

Sempervirens

Spring 2019 The Quarterly of the Virginia Native Plant Society

2019 Annual Meeting Set for Sept. 27–29

Celebrate the Diversity of the Piedmont



View from Culler's Overlook in Shenandoah River State Park

Members of the Piedmont Chapter are looking forward to hosting this year's Annual Meeting on September 27–29 in Front Royal. Arrangements have been made with the Holiday Inn Blue Ridge Shadows for guest rooms, meeting rooms, and a banquet hall. This location is about five miles north of Front Royal, allowing us to showcase the diversity of our region.

Piedmont, of course, means “foot of the mountains.” When you come to Front Royal, you will see the ancient Blue Ridge and Massanutten mountains rising up around you, while the lovely Shenandoah River drifts gently between them. The eastern part of our region is bordered by the Bull Run Mountains, not only

famous for their role in the Civil War, but also well studied for their distinct plant communities. A guided walk and even a caravan tour of Shenandoah National Park will afford us the opportunity to explore the botany and geology that make these mountains unique.

Between the mountains lie meadows, forests, and wetlands, preserved by people who cherish them deeply. We will learn about restoration in many forms, from Abrams Creek in nearby Winchester, grasslands being studied by Virginia Working Landscapes, and the Jones Preserve and the Clifton Institute. We will visit the unusual plant communities supported by the cool microclimate of the seep in the Thompson Wildlife Management Area and

will explore the visually stunning Sky Meadows State Park.

The environmental resources of our largely rural area have attracted a rich scientific community. Just south of Front Royal lies the Smithsonian Conservation Biology Institute, while to the north is the Blandy Experimental Farm, which includes the State Arboretum of Virginia. Experts passionate about understanding our natural world will guide our walks. They will also lead art classes and photography workshops and give presentations on such topics as edible plants, nectar plants, and propagation.

Plan now to join us in September and Celebrate the Diversity of the Piedmont.

—Karen Hendershot, *Piedmont Chapter*



From the President

Celebrating sinkhole ponds and special plant people in 2019

Easy come, easy go! On March 8 the Virginia Native Plant Society officially transferred its 85-acre parcel in Augusta County to the Virginia Department of Conservation and Recreation. This land, part of our DuPont–Waynesboro Settlement Grant, is now part of the Mount Joy Pond Natural Area Preserve managed by DCR’s Division of Natural Heritage.

While the VNPS held the deed in January, a few of us from the Executive Committee paid a visit. A light mist fell from the sky, a smattering of snow covered shady spots, and overall wet conditions made me grateful for the rubber boots I had chosen to wear. The site is generally wooded, with a couple of power-line easements through the property. Those easements had beautiful mosses and lichens—very colorful for winter. The forest within the natural area preserve boundary showed evidence of prescribed burns. Young pines and mountain laurels grew under hardwoods, and clubmosses were abundant in other areas. Sally Anderson and I waded into the main sinkhole pond, which was wider than usual because of the abundant rainfall we had over the previous year. We were both surprised by the invisible icy crust we encountered.

“Natural sinkhole ponds in the Shenandoah Valley are quite rare. The ponds are easily degraded through filling or draining,” reads the Natural Heritage website. “Fewer than two dozen of these ponds, all in Augusta, Rockingham, and Rockbridge

counties, support the Virginia Sneezeweed and other rare species.” While the preserve has no parking area or official access, maybe with more land acquisition, an environmentally sensitive parking area could be constructed. At present, a visit can be arranged through the land steward.

In early March we bade farewell to Chris Ludwig when he retired after many years as chief biologist with Natural Heritage. He and his wife took a well-deserved trip to Tanzania to celebrate the occasion. He has no plans to permanently leave the state, however, so we will stay in touch and continue to benefit from his expertise. We planned to honor him with a life membership in the VNPS only to learn that he was already a life member! He joked that we could refund his \$500. Not a chance. His successor is Anne Chazal, who is trained as a zoologist and has many years of experience with Natural Heritage. We look forward to a mutually beneficial working relationship.

We were very fortunate to find an excellent volunteer for our Conservation Committee Chair position. Alex Fisher grew up in Midlothian, majored in ecology and biology at the University of North Carolina Wilmington, and has a



Sally Anderson ponders the sinkhole pond at the Mount Joy Pond Natural Area Preserve. (Nancy Vehrs)

keen interest in botany and plant communities. He lives in Richmond with his wife, Ashton, and they are expecting their first child in August. He had been working for an engineering firm and started a job with The Nature Conservancy April 1. He adds a youthful perspective to our Board of Directors, and has already made an impact with several position statements and letters. Welcome, Alex!

