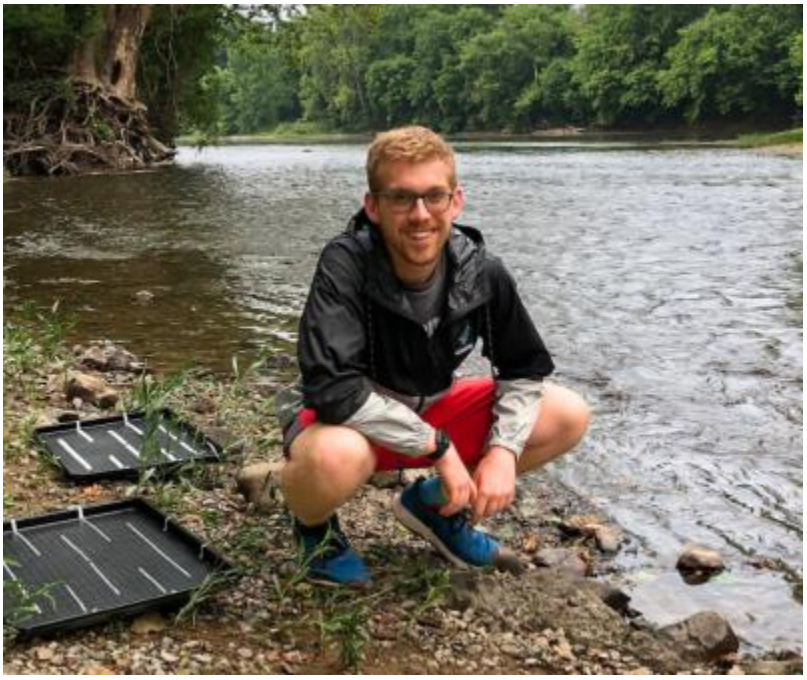
Arbor Vitae
From the Foundation of the State Arboretum of Virginia | Summer
June 2023

FROM VERMONT TO VIRGINIA, UNDERGRAD RESEARCHER SETTLES IN AT BLANDY FOR THE SUMMER



Hello, everyone! My name is Nate, and I am an REU participant this summer at Blandy. I come from a small town in northwestern Vermont called Georgia. The town is located about 45 minutes from Canada!

During the academic year, I study Environmental Science with a minor in Wildlife and Forest Conservation at Castleton University in Castleton, Vermont. While looking

through the REU catalog in late November, the program here at Blandy Experimental Farm caught my eye. Blandy offered several research projects ranging from bees to birds, and aquatic insects -- all of which I thought were fascinating to study. Once I looked deeper into the program and saw pictures of the area and community, I knew I wanted to be a part of it.

I knew from the first day of arrival, this summer would be my best yet. The first chapter of my REU adventure has been quite the journey -- moving in, orientation to the faculty and area, and most importantly, the project selection process!

Moving in was a nerve-wracking, yet enlightening process. I was introduced to my roommate and all the other REUs who would accompany me for the 11-week program. Soon after, onboarding and project selection were well underway.

Listening to the variety of projects presented this year was insightful. As I heard more, my interest in each project idea skyrocketed. After the project selection process was complete, I was paired with my mentor, Kyle Haynes, and understanding and researching aquatic insects became my area of study.

My project this summer is focused on the impacts of light pollution on the behavior and decisions of aquatic insects. I hope to learn that there are a number of factors influencing aquatic insect habitat selection, and to understand what exactly these factors are.

During the first few weeks of the program, there were many challenges and exciting experiences. One major challenge is learning that the scientific process in real time does not always go by the book. This might mean trouble-shooting problems and even altering your methods; however, the result becomes that much more accurate.

On the other hand, it is exciting to see the combination of you and your mentor’s project come to fruition. It is absolutely worth every second!

Thanks,
Nate

Nate Forgan's faculty mentor for the 2023 program is ***Kyle J. Haynes*** *(Associate Director at Blandy Experimental Farm and Research Professor of Environmental Sciences, University of Virginia) and the focus of his research is "*Assessing the visual averaging hypothesis and the influence of spatial fragmentation of polarized light on aquatic insects' oviposition site selection. (The Impacts of Light Pollution on Aquatic Insect Habitat Selection)." *The Research Experiences for Undergraduates (REU) program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation.*

A THRIVING RESEARCH COMMUNITY IS ABUZZ AT BLANDY EACH SUMMER

Undergraduate student Sydney Sauls in the greenhouse with some of the plants she's researching this summer.

Blandy becomes home to a thriving summer scientific research community each summer. Undergraduate and graduate students, university faculty, and fellow researchers gather for a program of focused study on a diversity of research projects in an environment that few other institutions can offer.

“When the summer research season kicks off, Blandy comes alive with scientific curiosity and exploration,” said Maggie McCartney, Blandy’s Field Station Manager.

Since 1992, Blandy has provided Undergraduate Research Fellowships to hundreds of students interested in ecology and evolution. These fellowships are funded by the National Science Foundation's Research Experience for Undergraduates (REU) program and Blandy. This year, the Harold M. and Adaline S. Morrison Family Foundation also generously provided a grant through the Foundation of the State Arboretum to assist with funding. Each fellowship award includes a weekly stipend, additional funds for purchasing groceries, and a budget for research supplies and research activities.

