University of Maryland Extension
Solutions in your community

Sea Grant Maryland

Issue 4 Volume 2
December 2015

Headwaters

Publication of Maryland Sea Grant Extension Watershed Educators

Inside this Issue

Dear Readers:

My father always said, "Practice doesn't make perfect...perfect practice makes perfect." While this was great advice for 10 year olds playing soccer, I've come to realize that even perfect practice does not always result in success. In fact, an important aspect of perfect practice is trying, and sometimes failing.

To succeed in restoring our local waterways, we must try. We must try new, innovative practices, we must try to change behavior for the social good, and we must try to change our own approaches to better communicate and make a difference in water quality. We will not always succeed- but with rigorous science, survey, and evaluation, we can "practice perfectly" by learning and improving.

This quarter, we are happy to share with you stormwater practice innovations, an outreach program audit tool, educational practices to increase adoption, restoring the American Chestnut, and a survey to better understand climate-related perceptions in the community.

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

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Slowing the Flow at Oregon Ridge

+ Krisztian Varsa

+ People are amazed that a garden can be attractive yet serve a myriad of services.

One of Baltimore County's premier parks received two new demonstration stormwater features this summer. With the help of the Eagle Scouts and summer interns, Oregon Ridge Park installed two rain gardens in highly visible parking areas, treating stormwater runoff from impervious asphalt.

Oregon Ridge Nature Center is visited by nearly 70,000 people each year. The Nature Center and surrounding park are a model for conservation practices including forest management, native plant maintenance, invasive species removal, deer control, rain barrels, and stream protection.

In partnership with the University of Maryland Sea Grant Extension, the Oregon Ridge Nature Center Council received support to remove invasive species and build two rain gardens with native plants,

"The rain gardens will remediate stormwater runoff and treat 2,000 square feet of imperviousness."

helping to infiltrate water leaving impervious surfaces. Two Eagle Scouts, with the support of the Nature Center's volunteers and interns and local Watershed Specialist, designed and implemented the rain gardens, which are protected by deer fencing to ensure the plants' long term survival. Oregon Ridge Nature Center's Director Winny Tan shares that, "Visitors and volunteers have remarked on how much of a visual interest and aesthetic appeal the gardens add to what were originally on those two sites. People are amazed that a garden can be attractive yet serve a myriad of services."

The rain gardens will remediate stormwater runoff from two significant sources of runoff: the parking lots and the Nature Center roof. The restoration project resulted in the removal of 1,500 square feet of invasive species and was replaced by over 200 native plants. The rain gardens will treat approximately 2,000 square feet of impervious surface. The Implementation Team will complete the project in 2016 with engaging educational signage encouraging homeowner adoption and long term maintenance of the projects.

Hot on the Streets- The Outreach Program Audit Tool

+ Amanda Rockler

+ this quick assessment to enable users to build or enhance their existing behavior change campaigns and outreach programs.

Are you trying to improve an existing outreach program, rather than create a new one? There is a new tool that may be able to help. The Outreach Program Audit Tool created by the Chesapeake Bay Trust and the University of Maryland Sea Grant Extension will assess the effectiveness of an existing outreach program and identify areas for program improvement.

Utilizing social marketing research and materials from experts from across the field, including famed social marketing guru, Nancy Lee, our team built this quick assessment to enable users to build or enhance their existing behavior change campaigns and outreach programs.

Research shows that raising awareness and providing education are vitally important activities, but that those efforts alone do not lead to behavior change. This tool helps assess

"The tool is designed to help existing outreach programs to evolve."

the degree to which an existing outreach campaign already contains elements of social marketing. The tool is designed to help existing outreach programs evolve to function more like a behavior change campaign.

The Assessment's six sections include:
1. Background, Purpose, Focus
2. Behavior Selection
3. SWOT Analysis
4. Audience
5. Program Development
6. Evaluation and Social Science Tools

The assessment uses a scoring system, designed to provide feedback for each section and the campaign overall. Further, each section allows for the auditor to make notes for improvement and provides links to additional resources. In the future, a companion resource document will be created for the assessment tool.

"Example Section from Outreach Program Audit Tool."

5. PROGRAM DEVELOPMENT	
5(a). Was the information from or about your target audience used to tailor your behavior change program? (Score 0 if no information has been collected from or about your audience; Score 1 if yes.)	0 1
5(b). Positioning Statement: Do you have a positioning statement that guides your campaign? *Example: "We want chefs to see disposing of fats, oils, and grease appropriately as easy and as more beneficial than dumping it down the drain."* (Score 0 if no; Score 1 if yes.)	0 1
5c: Detailed marketing activity review (4Ps)	
<u>Product</u> 5(ci). Are you currently providing a product/service as part of your program? *Example: customized technical assistance to install rain barrels.* (Score 0 if no; Score 2 if yes.) 5(cii). If yes, is your product or service based on your audience's perceived barriers and benefits to the behavior? (Score 0 if no; Score 2 if product is based on perceived barriers and benefits.)	0 2 0 2
<u>Price</u> 5(ciii). Are you currently providing a monetary or non-monetary incentive to your audience to do this behavior? *Examples: Rebate program for best management practices; free residential site assessment.* (Score 0 if no; Score 2 if yes.) 5(civ). When deciding on the incentive, did you factor in what people would be giving up or receiving by doing this behavior? (Score 0 if no incentive; Score 2 if you considered costs/benefits to the audience.)	0 2 0 2
<u>Place</u> 5(cv). Does your program incorporate convenience strategies for your audience, e.g. does the program make the logistics of doing the behavior appealing? (Score 0 if no; Score 2 if yes.) 5(cvi). Within your program offerings, have you considered where people go to acquire relevant products? *Example: working with the local hardware store to stock rain barrels* (Score 0 if no; Score 2 if yes.)	0 2 0 2