We still have several vacancies on the Board, including the important position of Membership Chair, which has been open since the beginning of the year. Joyce Wenger, an at-large director who chairs our grants review team, is resigning, and First Vice President Janet Pawlukiewicz plans to complete her service at the end of her term this year. Please consider volunteering for the state Board or persuading another qualified member to do so. Terms begin November 1.

Our 2018 fund-raiser ended with more than \$18,000 raised for “Flora II: Keeping the Science Current.” Thank you for your support!

Hope you are enjoying spring! ❖

‘Spirit of Inquiry’ drove Ludwig

Chris Ludwig, botanist, zoologist, and general all-rounder with the Virginia Natural Heritage Program, is off to greener pastures after 30 very busy years in the conservation community. And I do mean actual pastures right now since, as I write, Chris and his wife, Jolie, are staring out across the Serengeti as Wildebeest swarm and flocks of new birds come into view. For those of you who know Chris, this is exactly the sort of place you knew he would head to for his *real* retirement party. For those of you who don’t know him, Chris is a person whose intense interest in the natural world will always pull him toward the wild, the new, the novel, or the blank spot on the map.

This spirit of inquiry has resulted in numerous biological discoveries through his roles with the heritage network, but, much more importantly to Chris and to the benefit of all of us, it has led to the conservation of thousands of acres of land in the commonwealth. That, he has always emphatically declared, is what he is most proud of. Starting in the late 1980s, Chris led the botanical charge at the Virginia Natural Heritage Program as he combed the state for our rarest plants and the significant habitats on which they depend. When he needed more of a challenge (!), he set about learning the moths—a complex task for an inquisitive mind.

When I arrived as botanist with Natural Heritage in 2001, I knew immediately that we shared the same kind of enthusiasm and felt the same push to discover new territory, new species, and an ever more intimate knowledge of the

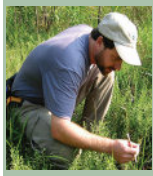


Marcia Mabee, former VNPS Conservation Chair; Sally Anderson, past VNPS President; and current VNPS President Nancy Vehrs celebrate with Chris Ludwig on the occasion of his retirement.

natural world. Chris also knew that we hadn’t even gotten around to properly documenting what *was* known botanically in Virginia. It was not too surprising, then, that Chris began his push toward what became the *Flora of Virginia*, a landmark work long sought by the Virginia botanical community and heavily supported by the Virginia Native Plant Society. I was lucky enough to be involved with Chris on this venture, one that would need his sustained efforts over more than a decade to complete. Typical of Chris, he served in numerous capacities, the role of author being just one. Organizing such a large, long-term project with so

many moving parts, people, and technical challenges turned out to be just his sort of thing. But being able to enjoy the outdoors is not terribly compatible with the demands of managing a staff of biologists and wrangling money, so it is not at all surprising he temporarily fled to Africa. Here’s hoping Chris can manage to spend many more days in the field, doing what got him here in the first place. Please tell him congratulations when you see him!
—Johnny Townsend is the staff botanist with the Virginia Department of Conservation and Recreation’s Division of Natural Heritage.

Discovery, the Unknown, and the Power of Curiosity



*From Your
Natural Heritage
Program*
By Johnny Townsend

I did not come to plants easily. I was blessed from the start, however, with a fanatical interest in nature, a sense of awe in the face of natural forces, and an addiction to the nearly constant surprises a life outside affords. The broad horizons of coastal South Carolina encompassed a marshy wilderness where it seemed nearly anything could and did turn up. Predictably, it was the nets full of flashy sea life and the soaring birds that hooked me. To this day, I still can't fathom why soaring hawks or migrating sandpipers don't cause most people to stop, stare, and feel something.

That something, I soon came to realize, was curiosity. My father worked for the National Weather Service early in my life, giving me the sense that he enjoyed the same level of curiosity that I did about something that was essentially unknowable and untamed. At that point I realized my life would be guided by this desire to know more and to fully embrace the seemingly opposing notion that we never really will know all that much.

As my colleague Alan Weakley often signs off during discussions about plant taxonomy: "We don't know jack!" And *he* should know.