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Blandy also provides dorm-style housing facilities to these researchers in the historic Quarters Building at the heart of the property and within walking distance of research facilities and field sites. Our research village cottages, a 5-bedroom farmhouse, and Blandy’s historic Stone Cottage provide additional housing for faculty mentors, graduate students, and other visiting researchers.

Through the course of the 11-week REU program, students interact with professors, graduate students, and stakeholders with the primary goal of teaching students how to formulate testable hypotheses about important ecological and evolutionary questions. The **format** of the program encourages students to develop skills in experimental design, data collection, analysis, and critical reading of primary scientific literature. Students also learn to prepare and communicate scientific information to other scientists and members of the general public.

After a competitive application process, the students arrive at Blandy in late May. During the first week of the program, mentors present an introduction to their diverse areas of research and student/mentor pairing takes place. Each student then identifies a novel research question related to their mentor's area of expertise and designs a study to address this question. With faculty support, the students formalize their ideas into written proposals, which they present to the research community for feedback.

This is when the fun begins, and REU students start conducting original and independent field research guided by their research proposal. During the program, students meet routinely with their advisors to discuss project progress, and to gain skills in data analysis and interpretation. You might notice the increased presence of researchers on the grounds of Blandy, testing soil samples, monitoring bird nesting habits, collecting plant and insect specimens, deploying experimental setups, and living life as summer residents of Blandy Experimental Farm.

In August, the program wraps up as each student gives a 15-minute oral presentation on their projects as part of the traditional summer "Research Forum" attended by all resident researchers and guests. The Forum is also used as an opportunity for students to celebrate their success with members of our broader community, especially those active in the Foundation of the State Arboretum.

Former REU students have gone on to share their Blandy research through poster sessions, conference presentations, and publications. Many have continued their education beyond undergrad, pursuing graduate degrees and careers in STEM, and several have returned to Blandy as graduate students, mentors, and staff members.

Make no mistake, this is not a mock or manufactured experience. REU participants are performing real, novel research on topics relevant to today's scientific and social communities. **Read past projects here** and **learn more about the systems our students are studying this summer here**.

University of Virginia
Blandy Experimental Farm NSF REU
2023 Program Participants

Patrick Crumrine, PhD
REU Coordinator

Rowan University

Nia Ashby
Hometown:
Ossiipee, New Hampshire

Bowdoin College

You've been bugged: Defense mechanisms against conopid fly parasitism by bumblebees (*Bombus griseocollis* & *Bombus impatiens*)

Mentor: T'ai Roulston

Kylie Bill
Hometown:
Florham Park, New Jersey

American University

The role of flower volatiles in maintaining reproductive isolation in the absence of pollinator shift and morphological differences

Mentor: Dave Carr

Camila Cohen Suárez
Hometown:
Alexandria, Virginia

University of Virginia

Effects of predator community composition and habitat connectivity on intraguild predation in aquatic insects

Mentor: Patrick Crumrine

Daniel Flores
Hometown:
Radford, Virginia

University of Pikeville

Rags or Riches: How supplementary nectar affects foraging patterns, division of labor, and colony health of *Bombus impatiens*

Mentor: Kelsey Schoenemann

Nate Forgan
Hometown:
Georgia, Vermont

Castleton University

Assessing the visual averaging hypothesis and the influence of spatial fragmentation of polarized light on aquatic insects' oviposition site selection

Mentor: Kyle Haynes

Dimitri Gonzalez
Hometown:
Pittsburgh, Pennsylvania

Wittenberg University

The impact of predator identity on the anti-predator behavior of prey in an aquatic insect intraguild predation system

Mentor: Patrick Crumrine

Caroline Mastria
Hometown:
Sykesville, Maryland

Shippensburg University

Game of spot the difference: The role of intra-clutch variation in the Northern cardinal (*Cardinalis cardinalis*) on the rejection of cowbird-like eggs

Mentor: Juliana Villa

Omar Morosse
Hometown:
Nyack, New York

Kenyon College

Trade-offs between frontline and backline defenses in a multiple host brood parasite system

Mentor: Daniel Hanley

Maddie Rapelyea
Hometown:
Silver Spring, Maryland

Colby College

Host plant and temperature mediated changes in *Vanessa cardui* and *Dryocampa rubicunda* wing morphology

Mentor: Rebecca Forkner

Sydney Sauls
Hometown:
Baltimore, Maryland

Howard University

Good things take thyme: Effects of thymol on nodulation, growth, ant defense & herbivory in African Cowpea, *Vigna unguiculata*

Mentor: Mary McKenna

IT'S DRY OUT THERE! 7 TIPS TO CONSERVE WATER

By Emily Ford, Lead Environmental Educator

The VA Department of Environmental Quality declared a Drought Watch Advisory in early June for 17 counties in Virginia, including Clarke County. It has been quite dry this summer, even with the recent rains, and we are approaching a drought warning.

While Blandy's water comes from a well (a hole drilled into the ground to access water contained in an aquifer/ the groundwater), we can all help save water even if you get yours from a municipal water supply.

