

Semprevirens

Fall 2016 The Quarterly of the Virginia Native Plant Society

Botany on the Rock Pile

Alpine Flowers of the Presidential Range

By Mark Gatewood, Shenandoah Chapter

We thought we had our summer planned until we got an e-mail from the Appalachian Mountain Club advertising a mid-June lodge-to-hut hike to see the plants of the most extreme environment in eastern North America, the Presidential Range of the White Mountains. Hike distances would be short, packs light, and we would be carried by van to a starting point high on Mount Washington and hike—mostly—downward. We were the first to sign on.

It's hard to write about the White Mountains without using the words iconic, legendary, historic. Mountain tourism in America got its start in the 19th century in the high mountains of the northeast—the Whites, the

Adirondacks, the Greens, the Catskills. History is everywhere. We would walk the Crawford Path, put up in 1819 by early mountain guide and tourism promoter Ethan Crawford to give guests at his Crawford Notch hotel a difficult but direct hike to Mount Washington and billed as the oldest continuously maintained trail in America. Botany has history here too. Nineteenth-century botanists combed the White Mountains for alpine rarities, and the landscape commemorates their names: Tuckerman Ravine, Boott Spur, Oakes' Gulf, Cutler River. And then there are the rocks. Mount Washington is called the rock pile, with good reason. In the 14,000 years since the glaciers receded, erosion has succeeded only in breaking the mountain into a surface of jumbled rocks. Trails on the high peaks often have no discernible path—what we would call tread in the Blue Ridge—and are marked only by cairns, often topped with conspicuous chunks of quartz.

The equipment list that came in our information packet was a stern reminder of Mount Washington's ability to deliver cold and snow without regard for the calendar. For June in the Whites, we packed as if for February in the Blue Ridge. Thus equipped, we arrived at Joe Dodge Lodge in Pinkham Notch on Thursday afternoon. The lodge's



Dwarf Birch, *Betula glandulosa*
(Illustration by Betty Gatewood)

namesake, Joe Dodge, was an icon and a legend, a long-time employee of the Appalachian Mountain Club who did just about everything having to do with trails and hiking in a 30-year-career. Here we met our fellow travelers. We were nine, eight women and me, all from cities in the Northeast, all having at least some acquaintance with the Whites. As you might guess, Betty and I were the only ones from below the Mason-Dixon Line. Our two AMC guides, Stefan and Molly, made 11. The guides went over the equipment list, gave a very favorable weather forecast, and sent us off to reshuffle our pack contents. After breakfast the next morning, we would load on the van for the trip up Mount Washington.

The van took us up the Mt. Washington Auto Road and deposited us at the Cow Pasture, at an elevation of 5,700 feet. In the days of the 19th-century hotel on the mountain, cows were pastured here to provide fresh milk for guests. Somehow, the cows didn't thrive and the practice was dropped, but the name remains.

The wind, however, was thriving
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Mark and Betty Gatewood enter the Alpine Zone.



From the President

Annual Meeting One for the Books

Another awesome Annual Meeting! Many thanks to New River Chapter President Mary Rhoades and her crew for coordinating this year's event in Blacksburg. We had a delightful blend of social, musical, botanical, culinary, and educational components to celebrate the 30th anniversary of the Virginia Natural Heritage Program. Following an afternoon board meeting in the leafy and tranquil Warm Hearth Village Community Center, we kicked off the weekend at the Day's Inn Conference Center with a social hour and entertainment by a local folk music quartet. With Mary as emcee and host, we enjoyed a presentation by Claiborne Woodall after dinner. As the southwest regional supervisor and western region steward with Natural Heritage, Claiborne explained the program and its mission over its 30-year history, illustrated by slides of beautiful habitats and plants from the region.