With some years came a broadening of experience and along with it a newfound affinity for plants. It was here that I found not just a new fascination, but a complex world where the new, different, and undiscovered were the prime targets. Since coming to the Virginia Natural Heritage Program in 2001, I have been lucky enough to help uncover what has sometimes been hidden in plain sight. This continuing pursuit fuels what we do and helps guide what we conserve.

"In plain sight" comes to mind when describing the Piedmont Fameflower (*Phemeranthus piedmontanus*), an extremely showy succulent with a remarkably restricted range, concentrated in southern Virginia. Why had this species gone undescribed until the past decade? Truth be told, the genus is complex, but as species go, this plant is as different from its congeners as are any two lookalike sandpipers. No less showy but still emerging from scientific obscurity is the Millboro Aster (*Symphytotrichum schistosum*), a plant described in 1911 but dismissed as a one-site-

wonder or a hybrid. The recent discovery of additional populations by Heritage has bolstered the case for its recognition not only as a species, but possibly also as another shale barren endemic.

As for currently undescribed plants, who knows what waits? As of this writing, two new species of panic grass (*Dichantheium*) are being described based on field work by Heritage botanists. Also moving toward description is a new *Monarda* uncovered by Missouri Botanical Garden staff. Curiosity is obviously a valuable thing to have, whether dealing with the homely grasses or showy, obvious wildflowers.

We do know plenty, and we all find great comfort in that, but pushing ourselves out of this comfort zone is essential to growing as scientists and growing as a program. Continuing to do that with plants, bees, millipedes, and more is a big part of our mission, and why we feel so blessed to work where we do. Here's to whatever comes next!
—Johnny Townsend is the staff botanist with the Virginia Department of Conservation and Recreation's Division of Natural Heritage.



Two new species of Panic Grass (*Dichantheium* spp.) are being closely examined by Natural Heritage botanists. The one at left has been found in Bath County and the one at right is from Halifax County. (Natural Heritage)

Corydalis incisa

Be on the lookout for this new invader

Ruth Douglas, the chair of the Invasive Alien Plant Working Group for the Society, reported to the board recently that she discovered a new infestation of *Corydalis incisa* (Incised Fumewort or Purple Keman) near her home in the floodplain of a small tributary to the Rivanna River. Ruth said that she believes that the plants were probably the result of flooding last year that brought in a lot of seeds to that floodplain.

“The plants I found last year near there were sprayed, and they didn’t reappear this year, so that is some good news, but it’s not very

encouraging to find a new and larger infestation,” she said. “I’m going to walk up the stream to look for any sites that might be the source of the new infestation. It’s a small tributary,” she added.

In order to be proactive, Ruth has been in contact with native plant enthusiasts up in the New York City area where the plant is common. They recommended that the invasive plants be hand pulled to eradicate.

Ruth sent the accompanying photos of the plant in this article and noted that it goes through its

lifecycle quickly and disappears shortly after blooming and setting seed, leaving no visible trace until the following year.

Corydalis incisa is not yet on the invasive plant list maintained by the Division of Natural Heritage, but is a candidate to be listed as a Noxious Weed.




Other sites in Virginia where the plant has been found are Charlottesville, Fairfax County, and along the Maury River behind Virginia Military Institute.

For more information, follow this link to the APHIS document about it https://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/wra/corydalis-incisa.pdf.

Society grants \$17,000 for research

At a board meeting earlier this year, the Society approved three research grants for a total of \$17,000. The funded applications include the following:

- **Securing Virginia’s plant biodiversity heritage for the future: A new life for the Lord Fairfax Community College Herbarium.** George Mason University, Weeks. \$6,712 from VNPS, leaving \$1,906 to be funded by other sources.
- **The influence of toxic compounds on nectar components: A genus wide comparison of *Asclepias* spp. native to Virginia.** College of William and Mary, Dagleish/Gustafson. \$5,288.
- **Drivers of tree mortality in Virginia’s Blue Ridge Ecoregion.** Smithsonian Conservation Biology Institute, Terrell/Anderson-Teiceira. \$5,000.