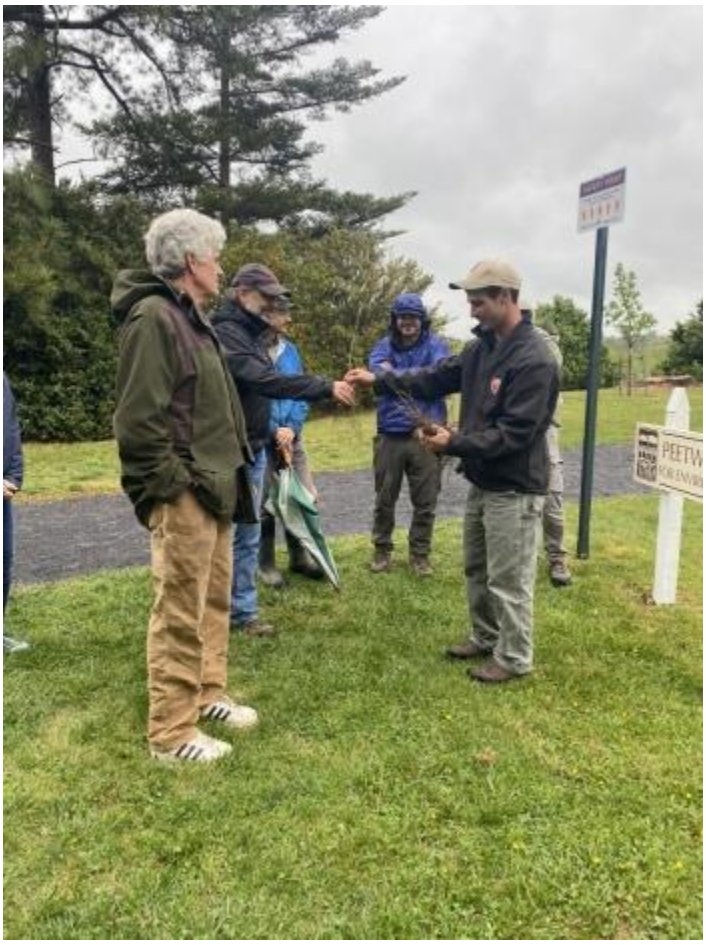
We encourage you to use the water-saving tips below to help conserve your water and well:

1. Only use dishwashers and washing machines when you have a full load. Water-saving models will allow you to adjust the washer's water level. When using the washing machine, cold water uses less energy.
2. Keep a container of drinking water in the refrigerator. This will save running the tap while waiting for the water to cool.
3. A shower can use up to 7 gallons of water per minute. Limit your showers to the time it takes to soap up, wash down and rinse off.
4. Turn off the tap while brushing your teeth, shaving, and washing your hands.
5. Flush toilets only when needed. Don't use the toilet as a wastebasket.
6. Don't wash cars.
7. Monitor and repair any leaky faucets or toilets as soon as possible.

More tips can be found at the EPA's website: **https://www.epa.gov/watersense/start-saving**

To see the latest Drought Stage declarations for your area,
visit: **https://www.deq.virginia.gov/our-programs/water/water-quantity/drought**

2023 TREE OF THE YEAR



ALLEGHENY SERVICEBERRY (AMELANCHIER LAEVIS), NAMED 2023 TREE OF THE YEAR

Boyce, VA – Representatives from the State Arboretum of Virginia at Blandy Experimental Farm have named the **Allegheny serviceberry (*Amelanchier laevis)*** as the **2023 Tree of the Year**. The Arboretum's 2023 Tree of the Year was selected after deliberation by Curator T'ai Roulston and Blandy arborists. Since 2019, the State Arboretum of Virginia has designated one extraordinary species of tree as its **Tree of the Year.**

In honor of Arbor Day, “the nation’s tree planting holiday,” **Blandy arborists and representatives from the Department of Forestry planted an Allegheny Serviceberry tree at the Arboretum on Friday, April 28.** The tree was added to a tree and shrub collection that dates to the 1930s.

“A vital part of our mission is to practice and promote tree education, science, and conservation,” said Roulston. “Through research and public programming, we want to share with everyone – of all ages – how important trees are to the environment.”

Four-season Interest

The Allegheny serviceberry, found native in Virginia, was chosen for its four-season interest, according to Roulston. A small understory tree, it’s ideal for landscapes and grows to only 15-25 feet tall.

The Allegheny serviceberry is one of the first trees at the arboretum to flower each spring when the delicate masses of white, fragrant flowers appear in mid-April. Small, dark purple berry-like fruit arrives in the summer. Also commonly known as juneberries, the edible berries attract pollinators and are a food source for native bees and more than 40 species of birds.

The fall foliage of the Allegheny serviceberry, when the leaves turn an orange-red color, is outstanding as well. The tree’s attractive gray bark lends structure to the winter garden.

“Juneberries” Serves as Food Source for Wildlife, Humans

Native Americans would dry juneberries, similar in size and taste to blueberries, and mix them with meat to create a high-energy snack called pemmican. Recipes for juneberry pies and jams are easy to find. If you want to eat the berries, though, you’d better be fast. Birds, squirrels, and other wildlife also enjoy the fruit.

How the Allegheny Serviceberry Gets Its Name

For settlers in the colder climates of North America, the blooming of the serviceberry was a sign that the ground was thawing. Graves could now be dug for loved ones who had died during the cold winter months and burial “services” could commence.