Saturday morning we took over the breakfast nook and expanded into the banquet room as we prepared for our field trips, which ranged from native gardens and a remnant old-growth forest, to the Blue Ridge Parkway and lakes, parks, and preserves. I registered for a trip to Poor Mountain Natural Area Preserve led by Ryan Klopff, Natural Heritage mountain region steward. Despite Mary's detailed written instructions, two of our car pools followed a car with a local passenger who knew the area and deviated from the prescribed route. Unfortunately, we lost the lead car and after a bit of a side trip caught up with our group after about an hour. But Ryan patiently briefed us, and we proceeded on our hike. The mountain is named for its poor soils, which were created from metamorphosed sandstone bedrock. While we saw Table-mountain Pines (*Pinus pungens*), Eastern Hemlocks (*Tsuga canadensis*), Mountain Laurel (*Kalmia latifolia*), and Blueberry (*Vaccinium* spp.), the pièce de résistance was the globally rare Piratebush (*Buckleya distichophylla*) in fruit. Poor Mountain has the largest population of this shrub, which is found only at a few sites in Virginia, Tennessee, and North Carolina.

Saturday evening we enjoyed the music of the Blacksburg Panjammers, a steel drum band that inspired some members to dance. Meanwhile, at the back of the banquet room, Andrea Weeks, of George Mason University,

demonstrated the digitized herbarium samples made possible by grants, including one from VNPS, and Michelle Prysby, director of the Virginia Master Naturalist Program, discussed the results of RareQuest, a citizen-science project using master naturalists to rediscover rare species. This, too, was partly funded by a VNPS Research Grant.

Our elegant dinner was followed by our annual business meeting at which we re-elected the following officers and board members: Betty Truax, Recording Secretary; Joyce Wenger, Publicity Chair; Ruth Douglas, Director-at-Large, Invasive Plant Educator; and John Townsend, Director-at-Large. Thanks to all for serving. Marjorie Prochaska, First Vice President, completed her term on Nov. 1, and we thank her for her faithful service. We also adopted the annual budget and amended the bylaws regarding our Nominating Committee.

Chris Ludwig, chief biologist with the Virginia Department of Conservation and Recreation, capped off the evening with a presentation on The Cedars Natural Area Preserve. The VNPS held a major fund raiser last year and received \$24,250 toward the acquisition of additional acreage for The Cedars, Virginia's first Natural Area Preserve. Chris's slides, with many stunning photos by Gary Fleming, assured us that our money was well spent. We hope to offer a field trip there in the next year.

Sunday morning Harry and I followed our written field trip directions to arrive at Wildwood Park in Radford without a misstep. There we met up with Ryley Harris, a senior at Radford University and an outstanding young botanist. With a seeping rock wall near the parking area and a stream running through the park, Wildwood is an oasis within a small city. I especially loved the colorful wet meadow with goldenrods, jewelweeds, ironweeds, lobelias, and asters.

The Annual Meeting was over too soon, and I wished that I had been able to attend more of the field trips and chat with more members. Next year we will join with the Maryland and West Virginia native plant societies as our Potowmack Chapter coordinates a tri-state effort at the National Conservation Training Center in Shepherdstown, W.Va. Mark your calendar now for the weekend of Sept. 29–Oct. 1, 2017, and watch for details on our website.

—Your President, Nancy Vehrs



KUDOS!

To Mary Rhoades and the
New River Chapter: You Rock!

Scenes from the Annual Meeting, by Nancy Vehrs



The Cedars: A Botanical Treasure Trove

In central Lee County, which is farther west than Detroit, there is a fascinating, biologically significant valley known as The Cedars. This valley and surrounding limestone terrain encompass 35,000 acres in which 1 out of every 50 rare species populations in all of Virginia is found. Along with its unique species—the Cedars has its own species of isopod and millipede—thriving populations of some of our rarest plants and animals dwell in the barrens, caves, woodlands, streams, and forests.

Delivering the Saturday night talk at our Annual Meeting, I spoke about this region and its special plants. I kept with the theme of this year's meeting, celebrating 30 years of the Virginia Natural Heritage Program, as I talked about the progression in the program's understanding and protection of this special place.