VIRGINIA NATIVE PLANT SOCIETY

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Next submission deadline: June 15, 2019

Unique Features of *Ceanothus* Trace to Earliest Stages of Flower Development

Articles by W. John Hayden, Botany Chair

The basics of flower structure are straightforward. A “typical” flower (Figure 1) has four whorls of floral organs arranged in stereotypical order: sepals (lowermost and outermost), petals, stamens, and, finally, one or more carpels (pistils) located in the innermost (or uppermost) position. This is not rocket science. Names of these floral organs and their relative placement within the flower can be grasped readily by schoolchildren. Also “typical” but seldom emphasized in elementary lessons is the fact that the organs of each successive whorl occupy alternate radii; i.e., petals are routinely positioned between sepals, and stamens (if only one whorl) are positioned between petals. Said another way, successive floral organs typically occur on alternate radii. Thus, for example, in most flowers, sepals and stamens occur on the same radii. “Typical” flowers are straightforward.

But what does typical mean? There are more than 350,000 extant species of flowering plants, and, to some degree, it is the details of how their flowers are constructed that make each one different from all others. The typical flower is really just a convenient starting point for learning about the immense full spectrum of floral diversity that exists in the natural world. One or more floral organs may be completely absent, or some organs may be present in multiple whorls. Numbers, sizes, shapes, and degrees of fusion between and among the floral organs can vary widely. Sepals may look like petals. Sometimes stamens and pistils

can be present in nonfunctional states, known, respectively, as staminodes and pistillodes. The ovary portion of carpels (pistils) may be located above or below the other floral organs. A flower can be as small and simple as a single stamen, as in, for example, *Euphorbia*, or as large and complex as the massive flowers of *Rafflesia*, from the jungles of Indonesia, which can exceed one meter in diameter. Variations on the typical flower theme go on and on. To really understand flower structure requires familiarity with plant diversity on a global scale. While the typical flower is pretty straightforward, the full spectrum of floral diversity is mind-bogglingly complex.

Thankfully, there is a saving grace for those who study plant diversity: these myriad variations of flower structure fall into discrete patterns. And it is these patterns that allow us to recognize, on sight, species, genera, and families. These patterns are the raw material upon which classification, taxonomy, and systematics are built. Fundamentally, knowledge of biodiversity, as summarized by taxonomy and systematics, grows from the bottom up; patterns seen among organisms define species, patterns among species define genera, and so on, up the taxonomic hierarchy.

Our 2019 Wildflower of the Year, *Ceanothus americanus*, provides an interesting case in point. In some respects, flowers of New Jersey Tea are quite straightforward (Figure 2): five sepals, five petals, five stamens, and three carpels making up a compound pistil with a superior ovary.

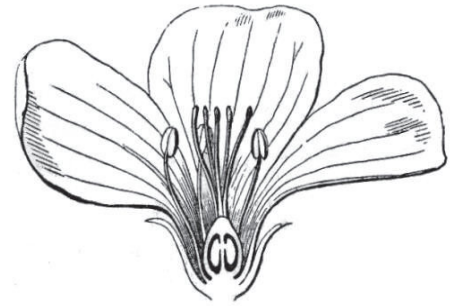


Figure 1. Flower of *Linum* (Flax), partly dissected to reveal all four floral organs. From Gray, A. 1868. Gray's School and Field Book of Botany. Ivison, Blakeman, & Co., New York.

Lots of dicots classified in a number of different families have the same general formula. But there is one detail by which *Ceanothus* departs radically from the common pattern of flower construction: rather than occupying alternate positions, petals and stamens occur on the same radii. Further, the petals are somewhat spoon- or hoodlike, and, in the bud, these hooded petals fit tightly over the pollen-bearing anthers. This is odd, and therefore noteworthy, but not unique. The character of hoodlike petals aligned with stamens is one of the distinguishing features of the plant family Rhamnaceae, in which *Ceanothus* is classified. If you spot a flower with hoodlike petals aligned with the stamens, you can confidently pronounce that plant as rhamnaceous!

Fifty-five genera and 950 species of plants are classified in Rhamnaceae. That is a mere one-half of one percent of all flowering-plant genera, and one-quarter of one percent of all flowering-plant species. Why is it that this small slice of biodiversity departs from the usual pattern of flower construction? Study of flower development provides the clue. In flowers of Rhamnaceae: 1) sepals start

to form first, as little bumps on the sides of the floral meristem; 2) then, instead of petals, which would be the usual second organ to appear, stamens take form, also as small bumps, alternating with the already formed sepal primordia; and 3) petals don't make their appearance until after the stamens—and the first sign of petals is a series of small bumps on the outer flanks of the stamen primordia. In other words, the odd pattern of rhamnaceous petals and stamens traces back to the earliest stages of floral organ initiation. But why aren't

these organs initiated in the usual sequence (sepals, then petals, then stamens)? One interpretation is that distant ancestors of Rhamnaceae, most likely, lacked petals entirely, and that petals were “reinvented” by proliferation of stamen primordia in the lineage leading to modern day Rhamnaceae.