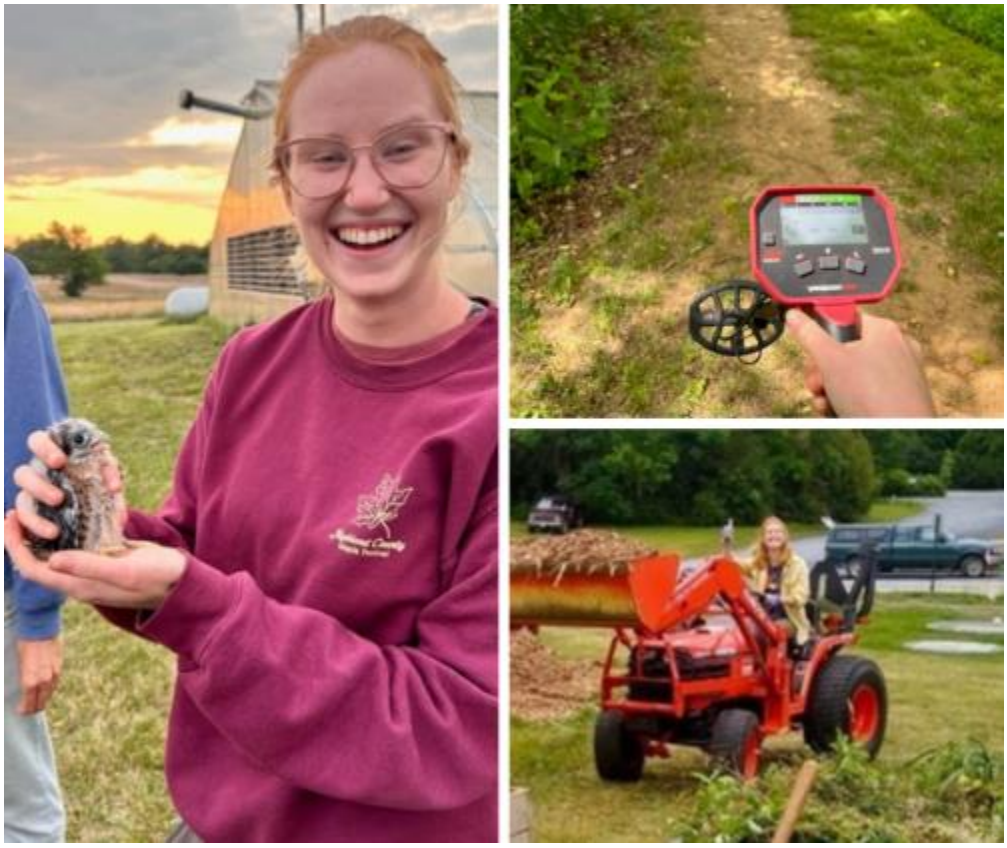
In some areas, the serviceberry is called shadbush or shadblow. The tree got this name because it blooms around the same time that shad return to their spawning grounds in freshwater rivers and streams. Common names also include smooth shadbush, juneberry and shadberry.

Garden Fair Returned to Blandy with Sunny Skies, Big Smiles and Red Wagons (of course)

Garden Fair returned to Blandy in May and Mother Nature cooperated! In fact, she made an appearance in the form of Neil Myers, one of the Blandy volunteers who also helps maintain the Native Plant Trail. Myers is pictured here with Carrie Whitacre, Assistant Curator of the Arboretum.

Save the Date for next year's Garden Fair on Mother's Day weekend! We'll be back at Blandy for the 34th Annual Garden Fair, May 11-12, 2024.

MEET MARGARET DONNAN, 2023 HORTICULTURAL INTERN



Hi! My name is Margaret Donnan, and I am serving as the 2023 Public Horticulture Intern at Blandy Experimental Farm. Here are a few highlights from the first few weeks of my internship!

To cap off the first week of my internship, I attended one of the fantastic public programs that the Foundation of the State Arboretum of Virginia offers throughout the year. This program, centered around the ecology of the American kestrel *(Falco sparverius)*, began with some background information about kestrels in the library