I joined Natural Heritage in 1988 as staff botanist. Already, Heritage had encouraged our stellar conservation partner, The Nature Conservancy (TNC), to buy five acres in the heart of The Cedars. This is because by 1988, we had mapped more than 50 occurrences of rare species and significant cave resources there. Karst biologists found many unique subterranean organisms; aquatic biologists knew of the thriving fish and mussel populations in the Powell River, which runs right through the heart of this area; and botanists had found a new and unnamed species of native clover. This clover, known from only



The Valley of The Cedars. (Photo by Gary Fleming)

one other site in the world, occurred at The Cedars in tremendous numbers. We knew the place was amazing.

In 1989, the Virginia Natural Area Preserves Act was passed and we began protecting Natural Area Preserves, an official protection of land with an attached deed of dedication ensuring protection and management of a Natural Area Preserve's biodiversity into perpetuity. With that designation, plus monetary resources provided by TNC and the Commonwealth (including \$10 million of the 1992 park facilities bond), we were off to the races, buying land and building our system.

During the early 1990s, Natural Heritage staff explored and refined our knowledge of this incredible area, realizing that it was more than merely The Cedars Valley, but included a larger area with a unique and relatively intact fauna and flora of great biodiversity significance. The Cedars Natural Area Preserve began in 1997 with the purchase of the Evelyn Mason tract, 50.7 acres in the heart of The Cedars not far from TNC's five-acre tract. The system

grew from that point onward, a tract at a time, as Natural Heritage teamed with the Southwest Virginia office of The Nature Conservancy. Larry Smith of Natural Heritage was always at the center of these purchases, while the TNC team of Bill Kittrell and Don Gowan worked with us—TNC folks eventually replaced by the equally driven and competent Brad Krepps and Steve Lindemen.

These efforts have resulted in not one but three Lee County Natural Area Preserves, The Cedars, Fletcher Ford, and Unthanks Cave. All of these are growing preserves and, when our conservation goals are fully realized, will merge into a 5,000-acre-plus protected core of land at the heart of the site.

As is almost always the case, to understand why so many wonderful native plants thrive in this area, we need to look at the site's geology. Virtually all of The Cedars and surrounding terrain is underlain by limestone, a rock that yields some of our richest soils. Most Virginia limestone sites have been put to the plow or are heavily grazed by cattle, but many areas of The Cedars have



A restored woodland at The Cedars unveils a thriving population of Rattlesnake-master (*Eryngium yuccifolium*) and Tall Coreopsis (*Coreopsis tripteris*). (Photo by Gary Fleming)

escaped that fate, resulting in a real rarity—limestone terrain with a fully expressed, intact, native understory.

And what an understory! Due to its distance from population centers, much of the land is relatively free of exotic species, so in places you can find acres of mesic and dry forests with a floor of common and uncommon native plants including such goodies as Golden-seal (*Hydrastis canadensis*), Ginseng (*Panax quinquefolius*), American Gromwell (*Lithospermum latifolium*), and Nettle-leaf Sage (*Salvia urticifolia*). On any trip you know you will come across rare Virginia plants, as 16 rarities are known from the area and some are nearly ubiquitous.

Two of the rare plant species deserve special mention. The first is a ragwort that closely resembles a southern species, Yarrow-leaved Ragwort (*Packera millefolium*) but is probably a species new to science. This plant is particularly common in the northern parcels of The Cedars Natural Area Preserve, where you can see thousands of plants on the edges of rock outcrops. If it is found

to be a new species—and studies are under way—then it is known only from a handful of sites in Lee and Scott counties.

The second top-shelf rarity is a native clover known only from The Cedars and one site in Tennessee. This is the Running Glade Clover (*Trifolium calcaricum*). It is astonishingly common at The Cedars, particularly in the central valley, where it is unusual not to come upon it within 15 minutes of exploration. It is often found with the mysterious ragwort in the drier, more open habitats.