Good stories have distinctive plot twists. Great pieces of music have memorable themes. In similar fashion, each flowering-plant family has its own unique pattern of distinctive features, prominent among

which are the particulars of how its flowers depart from so-called typical structure. In essence, the plot twist or dominant theme for recognizing Rhamnaceae is that the petals develop from the flanks of the stamens, resulting in radial alignment of these organs. And flowers of *Ceanothus americanus* (Figure 2) represent just one of 950 variations on that general theme. No, knowing biodiversity is not rocket science, but knowing what makes families, genera, and species unique across the full spectrum of biodiversity is, easily, as complex. ❖

Oops!

A lot goes into producing VNPS Wildflower of the Year brochures. Text is written and edited; photographs are sought, selected, and cropped (if needed); and line art is created. All these individual pieces are then artfully composed into the two-page document that gets sent to the printer. This year, there was a small glitch in creation of the brochure for *Ceanothus americanus*

(New Jersey Tea). In the process of rendering line art background to become transparent, one petal was inadvertently deleted from Nicky Staunton's elegant drawing of the flower. We regret the error. Happily, inclusion of that illustration as Figure 2 here provides an opportunity to print Nicky's intended rendition of this distinctive flower.

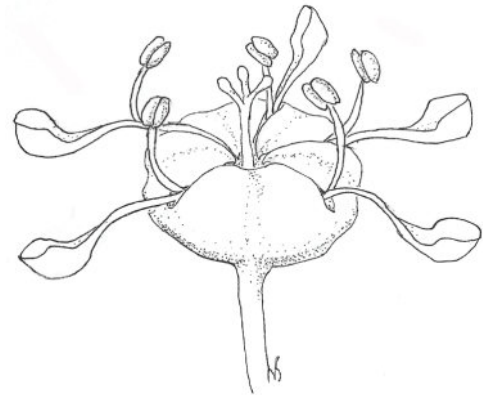


Figure 2. Flower of *Ceanothus americanus* (New Jersey Tea). Original drawing by Nicky Staunton.

Thanks for Keeping the Flora Current

I sometimes hear my fellow Virginia Native Plant Society members refer to “our Flora,” and that makes me feel proud. It's great to hear in people's voices how much they like and use the *Flora of Virginia* and the Flora Mobile App. But I also hear more in that than just our *state's* Flora. This is very much *your* Flora! First of all, we are designated partners, and we support each other in our drive for learning (and teaching) about our plants and promoting conservation of the plants and the habitats they populate—and create. But since the Flora of

Virginia Project was formed in 2001, you all have stepped up to the plate to support what we do. You have offered programs about the Flora at state and chapter meetings. You have invited us to exhibit or talk at your events. And you have put the print *Flora* in libraries and museums and gardens in your chapter regions.

And you have used your checkbooks (or PayPal!) to keep the Flora green. Your 2018 fund-raiser is the most recent organized case in point, raising more than \$18,000 for our major update, a work plan we call Flora II: Keeping the Science Current. We'll be adding species

and taking into account various taxonomic and nomenclatural revisions needed in light of recent molecular (DNA) studies. We want you to have the best, most current tools possible on Virginia plants, and you are helping ensure that this will happen. I want to add that many of you gave again in the Flora Project's own fall appeal. This all speaks volumes, and we appreciate it. Stay tuned for the update, slated for completion in 2020.

—Bland Crowder,
executive director, Flora Project

VNPS 2019 Workshop 'Our Changing Forests' Focus of Gathering

Article by Peggy Troyer, Fundraising Chair. Photos by Nancy Vehrs, President.



"Pipa," *Pinus palustris*. The red at the bottom of her costume represents the flames to which she is resistant. (She doesn't need the fire extinguisher on the wall next to her.)

The Virginia Native Plant Society's 2019 Workshop in March was one to remember. The new venue in Charlottesville provided ample space—no one had to be turned away. Jefferson Chapter members outdid themselves on refreshments. We were to bring our own lunch (or head to a nearby eatery), but the breakfast snacks lasted well into the afternoon. Botanical illustrations by Amy Jones and a diverse book table added to the pleasant surroundings.