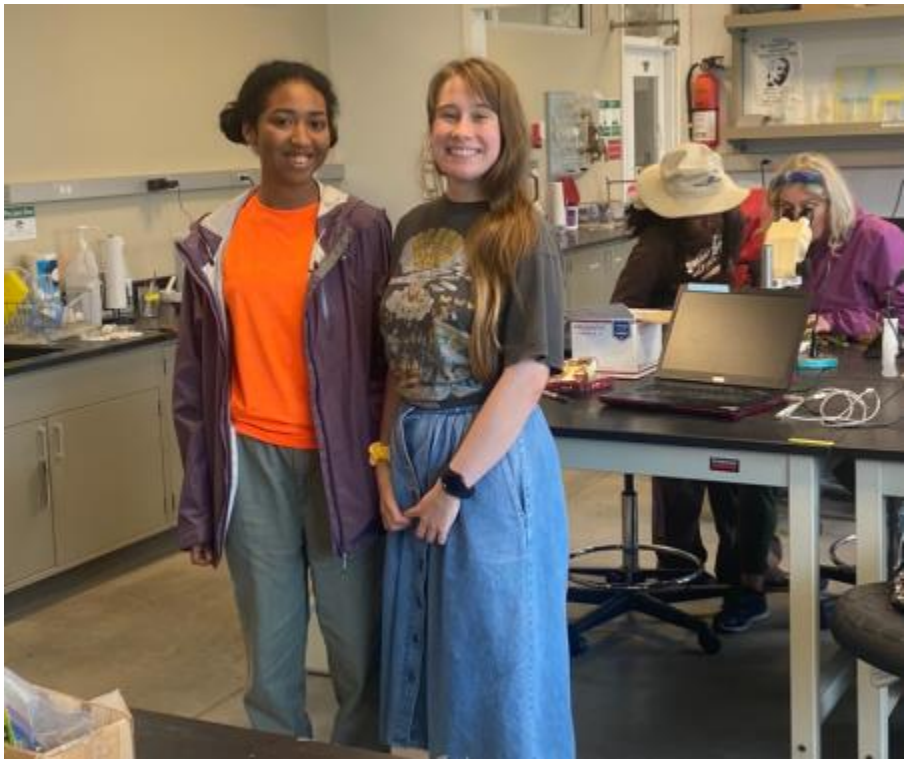
and culminated in a visit to the kestrel nesting box at Blandy. At this site, I got the opportunity to hold a young kestrel, which was absolutely incredible!

In the photo on the top right, I am using a metal detector to hunt for treasure – historical pawpaw *(Asimina triloba)* plant tags! One of the projects I am working on this summer focuses on uncovering the locations of the historical pawpaws planted at Blandy and learning more about the biological, historical, and cultural importance of pawpaw trees. Pawpaw Fun Fact: The primary pollinators of pawpaws include flies and beetles, who are attracted to the pawpaw flowers' unique (some might say stinky!) odor.

One of my favorite parts of the internship so far has been working with Blandy's brilliant assistant curators and an amazing team of volunteers to help care for the Perennial Gardens and the Native Plant Trail. In the bottom right photo, I am refining my tractor-operating skills by scooping wood mulch for the Native Plant Trail! We have been adding this wood mulch to the paths and edges of the Native Plant Trail Woodland.

This summer's horticulture intern is generously sponsored by the Fauquier and Loudoun Garden Club and the Andrew U. Ferrari Foundation.

HIGH SCHOOL STUDENTS GAIN HANDS-ON WORK EXPERIENCE AT BLANDY



Two rising seniors from Clarke County High School, Diana Kutai (left) and Vyolette Graham (right), are working as interns this summer and assisting faculty graduate students and REU students with their research projects from early June through July. Applications were accepted from area high school students in Winchester, Frederick, and Clarke Counties for the two internships from students who are thinking of majoring in the fields of science, technology, engineering, or math in college. The high school interns receive a stipend that enables them to assist in a variety of research projects for two months during the summer, spending six hours a day, five days a week in the field, lab, and greenhouse.

Blandy's goal is to inspire students to pursue their interests in a scientific field by offering them early experience in onsite environmental projects, as well as

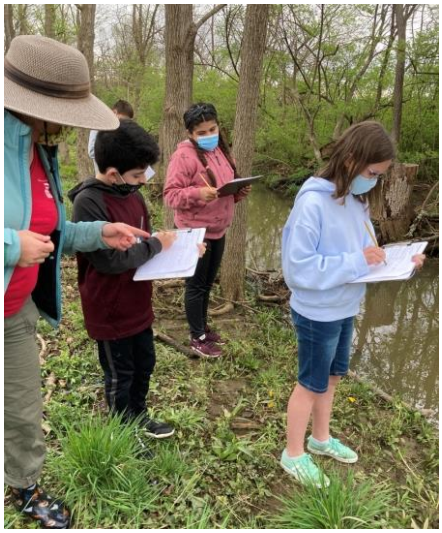
acquainting them with the scientific process. This is the fifth year of the program, which was interrupted by Covid in 2020 and 2021.

Funding for two area high school students to explore the complexities and joys of environmental science at Blandy Experimental Farm is provided by a grant from the James R. Wilkins Charitable Trust. FOSA thanks this organization for their ongoing support of environmental research and education.