There is so much more to know and see in this area. By all means, steel yourself for the long drive and visit this fascinating area. And also, let's all pat ourselves and our fellow VNPS members on the back for our 2015 fund-raising drive and our contributing \$24,250 to help protect this wonderful site.

—Chris Ludwig

Chris Ludwig is chief biologist with the Virginia Department of Conservation and Recreation and a co-author of the Flora of Virginia.

Plant Blindness: Let's Help Cure It

The term *plant blindness* was introduced in 1998 by botanists Elizabeth Schussler and James Wandersee, who defined it as the “inability to see or notice the plants in one’s own environment, leading to the inability to recognize the importance of plants in the biosphere and in human affairs.” As members of the Virginia Native Plant Society, we understand the value of plants and must fight for their recognition by both the general public and the scientific world. The study of botany does not receive its fair share of research funding when compared with animal research. In an attempt to encourage botanical research, our 2016 fund raiser seeks donations for the VNPS Research Grant program. We started awarding grants of approximately \$5,000 last year using funds we had received from unsolicited bequests. The positive response to our program by the academic community confirms the need for such funds. Please consider making a donation to this worthwhile endeavor. Our native plants need you to give them a voice. —Nancy Vehrs



VIRGINIA NATIVE PLANT SOCIETY

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Jewels of the Orchidaceae

By W. John Hayden, Botany Chair

To temperate-zone plant enthusiasts, the orchid family seems more than a little strange. On the one hand, native orchids grow wild without assistance from people, they are rooted in the soil, and they survive freezing cold winter temperatures. On the other hand, the tropical orchids that we encounter are ornamental plants, pampered by their human caregivers, cultured indoors in pots filled with fir bark or other media designed to mimic the plants' natural epiphytic habit, and, as a group, these ornamental tropical orchids have essentially zero tolerance to frost. Of course, their flowers, fruits, and seeds define them all as members of the orchid family, Orchidaceae, but from the perspective of how they actually live, and how we interact with them, native orchids and their tropical ornamental relatives seem utterly, profoundly, different.

Our Wildflower of the Year for 2016, *Goodyera pubescens*, or Downy Rattlesnake Plantain, however, is an exception. It belongs to a small group of orchid genera known informally as Jewel Orchids, and these plants, as a group, bridge several of the stereotypical distinctions between native wild orchids and the tropical orchids found in cultivation. First, Jewel Orchids are reasonably closely related to one another; all are members of subfamily Orchidoideae, tribe Cranichideae, and subtribe Goodyerinae. But most important, though some are tropical and others are temperate, all are terrestrial, naturally rooted in soil. Further, these are orchids notable for their attractive ornamental leaves, much less so for their relatively small



Figure 1 *Goodyera pubescens* (Photograph by W.J. Hayden)



Figure 2 *Anoectochilus setaceus*: by Miss Drake (1803–1857) del., J. Watts sc.—*Edwards's Botanical Register*, volume 23 plate 2010 (<http://www.botanicus.org/page/240734>), public domain, <https://commons.wikimedia.org/w/index.php?curid=5857934>.

flowers. In some ways they are opposites of hothouse denizens like *Cattleya*, *Dendrobium*, and *Phalaenopsis*, which are drop-dead gorgeous when flowering but downright plain, some might say homely, otherwise. This article will explore three genera of Jewel Orchids that are close relatives of our Wildflower of the Year.

Before considering its exotic relatives, let's first characterize briefly the genus *Goodyera*. Our Wildflower of the Year (Figure 1) is just one of 25 species of Rattlesnake Plantain, only 4 of which are found in North America. Other species range from temperate forests of Europe and Asia to tropical and temperate Australia and various islands of the Atlantic, Pacific, and Indian oceans. Their leaves are green, but their leaf shape (outline) and the pattern of white veins varies from species to species.