Our first presentation, "Biodiversity Collapse and the Future

of the Eastern Deciduous Forest Biome," by Michelle Spicer, looked at the decline of several canopy species in the eastern deciduous forest. There are five major declines, four of them attributable to insect or fungal infestations, Spicer said. Infestation declines include those of the American Chestnut (*Castanea dentata*) from the accidentally imported Chestnut Blight Fungus (*Cryphonectria parasitica*), first detected in New York in 1904; the American Beech (*Fagus grandifolia*), from a beech disease beginning in the 1920s; the Eastern and Carolina hemlocks (*Tsuga canadensis* and *T. caroliniana*), from the Hemlock Woolly Adelgid (*Adelges tsugae*), starting in 1951; and Ashes (*Fraxinus* spp.), from the the Emerald Ash Borer, which arrived in the 1990s.

The fifth decline is a shift in the canopy away from Oak (*Quercus* spp) and Hickory (*Carya* spp.) regeneration and toward Red Maple (*Acer rubrum*) as the dominant canopy tree. This cause is unknown, which Michelle's research hopes to identify. Her three hypotheses are shade intolerance, fire tolerance, and browsing by mammals.

Next on the agenda was Rebecca Wilson, Longleaf Pine Restoration Specialist with the Virginia Natural Heritage Program, who presented "Telling the Story of Longleaf Pine." Her recounting of the reforestation efforts in the northernmost portion of the natural range of Longleaf Pine (*Pinus palustris*) was engaging. We learned that historically, the British were interested in southeastern

Virginia and North Carolina in large part because Longleaf Pine provided a source of "naval stores" – pitch for sealing the hulls of wooden ships and tar for preserving sails and ropes. North Carolina became known as the "Tar Heel State" due to the significance of its naval stores history.

Virginia has eight pine species: Longleaf, Loblolly (*P. taeda*), Pond (*P. serotina*), Shortleaf (*P. echinata*), Table Mountain (*P. pungens*), Pitch (*P. rigida*), Eastern White (*P. strobus*) and Virginia (*P. virginiana*). Longleaf Pine, whose range is limited to the southeast corner of Virginia, can live for 300 years or more. Unlike any other tree in the U.S., Longleaf Pine seedlings have a "grass stage" – so called because they resemble thick hummocks of grass.

Longleaf Pines are extremely fire tolerant. While the thickly-bunched needles may scorch and die due to burning, they protect the buds – the growing tips (apical meristems) from excessive heat, allowing even very young trees to survive fire.

The decline of Longleaf Pine forests resulted from a combination of land clearing for agriculture, exploitive naval stores production, introduction of feral hogs by the Spanish and English, unsustainable logging, and fire suppression. Virginia was down to about 200 mature Longleaf Pine trees in 2005, when reforestation efforts began in earnest. The state-owned Chub Sandhill Natural Area Preserve was the first site where native Virginia Longleaf seedlings were planted at a large-scale (80 acres) in early 2008.

The Nottoway Indian Tribe and Old Dominion University are also involved in Longleaf Pine restoration projects using northern range (“native”) seedlings.

We were also introduced to Pipa the Longleaf, a mascot who is helping introduce Longleaf Pine restoration projects to communities through educational programs. Pipa is a very tall (stilt walking) “tree” with flames at her feet, pom-pom “needles” at her hands, and a lovely canopy.

After lunch, Jean Lorber reported on the Northern Shenandoah Mountain Restoration and Management Project. A project of The Nature Conservancy, the plan is to catalog species and explore ways to maintain “ecological integrity of terrestrial and aquatic ecosystems and watersheds.” The plan includes the importance of disturbances—such as fire—to maintaining ecological health. For instance, historically we know that there were once low-intensity fires every three to five years, with large fires about every 25 years. With that in mind, a study was launched that looks at how controlled burns affect forest development. Long-term goals of the Northern Shenandoah Project are the harvesting or thinning of about 5,000 acres of trees and the preservation of aquatic passageways for amphibian species placed at risk by the fragmentation of their habitat.

Katy Barlow, our final speaker, spoke on “Partnerships and Projections for *Picea rubens* Restoration,” another project with The Nature Conservancy. *Picea*



Workshop speakers, left to right, Rebecca Wilson, Michelle Spicer, Jean Lorber, and Katy Barlow.

rubens, for us novices, is Red Spruce. The Red Spruce forest ecosystem was largely destroyed by the Great Cutover (a policy of clear-cutting for the expansion of farmland during the second half of the 19th century, which affected forests throughout the Midwest and the East).