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Seeking Tall, Attractive Native Grass to Help with Bay Clean-up

+ Eric Buehl

+ Have your cake and eat it too, with switchgrass.

It is not very often that you find yourself in a situation when you can have your cake and eat it too, but with switchgrass, this might just be one of those times. Not only will this attractive native plant beautify your property, it will help improve wildlife habitat and Chesapeake Bay water quality as well! Found in almost all 50 states, switchgrass (Panicum virgatum) is a perennial warm-season native grass that is very different from cool-season grasses such as Kentucky bluegrass or fescues that most people are familiar with. Cool-season grasses do most of their growing in the springtime and some in the fall, whereas warm-season native grasses, including switchgrass, have adapted to do most of their growth in summer months. Switchgrass is also a C4 plant, which is a relatively small class

Switchgrass (Panicum virgatum) - both attractive and functional. Image Cornell University.

"It helps to utilize the nitrate (NO3-) form of nitrogen."

of plants that grow well in the dry conditions of summer when more carbon dioxide (CO2) is present in the atmosphere. This means that switchgrass can aid in Carbon sequestration better than its cool-season relatives.

The USDA Natural Resources Conservation Service notes that switchgrass is more than just an attractive landscaping plant since it produces a high quality hay for livestock, provides food and cover for a variety of wildlife, offers a source of biofuel, and is planted to help reduce erosion since it can grow in a variety of soil and climatic conditions. To add to the list of benefits, Dr. Ken Staver, Associate Research Scientist and Acting Director of the University of Maryland's Wye Research and Education Center, has been researching the benefits of switchgrass on water quality and how it helps to reduce the nitrate (NO3-) form of nitrogen in shallow groundwater. Excess amounts of nitrate can negatively affect bay water quality by stimulating the growth of algae.

Five months growth of switchgrass at a research plot at the Wye Research and Education Center.

"It leaves behind a valuable source of carbon."

Switchgrass produces a notable amount of growth both above and below ground which contributes to a significant amount of biomass. However, it is the plant's extensive root system which grows deeply into the soil, down to the water table Dr. Staver points out, that gives it access to nitrate in groundwater, which it can use to support more plant growth. Once the groundwater moves back up to into the root zone later in the season, some of the roots will begin to decompose, leaving behind a valuable source of carbon that further aids in improving water quality.

No need to worry about the roots it left behind, because they will be replaced by more roots next season, and the season after that, and on, and on. So the next time you are thinking about planting an ornamental grass that wears a number of hats, give switchgrass a try!

Dr. Ken Staver showing the extensive root system produced by switchgrass. Image David Harp.

Restoring the American Chestnut

+ Jackie Takacs

+ We've stacked the deck for the American chestnut

The American chestnut is a large, deciduous tree of the beech family and is native to Eastern North America. It is one of four species of chestnut trees that exist in the world. Prior to 1900, chestnuts and oaks predominated in over 200 million acres of forest from Maine to Florida and west to the Ohio Valley, and were integral to everyday life in the United States. Informally referred to as "cradle to grave" trees, their rot-resistant hardwood was used to make everything from baby cradles to coffins. Wildlife thrived on the trees, which each year produced bumper crops of nuts.

In 1876, a New York nurseryman imported the Japanese chestnut, and unknowingly introduced the fungus C. parasitica, commonly known as chestnut blight. Blight was first discovered on the American chestnut at the Bronx Zoological Park in 1904. With no resistance to the blight, an estimated 40 billion American chestnuts were wiped out in just 60 years. The American chestnut (Castanea dentata) offers a compelling story of how forests change and why some management is needed to maintain native forests.

"130 resulting seedlings were planted at Codorus State Park in Hanover, PA."

As reported in our last issue, Maryland Sea Grant and Carroll and Allegany public schools are using the American chestnut as a key species for engaging students from middle to high school in hands-on scientific exploration, civic tree plantings, and environmental awareness. This fall 150 students from Washington Middle School and Fort Hill High School in Allegany County planted two new American chestnut groves on their campus with over 40 trees per grove.

Won't these trees succumb to the blight? Good Question. Possibly – but we have stacked the deck!

