



Biodiversity is on Display at the STATE ARBORETUM of VIRGINIA



By Glenda C. Booth

Photos courtesy of Blandy Experimental Farm and State Arboretum of Virginia



Walking through the State Arboretum of Virginia in Boyce, T'ai Roulston happened upon a dead shrew impaled on a honey locust tree thorn. This hapless rodent had been caught and stabbed to death on the thorn by a loggerhead shrike (*Lanius ludovicianus*), aptly nicknamed, the “butcher bird.”

Ecologists typically tout trees’ ecological services, like cleaning the air, curbing run-off, and shading homes. Being instruments of death and helping to keep rodents in balance are not “services” they typically cite. But David Carr, director of the Blandy Experimental Farm, has seen shrews, voles, and a white-crowned sparrow pierced on the tree’s three-inch and longer thorns. The loggerhead shrike’s use of the thorn as a weapon is a perfect example of the interconnectedness of flora and fauna evident at the State Arboretum.

The 172-acre State Arboretum of Virginia is part of the 712-acre Blandy Experimental Farm, a research field station for the University of Virginia. It is home to 5,787 mapped and living trees and shrubs, including 28 state champion trees, which have earned the title due to being the largest of their kind in the state.

And while trees are the centerpiece, the arboretum complex is all about biodiversity, ecology, science, education, and exploring nature’s mysteries and resilience. Bobwhite quail may lurk in the meadow. Spring peepers call from the wetland.

Right: The Quarters, built in 1825, were once housing for enslaved peoples, but were converted and expanded in the 1940s for research laboratories and housing for students and faculty.



*The trees and plants of the State Arboretum
and Blandy Experimental Farm
provide a home for wildlife and research.*



Vultures soar and hawks glide above the undulating rocky karst geology of the Piedmont and Shenandoah Valley.

The property's three habitats—woodland, meadow, and wetland—support a wide range of wildlife, including black bears, wild turkeys, ringneck pheasants, deer, raccoons, skunks, coyotes, foxes, groundhogs, frogs, toads, turtles, great blue herons, songbirds, and more. The Shenandoah Audubon Society chapter maintains more than 100 bluebird boxes on the property. Observers have recorded 216 bird species on eBird at Blandy, and the arboretum is on the Front Royal loop of the Mountain region of the Virginia Department of Wildlife Resources' (DWR) Bird and Wildlife Trail.

Full of Life

During the 2020 pandemic, with the arboretum closed and largely void of people and dogs, Eastern wild turkeys freely roamed the grounds. "The turkeys were all over the place," said Carr. Bears showed up too.

June nights are electrified by millions of twinkling fireflies in courtship, flashing their bioluminescent abdomens. "It's a great light show," said Ariel Firebaugh, Director of Scientific Engagement. At their peak, one species can produce 100 flashes a minute. The Arboretum is favored firefly habitat because managers use no pesticides or herbicides and light pollution is minimal. Light discourages them from flashing.

In 2000, DWR lent the Arboretum staff seed drills for planting a native meadow of warm season grasses and wildflowers to create bobwhite habitat. The conifer collection attracts winter finches and pine siskins.

One "star attraction" every winter since 2015 has been a long-eared owl, one of the hardest birds for people to see because of its secretive nature. Carr has collected dozens of pellets from under its roosting tree, balls of regurgitated, indigestible fur and bones from mice and voles. "After a successful night's hunt, the owl would always return to the



exact same roost spot to snooze through the day," Carr said.

Within the Arboretum, the Nancy Larrick Crosby native plant trail features a ½-mile gravel path winding its way through three different gardens and habitats—woodland, meadow, and wetland—featuring plants that are native to Virginia. Interpretive signage and seasonal interactive exhibits help visitors understand the depth of flora and landscapes of Virginia.

The woodland garden is vibrant with 70 species of native trees and more than 200 species of native plants and wildflowers, home to woodpeckers and squirrels. The 24-acre meadow showcases tall grasses and wildflowers and habitat for whitetail deer, eastern cottontail rabbits, red-shouldered hawks, and dozens of species of songbirds. A boardwalk winds through the wetland amidst cattail reeds, jewelweed, and buttonbush and provides a platform to spot great blue herons, frogs, turtles, and songbirds.

Art and Habitat

Added to Blandy in 2019 was the innovative bee habitat wall, where art meets science and visitors can watch bees at work in the summer. The piece of art titled "Dwelling: Shenandoah Valley," is a U-shaped, adobe-like structure made of cob, which is a clay, sand, straw, and water mixture atop a stone foundation. The Toronto, Canada, artist Sarah Peebles created the piece as part of her Resonating Bodies series. "Dwelling: Paint Bank Creek" is a similar piece at the University of Maryland Arboretum.

The wall provides nesting habitat for solitary bees and wasps. Some species of solitary bees can burrow into the hard structure to build nests and lay eggs. Roulston, the Arboretum's curator, explained how digger bees dig into the wall. "To burrow, they find a water source, return with a mouthful of water, and use it to soften the extremely hard substrate so they can create a tunnel



through it. Over time, such areas can become thriving cities of bees going in and out."