Anoectochilus (Figure 2) is an even larger genus, with approximately 50 species distributed from the Himala-



Figure 3 *Ludisia discolor* (Photograph by W.J. Hayden)

yas through China, Japan, Southeast Asia, the islands of Melanesia, and Australia. Although some species of *Anoectochilus* have green-and-white leaves much like *Goodyera*, most have prominent anthocyanin pigments that, together with chlorophyll, render interveinal portions of the leaf as dark green and, in the absence of chlorophyll, render veins white to red or purple; undersides of leaves are often reddish. One species, *A. sandvicensis*, is endemic to the Hawaiian Islands. Although known as the Hawaiian Jewel Orchid, its foliar veins only subtly contrast with the green tissue at large. Also, the flowers of the Hawaiian Jewel Orchid are yellow, setting it apart from the white flowers found in other species of the genus. Though found on most of the major islands of the Hawaiian archipelago, *A. sandvicensis* is rare and threatened by habitat loss.

Another Jewel Orchid belongs to a genus, *Ludisia*, that is monotypic, i.e., it consists of just a single species. *Ludisia discolor* (Figure 3) is found in the deep shade of warm, humid forests from southern China, nearby Thailand, Myanmar (Burma), and Vietnam to the islands of Indonesia and the Philippines. As might be expected from a single species occupying a broad geographic area and having a long history in horticulture, one can find cultivated plants with a wide variety of vein and interveinal colors on the leaves. Most are green with red tinges and clearly contrasting veins, but some are dark purple with



Figure 4 *Macodes petola*: By JMK. Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=32596095>.

obscure veins, and others, evidently anthocyanin-lacking mutants, have bright-green leaves with white veins, much like our *Goodyera*.

Finally, there is the genus *Macodes* (Figure 4), consisting of 11 species from more or less the same shady forest habitats in roughly the same overall range as *Ludisia* and *Anoectochilus*. Though *Macodes* is not found in cultivation as often as is *Ludisia*, its leaves are striking, with high-contrast differentiation between veins, mostly white, yellow, or green, and leaf background colors that range from yellowish green to dark green or reddish purple.

In summary, the Jewel Orchids are terrestrial plants with creeping rhizomes and variegated or otherwise colorful leaves and usually smallish flowers found mostly in the tropics of Southeast Asia but with some species, such as our Wildflower of the Year, extending to the temperate regions of North America and Eurasia. So, next time you encounter that precious jewel we know as Rattlesnake Plantain, don't focus on the apparent disconnect between native and tropical orchids. Rather, recall these relatives of *Goodyera*, several of which can be found in conservatories or even household windowsills, and appreciate these special jewels in the crown of biodiversity's most extravagant and flamboyant plant family.

AN ETYMOLOGICAL NOTE

The English word orchid is derived from the Latin *Orchis*, the name of a genus well known to the ancient Greeks and Romans. But orchis is also Latin for testicle. Here is the connection: *Orchis* orchids are perennial plants arising from swollen, often paired, storage roots. To the ancients, when pulled from the ground the lower extremities of these plants were reminiscent of testicles, so this somewhat earthy name came to be associated with them and, by extension, the whole family, Orchidaceae. ❖

In the Alpine Zone

Continued from page 1

and as we came out of the van, we all dug out our wind shells, gloves, and knit hats. The Cow Pasture gave us our first alpine plant, the Moss Champion (*Silene acaulis*). With bright magenta flowers against dark-green foliage, it looked like our familiar Moss Pink (*Phlox subulata*) at one-quarter scale. You could have covered the plant with a cereal bowl, and so it introduced us to the theme and scheme of plant survival in the alpine zone: get small, stay low.

Shouldering our packs, we followed our guides down the steep, rocky Huntington Ravine trail to the Alpine Garden Trail. We were now in the lee of the cone of Mount Washington, on a southeast-facing slope. Just as a snow fence catches and deposits wind-blown snow on its downwind side, the Alpine Garden receives and deposits a heavy snow cover from the prevailing northerly storm tracks. Rivulets of melt water coursed down the mountain, and one patch of snow remained high on the mountainside. Here's where the show began.