The seedlings used for these plantings have a genetic advantage – they are the offspring of a very special set of "grandparents." In 2004, a 100+ year old American chestnut in Cumberland County, PA was hand-pollenated with a 200+ year old American chestnut from Amherst County, VA. The 130 resulting seedlings were planted at Codorus State Park in Hanover, PA and are known as the Codorus F1 Old Survivor Trees. There are over 60 F1 trees still living in this grove and they appear to be moderately resistant to the blight. It is believed that the

"These new chestnut groves will be living laboratories for students."

second generation (F2) nuts produced from these trees may be more resistant to the blight since both parents probably have resistant genes. These F2 nuts were harvested in Fall 2014, raised to seedling size by the Maryland Department of Natural Resources and Frostburg State University, and were used for our current plantings.

These new chestnut groves will be living laboratories for the students, provide food and habitat for local wildlife and help improve local water quality. Look for more updates in the future about our online curriculum and student driven projects.

Kelly Tree (100+ yrs)

Amherst Tree (200+ yrs)

Risk perceptions in vulnerable communities

+ Jennifer Dindinger

+ A survey specifically tailored to three communities that are at high risk from the effects of flooding, erosion, and extreme heat

"What are the most important issues in your neighborhood that you would like to see addressed?"

"How do these issues personally affect you?"

"What actions — if any — have you taken to prepare for, or respond to, extreme weather events?"

These are just a few of the questions that will be asked of community members in Baltimore City and two vulnerable coastal communities on the Eastern and western shore in 2016 as part of an exciting new research project funded by the Town Creek Foundation. Several of the watershed specialists will work together with local and regional partners under the leadership of Dr. Karen Akerlof from the Center for Climate Change Communication (4C) at George Mason University to complete this project.

For the past three years, the 4C group conducted a **statewide survey** in Maryland that asks residents questions about their energy and climate change attitudes and policy support.

"Flooding caused by high tide along the Choptank River."

This flooded street in Cambridge, Maryland, is appropriately named Water Street. Credit: David Harp and Bay Journal

In 2016, this ongoing survey will include a first-of-its-kind add-on survey specifically tailored to three socially vulnerable communities that are at high risk from the effects of flooding, erosion, and extreme heat in the changing climate. This additional survey will be delivered door-to-door in partnership with local higher education institutions using survey "teams" to administer the questions in person.

The goals of this effort are to:

- Further develop relationships with local community governments and organizations;
- better understand which questions communities want answered and what barriers to community engagement exist;
- obtain baseline data for use in local/state preparedness efforts; and

"Develop relationships with local community governments & organizations."

- promote the importance of socially vulnerable communities in state and local decision-making on climate and energy.

The community survey results will be released in summer/fall 2016 in parallel with the statewide survey.

In other climate-related news... The University of Maryland Sea Grant Extension Coastal Communities Specialist works with state agencies, researchers, and policy-makers to ensure that the latest science is considered when addressing climate change adaptation and mitigation. **Additionally, the Watershed Specialists are working with New Jersey Sea Grant Extension and Rutgers Cooperative Extension to identify ways that stormwater best management practices in the mid-Atlantic can be designed, installed, and maintained to be more climate resilient.**

For more information about these projects, please contact Jennifer Dindinger at jdinding@umd.edu or 410.228.8800.

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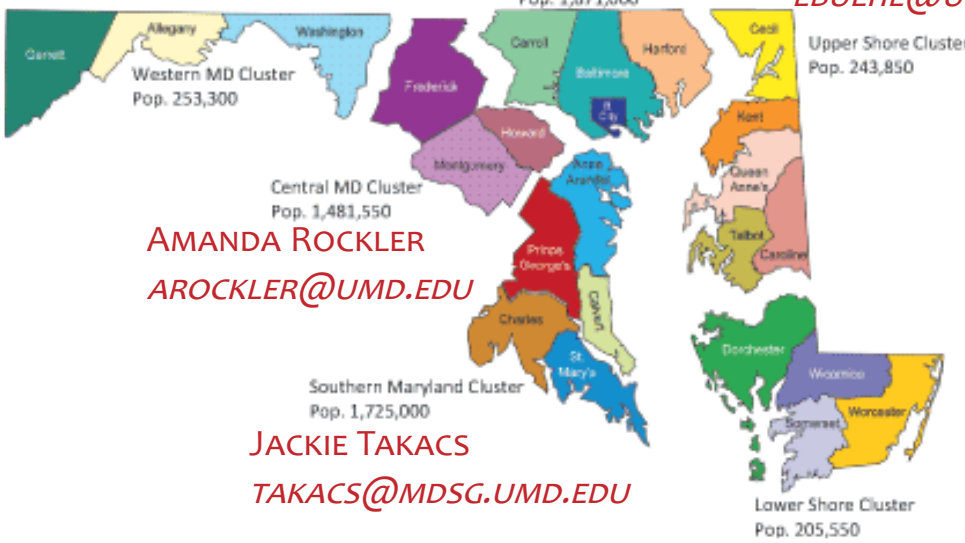
Who's *Your* Watershed Specialist?



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