisiifolia*), Dr. Harris noted, “The pollen of *A. artemisiifolia* is produced in enormous amounts compared to other grasses, and a single plant alone may produce millions of pollen grains. Since the pollen grains are small (18–22 μm), they are often transported long





“Since the pollen grains are small (18-22 um), they are often transported long distances.”

distances.” Looks as though we may have found our seasonal allergy culprit. Now like most plants, various species of Ragweed do serve as a source of food for insects and animals, but in researching this article online, I failed run across Ragweed on any organization’s list of ‘must-have’ beneficial plants.



Daily Pollen and Mold Report provided by the National Allergy Bureau.

So the next time you want to find out what’s making you sneeze, check out the Daily Pollen and Mold Report to see what’s in the air. You can access the site through the American Academy of Allergy, Asthma & Immunology [website](#).



Southern Maryland Community Becomes Model for Stormwater and Stewardship

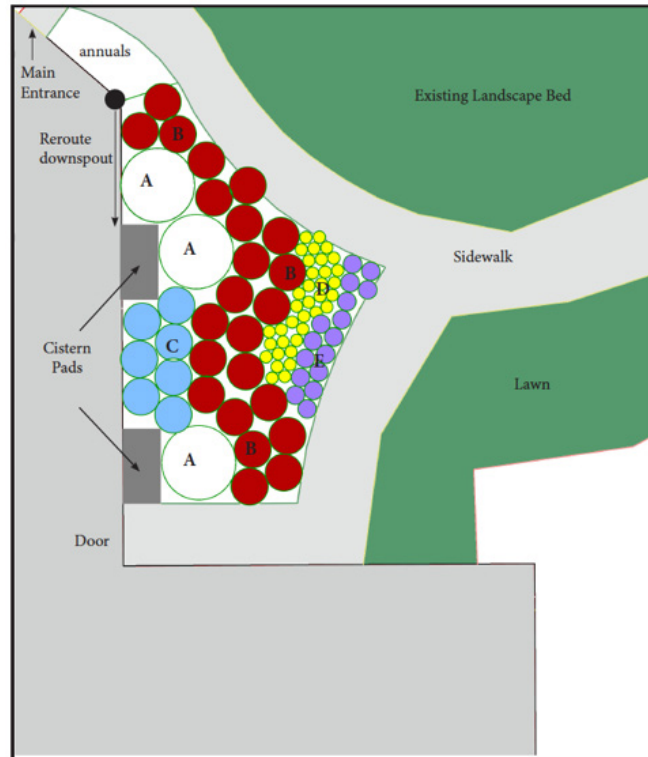
+ JACKIE TAKACS

Located on a 42-acre parcel of land on the banks of the Patuxent River Calvert County, Asbury Solomons Retirement community is a mix of apartments, cottages, assisted-living suites, and a skilled nursing facility for some 600 residents. Built before current Environmental Site Design (ESD) standards, stormwater coming from the campus' rooftops and roadways are plumbed to an underground conveyance system that discharges untreated stormwater runoff directly to the Patuxent River. In 2018 Asbury's *Go Green Team*, led by resident Sue Hu, proposed a plan to make their campus a model community for the stewardship of the Patuxent River that would educate not only their residents, but those of Calvert County and Southern Maryland about the impacts of stormwater on the local environment and waterways.

The process started with the development of a Master Stormwater Plan for campus community funded by the *Go Green Team*. The resulting plan identified 10 conservation landscape areas, 74 cistern, and 42 rain garden opportunities that would treat over 130,000 square feet of impervious surface on the campus. The first step in putting the plan into action happened on October 5, 2020 with a kick-off project funded by the *Go Green Team* and Chesapeake Bay Trust in the form of a 484 square foot conservation landscaping and rainwater harvesting project, designed by Jennifer Vaccaro of *Living Landscape Solutions*, who also developed the Master Stormwater Plan.



“stormwater coming from the campus' rooftops and roadways are plumbed to an underground conveyance system that discharge untreated stormwater runoff directly to the Patuxent River.”



Jennifer Vaccaro's design for the conservation plantings and the cisterns at the entrance to Asbury Solomons Main Building

The project site required the removal a turf, amendment of soils, and the replumbing of the building rain gutter system for the installation of 85 new native plants and two 265-gallon 'Slimline' rainwater harvesting tanks. It took McKenzie Contracting's crew and Asbury Solomons' facilities crew roughly eight hours to install the project and replumb the drainage. Stormwater from the rainwater harvesting tanks has been diverted to soaker hoses within the garden and its overflow is





"Centrally located at the entranceway of the main building, the garden will become a focal point and educational demonstration area for residents and guests."

redirected back into the original drain. Overflow will only happen with very large storm events and will not contain the first flush of "dirty" rainwater.