Our first, and most common, plant was Bog Bilberry (*Vaccinium uliginosum*). Then we began to see willows, Tea-leaf Willow (*Salix planifolia*) and Bearberry Willow (*Salix*

uva-ursi), sprawling on the ground or espaliered against rocks. Then came Mountain Avens (*Geum peckii*), Bluets (*Houstonia caerulea*), and Labrador Tea (*Rhododendron groenlandicum*). The showiest blooms were those of Alpine Azalea (*Kalmia procumbens*), Lapland Rosebay (*Rhododendron lapponicum*) and Bog Laurel (*Kalmia polifolia*), all in the magenta range. According to our guides, the bloom cycle was somewhat out of order due to snow and cold in early June. None of us minded. The weather was trending mild, the views were good, and the show on the ground was still spectacular.

For me, the queen of the mountain was *Diapensia* (*Diapensia lapponica*). It has all the attributes of an alpine plant, allowing it to prosper on the windiest, most exposed sites: shrubby form, prostrate habit, early blooming. The flowers, which were mostly gone by, ranged from ivory to white. I thought it would be rare, a tuft here and there, but it often forms extensive mats.

Moving at a slow, nature-appreciating pace, we reached our first night's lodging at Lakes of the Clouds Hut. The Appalachian Mountain Club has eight huts scattered throughout the White Mountains. "Hut" somewhat belies the fact that each is a bunkhouse,

some of them accommodating 100 people, with composting toilets, cold running water, solar panels, and a full kitchen. Each is staffed by a croo of lithe, energetic young men and women who maintain the hut and serve up a hearty dinner and breakfast to each night's guests. The origins of the word "croo" seem to be lost in antiquity, but the word speaks to the easygoing camaraderie, the esprit de corps of a group of young people living together in close quarters, doing hard work in a beautiful environment—and whose idea of off-hours fun might be a night hike several miles to play a prank on the croo at the next hut, returning in time to prepare breakfast for the overnight guests. Because the huts are not accessible by road, each croo member makes two trips a week down to the nearest road to pick up food and supplies and returns with a 50- to 80-pound-load piled high on a vintage Trapper Nelson packboard (younger readers may have to Google that).

Poking around the lakes on my own, waiting for dinner, I was pleased to find Dwarf Birch (*Betula glandulosa*). It is most unbirchlike, with thumbnail-size, round scalloped leaves. A few withered catkins gave it away as a birch. After dinner, Stefan showed us Moss Plant (*Harrimanella hypnoides*), a member of the heath family with leaves like a clubmoss and the pendent flowers of the heaths. It's found where the snow lies longest in the rocks.

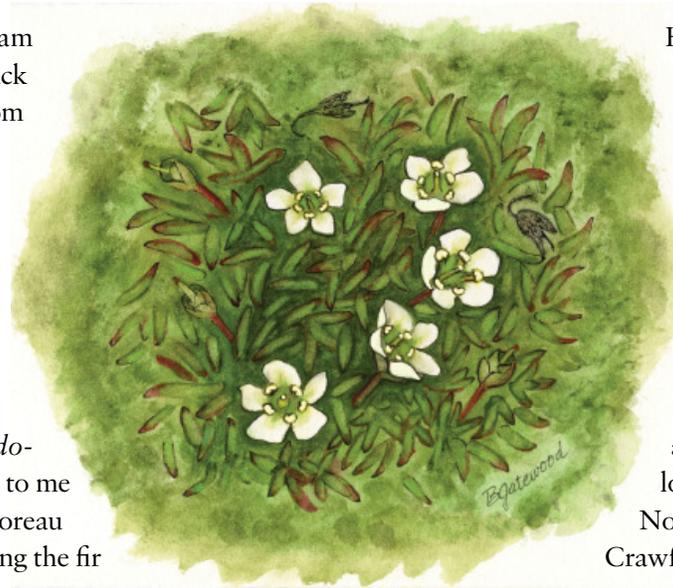
The next morning—Saturday, as if it mattered—we continued on a generally downward route on the Crawford Path, which is a part of the Appalachian Trail. We went over a few Presidential 4,000-footers—Monroe, Eisenhower, Pierce. We were working our way out of the alpine zone, into the Krummholz,