GREENWAY GARDEN CLUB MEMBERS HELP CLARKE COUNTY STUDENTS CREATE RIPARIAN BUFFER AT SCHOOL

By Candace Lutzow-Felling, Director of Education

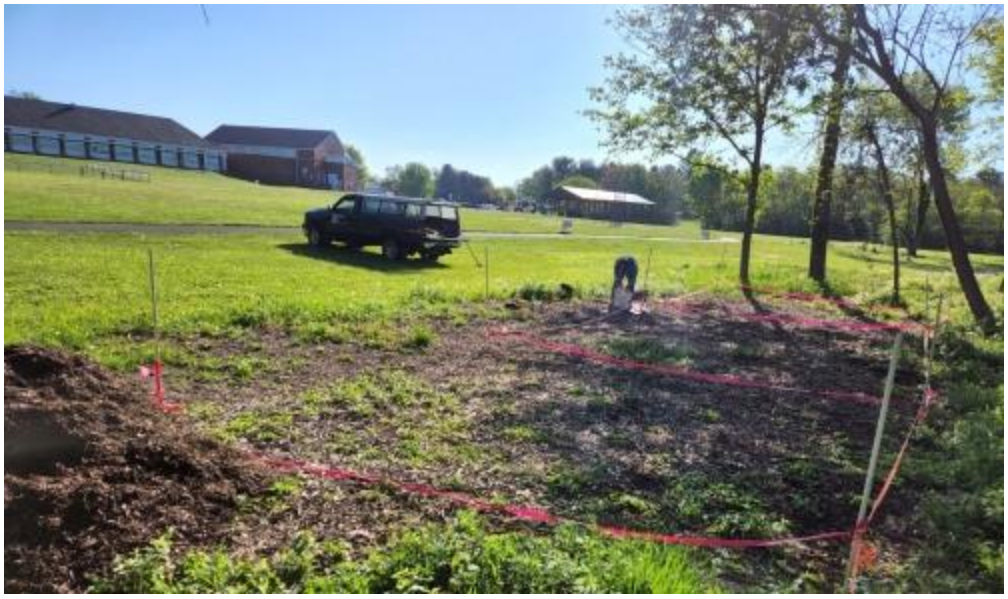
Did you know there is a stream that runs behind Boyce Elementary School? Three years ago, Clarke County fourth-grade students were learning what our native brook trout need to survive. They need streams that are cold (generally spring fed), have lots of pebbles and rocks on the bottom, and are clear (not muddy).



Students assessing stream health with Blandy Lead Environmental Educator, Emily Ford.

The next year, as fifth-graders, these students were examining their school yard and the stream, Roseville Run. They noticed this steam was not clear, mainly due to erosion of the soil bank and debris entering the stream. There was insufficient vegetation along the banks to impede sediment getting into the stream because several dozen dead or dying ash trees were removed along the stream, victims of the Emerald Ash Borer. The students exclaimed, “Our trout can’t live in this dirty stream!”

Their teachers encouraged the students to write letters to the school principal asking if they could create a riparian buffer along the stream within their schoolyard boundaries. The principal said, “Yes!” and Randy Trenary, the Clarke County School Division Facilities Manager, also agreed to the project and prepared the site by mulching the area and making sure it was safe for the students to work there. This ambitious project will require multiple years of planting different sections along the stream. Spring 2022 the fifth-grade students planted three 15x5 foot sections with Virginia native plants. The project continued this spring with the next class of fifth-graders; they planted a 45x10-foot section that extended the width of the original riparian buffer.



Candace Lutzow-Felling, Blandy's Director of Education, laying out the plots for planting.

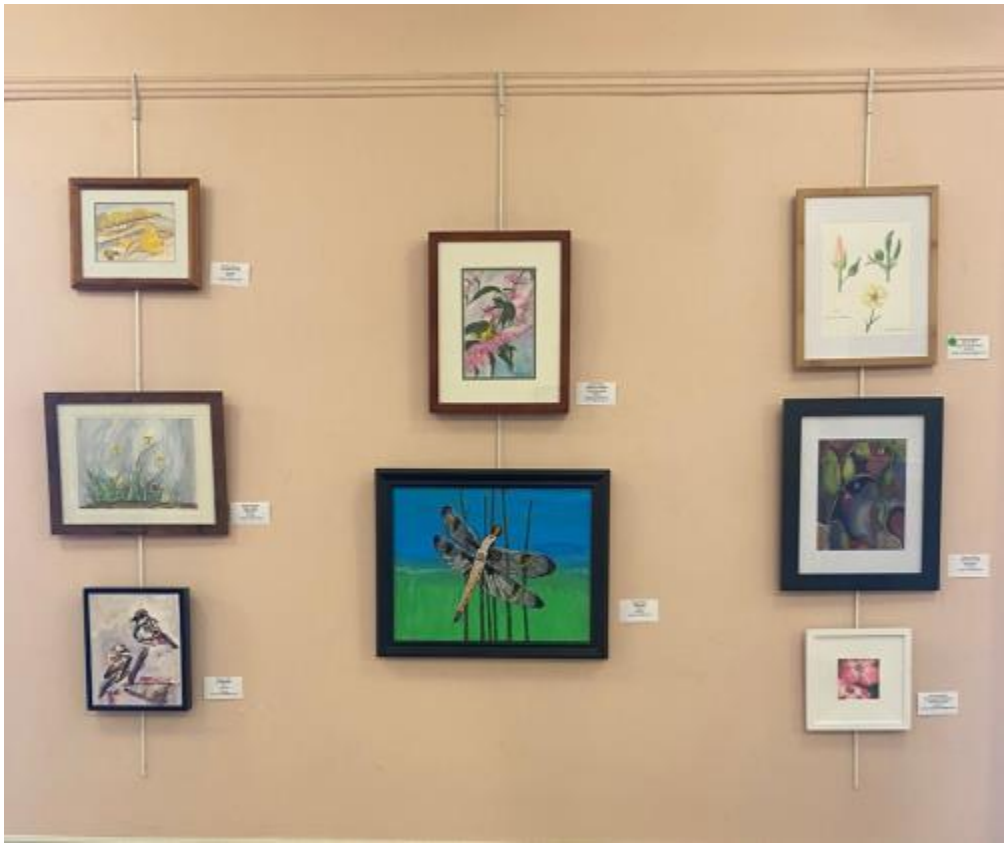
Blandy's Education Team was the advisor on this project: we laid out the plots to be planted; created a list of potential plants that we knew would grow well in the moist, shady area along the stream; purchased the plants the students selected; and made a scaled down grid of the plots for students to design their plots. The fifth-graders selected the plants they desired in their riparian buffer and each class created a design for the area they would plant.