Undisturbed Red Spruce forests have a moist understory with moss and aquatic and semiaquatic plants, providing territory for endangered species such as the Cheat Mountain Salamander and the Northern Flying Squirrel and birds such as the Red Crossbill, Northern Saw-whet Owl, Northern Goshawk, and several warblers. The Goshawk requires a huge territory—500 acres per breeding pair.

The wetlands of this habitat provide terrain for White Monkshood (*Aconitum reclinatum*), Bachelor’s-buttons (*Centaurea cyanus*), a spurge, a cute blue crayfish, and the pirate wolf spider, to name but a few.

TNC is planting Red Spruce seedlings in several national forests and state parks. CASRI (Central Appalachian Spruce Restoration Initiative) works with SASRI (Southern Appalachian Spruce Restoration Initiative),

which continues the work farther south into North Carolina. Seeds are collected from surviving trees, and Dave Sabill, on the West Coast, is growing seedlings in greenhouses, which are shipped back for planting.

All in all our “day in the forest” provided lots to think about, and plenty of common threads. Our thanks to the presenters, the organizers, and the Jefferson Chapter for hosting. Make plans for the workshop in 2020! ❖



The Pledmont Chapter book sales table was a busy place.

Wilderness Bill could protect special places such as shale barrens

Virginia's shale barrens are a distinctive feature of the geology and ecology of the state's western highlands. The rich plant life found in this rocky terrain is one reason the Central Appalachian region qualifies as a biodiversity hot spot.

Many of the shale barrens in Virginia are located in the George Washington and Jefferson national forests. The largest of these is the 3,000-acre Rough Mountain shale barren, mostly in Bath County, near the Cowpasture River. As we have seen in the case of the Atlantic Coast Pipeline, even special resources like unique shale barrens on public lands are at risk for development if not protected. Fortunately, the large Rough Mountain shale barren has been protected as part of the Rough Mountain Wilderness since it was designated in 1988 and so is considered permanently off-limits to development.

In October of 2017, U.S. Virginia Senator Tim Kaine introduced the Virginia Wilderness Additions Act. The bill was referred to the Senate floor as part of other legislation, but did not make it to a final vote. This January, the Virginia Wilderness Additions Act of 2019 (S. 247) was reintroduced in the Senate by Senators Kaine and Mark Warner. The legislation would expand Rough Mountain Wilderness and the nearby Rich Hole Wilderness by a combined 5,600 acres.



A Central Appalachian shale barren. (Steven David Johnson)

Like the Cowpasture River area, Rich Hole Wilderness is also in the George Washington National Forest, mostly in Rockbridge County. If the bill becomes law, these additions would create a nearly contiguous block of wilderness totaling more than 20,000 acres in the Lower Cowpasture River region, reinforcing protection of the region's shale barrens.

Both bills—the one introduced in 2017 and the one introduced earlier this year—have had the support of a diverse coalition of stakeholders. This year's bill (S. 247) has been referred to the Senate Committee on Agriculture, Nutrition, and Forestry. No companion legislation has yet been introduced in the House of Representatives.

The casual hiker or naturalist may walk past a shale barren thinking he or she has seen just another rocky patch along the trail. But shale barrens deserve a closer look in order to appreciate their many features and the fragile life they support.

Shale barrens are usually found on steep, southern-exposed mountain slopes in western Virginia and

eastern West Virginia (as well as in the western Maryland and western Pennsylvania) at elevations from 1,000 to 2,600 feet, often in tracts of several dozen acres. They are relatively dry, and their rocky surfaces soak up the heat of the summer sun. Their generally sparse vegetational cover nonetheless varies from one barren to the next and within a barren. Some shale barrens present a crumbly, rocky surface covered with little more than Reindeer Lichen (*Cladonia rangiferina*); others resemble a wispy prairie of Pennsylvania Sedge (*Carex pensylvanica*), Little Bluestem (*Schizachyrium scoparium*), Eastern Needlegrass (*Piptochaetium avenaceum*), and Poverty Oatgrass (*Danthonia spicata*); still others have sparse and stunted tree cover usually of Virginia Pine (*Pinus virginiana*), Northern Red Oak (*Quercus rubra*), Pignut Hickory (*Carya glabra*), and Eastern Red Cedar (*Juniperus virginiana*), sometimes above a carpet of Reindeer Lichen.