Hiking the Alpine Garden Trail among rock cairns. (Courtesy Mark and Betty Gatewood)

an area of wind-formed Balsam Fir (*Abies balsamea*) and Black Spruce (*Picea mariana*) seldom over waist high. Sheltered in the Krummholz were some lower-elevation plants more familiar to us—Northern Starflower (*Trientalis borealis*), Bluebead Lily (*Clin-tonia borealis*), and Eastern Twisted-stalk (*Streptopus lanceolatus*). Rhodora (*Rhodo-dendron canadense*), known to me only from the writings of Thoreau and Emerson, appeared among the fir and spruce.

After crossing Mount Pierce, we began our descent to our final night's lodging at Mizpah Spring Hut. The last half mile involved lowering ourselves down rock faces and boulders, with two very welcome log staircases. Our rewards were the song of the Bicknell's Thrush and a Gray Jay, which observed us briefly.



Diapensia (*Diapensia lapponica*)
(Illustration by Betty Gatewood)

We were now in Balsam Fir forest. In the perpetual twilight of the firs, the ground cover was Sphagnum Moss (*Sphagnum* spp.) dotted with Bluebead Lily, Wood Sorrel (*Oxalis montana*) and Claspingleaved Twisted Stalk (*Streptopus amplexifolius*).

Hiking out on Sunday morning, we would gradually leave the fir forest for familiar northern hardwoods—Yellow Birch (*Betula alleghaniensis*), American Beech (*Fagus grandifolia*), Sugar Maple (*Acer saccharum*)—before reaching Crawford Notch.

Nothing writes the coda to a hike like the sudden appearance of roads, parking lots, and traffic. Crawford Notch was packed. It was Ethan Crawford's vision, fully realized. And we were done.

With the logistical precision that characterized our trip, an Appalachian Mountain Club van awaited to whisk us back to Joe Dodge Lodge and our waiting cars. A debriefing, lunch, exchange of e-mail addresses and hugs with our fellow hikers, and we were back in automobile-world. ❖

FACTS AND STATS

WEATHER The week before our trip, the Mount Washington Observatory reported sustained 100-mph winds and snow; a few days after our trip, snow again. During the three days of our trip, the high peaks enjoyed an unprecedented run of calm winds, mild temperatures (an afternoon temperature of 57), clear skies, and 100-mile visibility, with just a spritz of rain and hail as we approached Lakes of the Clouds Hut.

CLOTHING AND EQUIPMENT Since we were staying in the huts, we were freed from carrying overnight backpacking gear; our packs weighed 25–27 pounds. With the mild weather, we didn't use all the clothing we carried. Back home, unpacking, I was dismayed to note that my rain/wind pants were in a stuff sack that hadn't gone in my pack. That could have been really

bad, had the weather been less kind.

DISTANCE AND DIFFICULTY

Because this was an educational trip, we didn't go far or fast. The trip total was about 10 miles. With some steep climbs and descents and rough, rocky footing, I rate 1 mile in the Whites as equal to 2–3 miles in the Blue Ridge.

MY PLANT LIST At the end of the second day, when we began to leave the alpine zone, my list was 36 species, most new to me. By the end of the trip, plants in the Krummholz and fir forest bumped me up to 47 species. There were a few friendly faces from home—Three-toothed Cinquefoil (*Sibbaldia tridentata*) and Whorled Wood Aster (*Oclemena acuminata*) among them—but most plants were new to us.

SWAG Trip fees covered overnights and meals at the lodge and huts, and lunch food and snacks.