One 5th grade class proudly showing their riparian buffer design. The circles represent the colors of the flowers and the width of the plants at maturity.

Best of all, the Greenway Garden Club of Clarke County decided to adopt this riparian buffer planting as one of their two annual garden projects for both years, 2022 and 2023. Greenway Garden Club members worked hard to prepare the sites for planting by removing non-native species from the site; they guided the students during the planting, and they also help maintain the site, removing unwanted non-

native plants before they become well-established. This riparian buffer collaborative story is best told through pictures.

BLANDY SKETCH GROUP ART SHOW & SALE

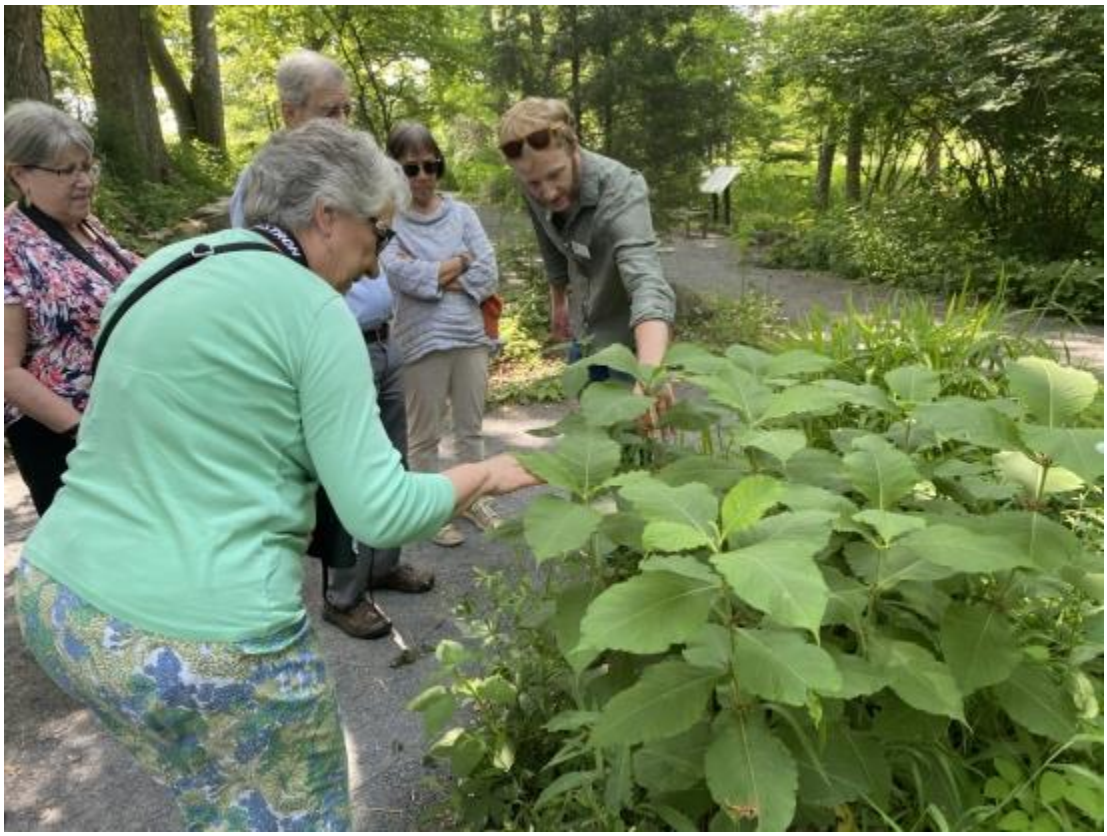


The Blandy Sketch Group is hosting an Art Show & Sale in the Dining Room of the Quarters Building at Blandy through August 3, 2023. The Dining Room is open for viewing every day from 8 a.m. to 3 p.m.

Various framed pieces from local artists are available for purchase. Tags with information needed to purchase a specific piece of artwork are attached to each frame.

The Blandy Sketch Group is a dynamic group of artists who work in visual arts and share a love of the natural world as inspiration for their artwork. The Blandy Sketch Group is open to any artist, from beginner to professional. The Sketch Group meets again on Thursday, July 6 from 12:30-3:30 p.m. More information at blandysketchgroup.wordpress.com.

FOSA ANNUAL BOARD MEETING 2023



Jack Monsted, Arboretum Assistant Curator, leads FOSA members on short walk called "The Glory of Green: Exploring Lush Plant Growth Along Blandy's Native Plant Trail."

The Foundation of the State Arboretum (FOSA) held its Annual Meeting on Saturday, June 3. **President Jolly de Give's annual report** to the membership marked the end of her three-year tenure as FOSA president.