An observation cabinet with Plexiglass on one side offers visitors a look inside a nest cavity. Bees create a series of chambers to rear their offspring. Captivated viewers might see a female bringing pollen and nectar to her young in "rooms" separated by partitions that she has created. Solitary wasps, too, create a series of brood chambers for their offspring. They paralyze their prey and pile them up for their offspring to eat. Mud dauber wasps bring paralyzed spiders to the nest.

Trees and More Trees

Arboretum staff have mapped 599 species of trees and shrubs; if they include cultivars and varieties that number goes up to 974. The arboretum has 1,310 conifer specimens, one-third of the world's pine species; 338 ginkgo trees (*Ginkgo biloba*), one of the largest collections of ginkgoes outside the tree's native China; the largest variety of boxwood cultivars in North America, 162 types; and a 36-tree Cedar of Lebanon alleé. A ½-mile old farm road, today called Dogwood Lane, is lined with 200 dogwoods, many of which are *Cornus florida*, Virginia's state tree and flower.

The Virginia Big Tree project has identified 28 state champion trees, which are trees that are measured for their height, girth, and crown spread and qualify as the largest of their kind. The Arboretum's state champions include a Himalayan white pine (*Pinus wallichiana* (syn. *griffithii*)), a hardy rubber tree (*Eucommia ulmoides*), and a Miyabe maple (*Acer miyabei*).

The earliest known tree planted at the Arboretum is a Norway maple (*Acer platanoides*) planted in 1927. This tree collection is the only mature arboretum on limestone soils on the East Coast.

Answering Scientific Questions

In 1926, when Graham F. Blandy, New York stockbroker and railroad tycoon,





The Nancy Larrick Crosby native plant trail winds through three different habitats.



A functional art installation titled *Dwelling: Shenandoah Valley* was created as a home for native bees.



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The facility offers many workshops, such as this one on pollinators.



Cross-breeding American and Chinese chestnut trees is another research focus of the facility.



There are 28 state champion trees at the site. This champion is a Blandy maple.



A proud Research Experiences for Undergraduates student with her project.

passed away, he willed 712 acres of his 900-acre estate to the University of Virginia “to teach boys about farming.” The university hired Dr. Orland E. White in 1927 as the first director of the farm.

White furthered its use as a field research station and training ground for agricultural techniques, but also sought to establish an arboretum as well. White was curious about what non-native tree species might thrive in Virginia and planted a wide variety of trees around the property. Several Arizona cypress trees that he planted are still alive at Blandy today, along with the ginkgo grove.

While Blandy Farm and the Arboretum were opened to the public in 1982, students and researchers still use the site for studies. Some recent projects include the capture and study of painted turtles to determine how far they travel to lay eggs between bodies of water and trying to learn why some of Virginia’s 23 species of native mason bee are declining while two exotic mason bee species are stable or rapidly spreading across the East.

During the summer, Blandy hosts the Research Experiences for Undergraduates (REU) program, which invites

For the Public

Blandy Experimental Farm and the Virginia State Arboretum are open 365 days a year, dawn to dusk with no admission fee. There are outdoor educational programs, summer nature camps for youth, and other activities such as firefly walks, wildflower walks, and summer science seminars.

Blandy offers a 2.6-mile driving tour, a Geocaching Trail, four walking trails, a 7-mile bridle trail, a driving tour, and volunteer opportunities. Each year, there is a Mother’s Day Garden Fair and a Summer Solstice Twilight 5K race.

Visit www.blandy.virginia.edu or call 540-837-1758.



college students interested in ecology and environmental science to Blandy to learn skills in designing experiments, collecting and analyzing data, and critically reading scientific literature.

Blandy Director David Carr has studied bees, the pollen that bees collect, and how the abundance of pollen influences their hives’ success. His work seeks to illuminate how bumblebees decide which flowers to forage on. For example, is aroma always a factor? He knows bees are attracted to fragrances, but scientists do not know why.

Roulston examines plant-pollinator interactions. He’s looking at a parasitic conopid fly that lays eggs on an adult bumblebee. Then the fly grows inside the bee and forces the bee to burrow into the ground—in other words, dig its own grave. An adult fly then emerges from its bee host and implants more bees with eggs. Roulston wants to better understand the importance of parasitism to bees’ abundance, what controls the numbers of bumblebees, and how to conserve native bees.

Chestnut trees are another research focus. Before 1904, eastern U.S. forests were dominated by American chestnut trees, with trunks up to 10 feet in diameter, but a devastating fungus made the tree effectively extinct from Maine to Georgia. At Blandy today, the American Chestnut Foundation is cross-breeding American chestnut trees (*Castanea dentata*) with Chinese chestnut trees (*Castanea mollissima*), the latter being naturally resistant to the blight, in hopes of ultimately having genes that provide resistance to chestnut blight fungus.

Whether it’s a researcher looking for answers or a person just looking to connect with nature, Blandy Experimental Farm and the Virginia State Arboretum are fantastic destinations to add to your list while exploring the wild. 🌿

Glenda C. Booth, a freelance writer, grew up in Southwest Virginia and has lived in Northern Virginia over 30 years, where she is active in conservation efforts.



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Ginkgo trees glow in fall colors. The State Arboretum has one of the largest collections of ginkgoes outside the tree's native China.