Gene McKenzie and crew of McKenzie Contracting, installed the Conservation Landscaping and Rainwater Harvesting project. Image source: Jackie Takacs.

Centrally located at the entranceway of the main building, the garden will become a focal point and educational demonstration area for residents and guests. Once COVID restrictions are lifted, the Asbury campus will once again become an open campus for non-residents and community member to come and view this project along with future stormwater BMPs at work. Complimenting this project, two virtual workshops on rain barrels and conservation landscaping were hosted by University of Maryland Extension faculty, Jackie Takacs and





Nicole Basenback. The workshops focused on how residents can implement similar projects on their properties.

This is the first in a number of projects and educational events that we hope will result in the investment in Asbury Solomons' new Master Stormwater Plan. Members of Asbury's *Go Green Team* and Garden Club will work with Asbury's Grounds Committee to maintain the project. The *Go Green Team* also has a very active and successful fundraising plan to continue to support environmental projects. Both Vaccaro and McKenzie hold Chesapeake Bay Landscape Professional Certifications. For more information about the project – go to <https://sites.google.com/umd.edu/swm-project-asbury-solomon/home>.



Welcome Calvert County WSA!

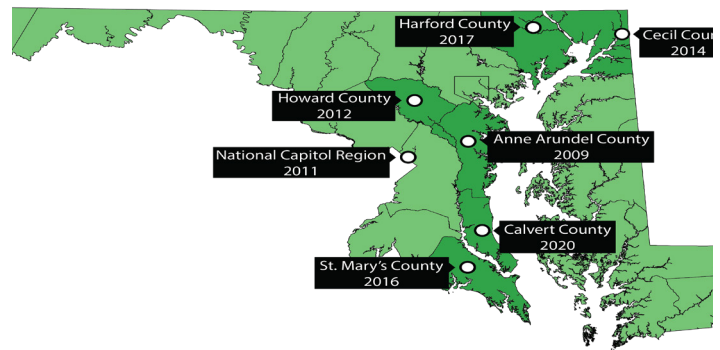
+ NICOLE BASENBACK

Watershed Retoration Educator
University of Maryland Extension
26737 Radio Station Way, Suite E2
St. Mary's County 301-475-4484
Calvert County 410-535-3662

University of Maryland Extension is partnering with Calvert County government to offer the Watershed Stewards Academy (WSA) program to local residents. Calvert County WSA joins six other academies offered across the state, with the oldest being the Anne Arundel County WSA program that started in 2009. Ten community members with a wide array of backgrounds and interests, have joined this inaugural class that started on October 6, 2020.

Due to current events, this course is being offered primarily online with the hopes to engage Stewards for in-person field sessions in the spring. In the meantime, virtual classroom training will continue in a diverse range of topics including: watershed processes, stormwater best management practice installation and maintenance, native plants, project funding and permitting, community engagement, and much more. Welcome Calvert County WSA! Our team looks forward to working with you.

If you'd like to learn more about the WSA program, please visit our website at <https://extension.umd.edu/watershed>, or contact your regional watershed restoration specialist.



Water Education Summit Goes Virtual, Exceeds Attendance Goals

+ JENNIFER DINDINGER



Penn State water resources educator Jennifer Fetter did what all Extension agents do when they can't find the right resource for their programming: she created it herself. Five years ago she kicked off the [Dive Deeper Summit](#) as a way to provide professional development and networking for youth water educators in Pennsylvania and the mid-Atlantic. While this year's Dive Deeper "Distantly" Summit was obviously a little different, it also had great attendance.

"A record [number of] educators from school classrooms, parks and nature centers, and educational institutes across the United States and Canada 'gathered' to learn about and share water education during this time of distance learning."

Jennifer Fetter, Water Resources Educator with Penn State Extension.

In light of challenging budget times, Penn State Extension and Maryland Sea Grant Extension offered registration scholarships, which helped several people who otherwise would not have been able to attend. To foster connection and community prior to the main event, participants received a "conference in a box" mailed to their homes. The box included helpful items for working from home, such as a camera cover and a screen cleaner. A crowd favorite was the biscotti, which was shared during the coffee hour preceding the summit.





"Summit attendees learned about StoryMaps as a tool for curriculum, took a live video tour of an amazing aquaponics operation at a Pennsylvania high school, and even had the chance to browse through the 'virtual exhibit hall' to pick up teaching resources."