"It has been my honor and pleasure for the past three years to serve as President of FOSA," de Give noted, "working with our excellent Board and staff as we encountered the stormy waters of Covid-19 and learned to navigate them until we had smooth sailing again. During this period, we updated our Strategic Plan, improved our technological reach, re-evaluated and re-aligned staff positions as vacancies occurred, and put our financial books in order."

De Give added that upcoming FOSA projects include launching a capital/endowment campaign, exploring expanded grant opportunities, actively pursuing such new projects for Blandy as an improved trail network, and working to fund and complete a cultural landscape report to lay the groundwork for and guide our ambitious plans.

Bob Lee, a founding father of FOSA who has served several stints on the Board, beginning in 2003 and including various leadership positions, will also be honored with the planting of a Scarlet Oak in the fall.

"Jolly began serving on the Board in 2015," said Nancy Takahashi, the incoming president. "Since then, anyone who has worked with her, knows her to be an unwavering and steadfast promoter for all things Blandy and the State Arboretum.

"Jolly's leadership style is personal, warm and friendly and she carries herself with an unpretentious grace," Takahashi said. "I always appreciated Jolly's no-nonsense, clear-headed thinking and positive can-do approach to the activities and issues under discussion."

This fall, a golden Ginkgo tree will be planted at Blandy with a marker commemorating de Give's service.

The FOSA members present unanimously elected three new board members: **Karen Cogar Abramson, Donald "Donnie" Matlock, and Don Owen**. The members also reelected for second terms board members **Roger Courtenay and M. Tyson Gilpin Jr**. Full bios of the new members can be found **here.**

Directors in attendance were treated to two special tours. Dave Carr, Blandy Director, let a birding mini-tour called "The Birds of Late Spring at the State Arboretum of Virginia." Jack Monsted, Arboretum Assistant Curator, led a short walk called "The Glory of Green: Exploring Lush Plant Growth Along Blandy's Native Plant Trail."

Karen Cogar Abramson *(nominated by Susan Harris)*

Karen Cogar Abramson is an avid horticulturalist, with a special passion for – and in-depth knowledge of – bulbs. She is especially fond of daffodils and is active in competitions and educational initiatives involving daffodils. Karen is a longtime member of Hunting Creek Garden Club in Alexandria, a member of the Horticulture and Daffodil Committees for the Garden Club of Virginia, American Daffodil Society Judge and Board member, co-chair of The Washington Daffodil Society Bulb Order, and former President of that society. She refers to herself as "an ardent dirt gardener." She also has served as a Trustee of the Virginia Museum of Fine Arts for 12 years, originally nominated by Governor Tim Kaine and reappointed by successive Virginia governors. She previously worked as a partner in BeauFaux, a decorative painting company, whose commissions included a mural for the Inova Alexandria Hospital Women's Center. In addition, she served as Art Director for *Country Magazine* and graphic designer for the Ethyl Corporation and the Martin Agency in Richmond. She holds a BA from Clark University and an MFA from Virginia Commonwealth University, where she taught in The School of the Arts. A longtime supporter of and participant in the visual arts, Karen lives in Alexandria. She is a member of FOSA's Arboretum Collections Committee.

Donald Matlock *(nominated by Robin Couch Cardillo)*

Donald “Donnie” Matlock is a principal consultant with MITRE, a Washington D.C.-area nonprofit serving government, industry, and academia in such wide-ranging areas as cybersecurity, artificial intelligence, healthcare, defense, and transportation. His leadership includes strategically transforming organizations to increase measurable growth, fiscal discipline, and technological excellence. He has extensive program management experience, as well as consulting experience, in business and organizational strategy, finance, operations, risk

Donald Owen *(nominated by Bob Lee)*

Don Owen is a Senior Executive Consultant with Lands Trails and Parks Consulting LLC. He works regularly with the Land Trust Alliance, the Maryland Environmental Trust, the National Park Service, the Partnership for the National Trails System, and land trusts, trail organizations, and agencies across the country. Don specializes in helping small and all-volunteer land trusts improve operations, outreach, and governance. He spent 23 years working for the Appalachian Trail Conservancy and the National Park Service on the Appalachian National Scenic Trail, where he focused on protecting, planning, designing, and managing the 250,000-acre corridor for the Trail. He then served as Executive Director of the Land Trust of Virginia, guiding the organization through accreditation. Don is currently Secretary of the Continental Divide Trail Coalition, a member emeritus of the Appalachian Trail Conservancy Stewardship Council, and a volunteer and boundary monitor for the Potomac Appalachian Trail Club. Don holds a BS in Psychology from Tufts University and a MS in Natural Resource Administration in Outdoor Recreation from the Graduate School of Forestry and Natural Resources at Colorado State University. He lives in Round Hill, Virginia. He is a member of FOSA’s Public Programs Committee.

Current Directors Eligible for Reelection

(three-year terms begin July 1, 2023)

■ **Roger Courtenay**

To be reelected for second three-year term, FY24-26

Arboretum Collections Committee

■ **M. Tyson Gilpin, Jr.**

To be reelected for second three-year term, FY24-26

Government & UVA Relations Committee, Nominating Committee

Directors Completing Terms

■ **Steve Bauserman** ■ **Karla Etten**

■ **Scott Johnston** ■ **Bob Lee**