These isolated islands of habitat host many rare species of plants as well as butterflies. At least 15 species of wildflowers are endemic to Central



Two of the rare plants found on Virginia's shale barrens are Kates Mountain Clover (*Trifolium virginicum*), above, and White-haired Leatherflower (*Clematis albicoma*). (Steven David Johnson, top, and Brad Striebig, right)

Appalachian shale barrens, including Shale Barren Rockcress (*Boechea serotina*), White-haired Leatherflower (*Clematis albicoma*), Shale-barren Ragwort (*Packera antennariifolia*), Kates Mountain Clover (*Trifolium virginicum*), Shale Barren Wild Buckwheat (*Eriogonum allenii*), Shale Barren Evening-primrose (*Oenothera argillicola*), and Shale-barren Pussytoes (*Antennaria virginica*).

Rare animals hosted by shale barrens include butterflies such as the Appalachian Grizzled Skipper (*Pyrgus centaureae wyandot*), the



Shale Barren Rockcress (*Boechea serotina*) is pollinated by the Appalachian Grizzled Skipper (*Pyrgus centaureae wyandot*), a butterfly that is declining in numbers. The Appalachian Grizzled Skipper is found in only nine counties in Virginia. It is ranked by the Virginia Natural Heritage Program as S1 (critically imperiled), and its global rating is G1 (critically imperiled). (Matt Orsie)

Olympia Marble (*Euchloe olympia*), and the Columbine Duskywing (*Erynnis lucilius*), and moths such as the Sweet Underwing (*Catocala dulciola*) and the Pine Barrens Underwing (*Catocala herodias gerhardi*). In a seeming case of the downtrodden doing what it can to help the oppressed, the globally critically imperiled Appalachian Grizzled Skipper butterfly pollinates the federally endangered Shale Barren Rock Cress. According to the Virginia Department of Conservation and Recreation, the main threat to these

plant and animal communities is from introduced invasive weeds, though some shale barrens near roads are also threatened by quarrying. More positively, the Eastern Fence Lizard (*Sceloporus undulatus*) is abundant on shale barrens.

Citizens who appreciate shale barrens and the biodiversity they support should welcome the designation of additions to the existing Wilderness areas as an effective public policy

tool to protect these ecosystems. The creation of a federal Wilderness affords the highest level of protection for public land under federal law.

Just to the northeast of the areas covered by S. 247 are several other shale barrens, including Ratcliff Hill, Big Cedar, and Reubens Draft. While these areas are protected to an extent by designation as special biological areas, they do not have Wilderness status. These unique places are all close to the proposed route of the Atlantic Coast Pipeline, and opponents cite the pipeline project and its associated construction and operation as having the potential to negatively impact these fragile and incredibly diverse mountain ecosystems.

Society members who support bills such as S. 247 could send a message to Virginia Senators thanking them for their support of the bill. —Tom Engle is a member of the board of the Virginia Wilderness Committee and lives in Augusta County, near Middlebrook. He was in the U.S. Foreign Service from 1986 to 2017.

Ledec earns award for environmental work

Society member Cathy Ledec was honored recently as Fairfax County's 2018 Citizen of the Year for her efforts in preserving our natural environment. This prestigious award has been presented for the past 69 years by the Fairfax County Federation of Citizens Associations, an organization established in 1940.

Cathy's achievements are an inspiration to all of us. I first met Cathy several years ago when we both participated in the Christmas Bird Count for the Mount Vernon sector. Later she became president of the Friends of Huntley Meadows Park and also chairman of the Fairfax County Tree Commission.

Here are some glimpses of Cathy taken from her nomination form. "Cathy Ledec is a force of nature - by being a force FOR nature, with

an intensity and focus that is truly remarkable. She has behind her a lifetime of volunteerism that began when she was 14. She volunteers with several Fairfax County Park Authority Programs and you might find her "deep in the weeds" pulling English ivy from our trees and working to restore our forests and woodlands."

Cathy also led the landscaping of many areas including overseeing the installation of two native pollinator meadows. Her conservation efforts at Huntley Meadows Park resulted in the protection of rare natural and historic resources for present and future generations to enjoy.




Cathy Ledec at Mt. Eagle Park

She passionately fulfills the purpose of the nature-oriented certifications by earning certification as a Master Naturalist and Audubon-at-Home Program Ambassador.

On behalf of the entire VNPS, we congratulate Cathy on this well-deserved recognition.

—Nancy Vehrs, President

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