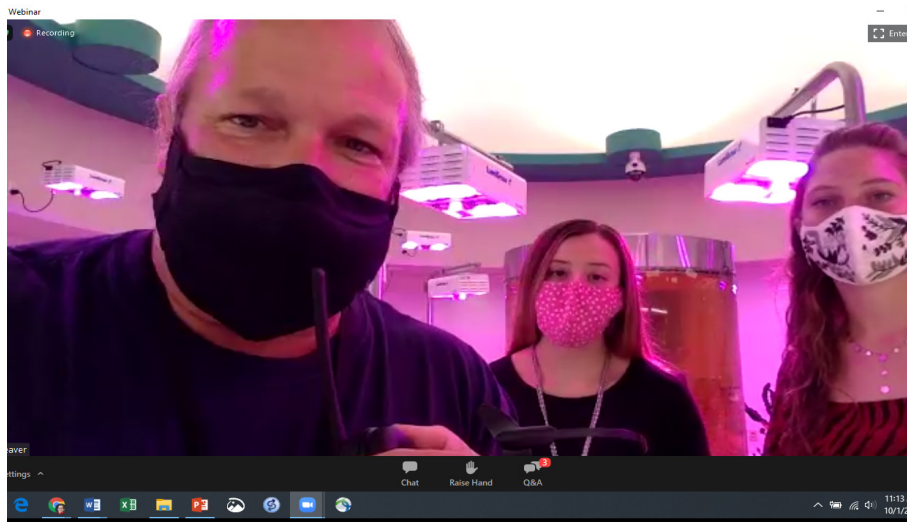
StoryMap front page from Keynote Speaker Kathy Carroll

Summit attendees learned about [StoryMaps](#) as a tool for [curriculum](#), took a live video tour of an amazing [aquaponics operation](#) at a Pennsylvania high school, and even had the chance to browse through the “virtual exhibit hall.” The exhibit hall was chock full of tools that water educators are using to help parents, teachers, and kids stay connected to water and the outdoors even in a pandemic.





" 99% of participants indicated an increase in knowledge about tools, resources, and opportunities to help them teach about water."



Aquaponics operation virtual tour with educator Justin Weaver and two high school students.

Afterward, 99% of participants indicated an increase in knowledge about tools, resources, and opportunities to help them teach about water. And 89% planned to increase their time or efforts teaching youth about water. Seventy-three percent of attendees even said they met someone during break-outs who they were likely to continue networking with.

If you are interested in viewing any of the presentations, the Summit was recorded and is available for a discounted registration fee. Email [Jenn Fetter](mailto:Jenn.Fetter) for more information. Or, wait for fall 2021 when (hopefully!) the Summit is [once again live and in person.](#)



HEADWATERS

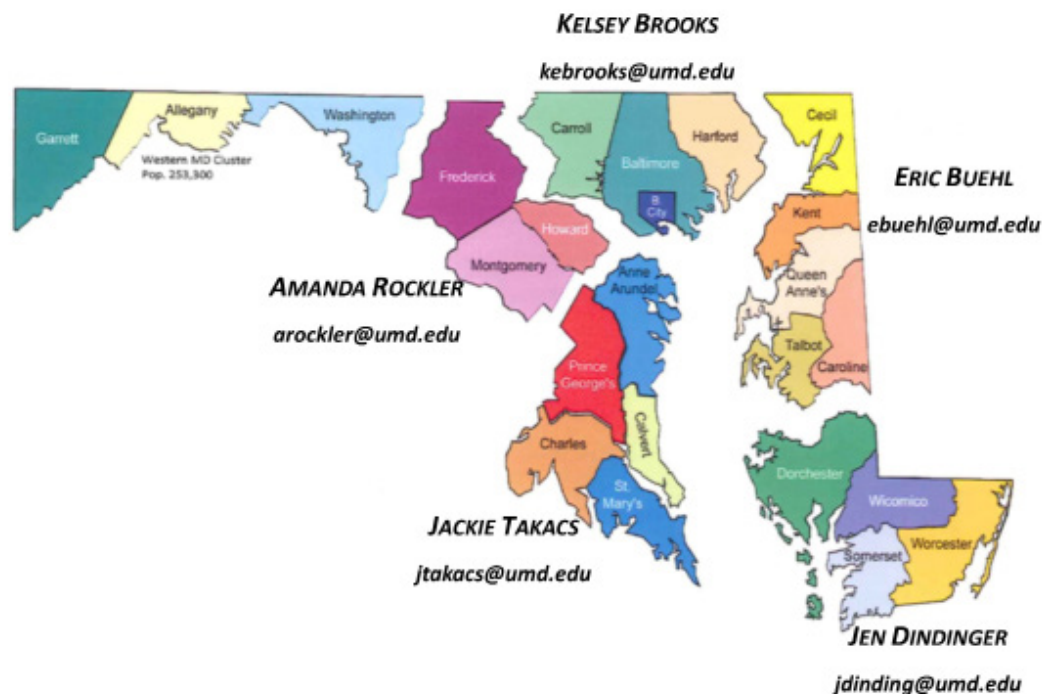
PUBLICATION OF MARYLAND SEA GRANT EXTENSION WATERSHED EDUCATORS

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 Poole, 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.