And every participant got a copy of the Appalachian Mountain Club's *Field Guide to the New England Alpine Summits*, by Nancy Slack and Allison Bell. It's beautifully illustrated with photographs of the plants and animals that live above treeline. The guide begins with the early explorations of botanists and naturalists and ends at current work by citizen and professional scientists to monitor the alpine zone. Readers seeking more rigorous science are directed there.

IF YOU WANT TO GO First, join the Appalachian Mountain Club (www.outdoors.org). You'll quickly recover your membership fee in discounts on trips, lodging, books and maps. And you're supporting the leading organization conducting research, education, and conservation in the White Mountains and throughout the Northeast. ❖

Many Natural Area Preserves Are Public-Accessible, But Stewards Must Be Vigilant to Impacts

We are so fortunate to have such a robust and successful Natural Area Preserve System in Virginia, backed by the Natural Area Preserves Act. This act charges the Department of Conservation and Recreation's Natural Heritage Program with identifying, protecting, and managing Virginia's natural heritage resources (i.e., habitats of rare, threatened, and endangered species, significant natural communities, geologic sites, and other natural features) through a statewide system of Natural Area Preserves.

Each preserve also provides a snapshot of an important reference point for Virginians: they best portray the environment and the ecology in which human cultures took root in Virginia millennia ago. For example, the relatively undisturbed expanses of shoreline at False Cape Natural Area Preserve (designated in 2002; 3,573 acres) and the intact maritime dune forests at Savage Neck Dunes Natural Area Preserve (1998; 298 acres) offer a step back in time, to when our ancestors were first learning how to live on and steward coastal plains. Overlooking Rocky Mount, Va., Bald Knob (2016; 79 acres) harbors the world's largest population of *Phemeranthus piedmontanus*, one of only five known populations, and The Cedars (1997; 1,797 acres), which has grown via two decades of land conservation efforts by Natural Heritage, The Nature Conservancy, and other partners, protects populations of 18 rare plant species, 12 rare animals, and 4 natural community types, as well as fish and mussel species and cave and karst features. Indeed,

From Your Natural Heritage Program

By Jason Bulluck



the VNPS raised \$24,250 last year to help our efforts at The Cedars.

There is much to treasure and be proud of in our Natural Area Preserve system, and we work hard to share these places wherever and whenever we can. All preserves are accessible via our natural area stewards, and one-third of them are open for public access, with parking, established trails, and signs. We realize the importance of making the preserves available for nature-based education, hiking, birdwatching, canoeing, and other low-impact activities, now and for future generations.

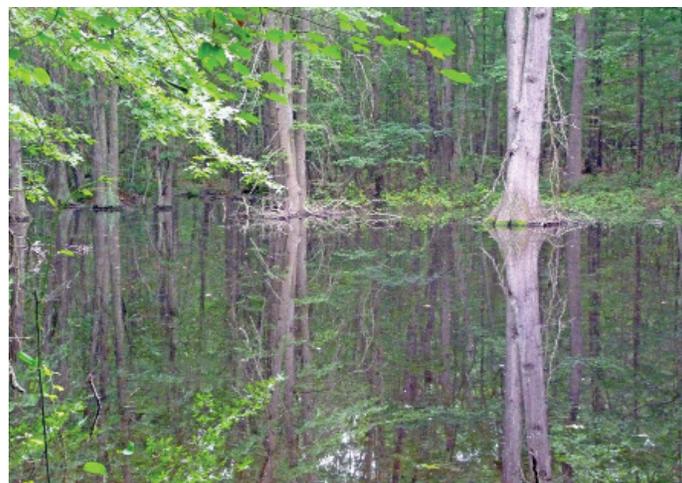
But, considering Natural Heritage's primary charge—to protect biodiversity—balance is critical. Indeed, many resources are simply too rare, fragile, and vulnerable to impacts wrought by open access. Off-leash dogs on coastal preserves diminish habitat value for beach-nesting birds. Dogs and exces-

sive beach use can harm habitat of the federally threatened Northeastern Beach Tiger Beetle (*Cicindela dorsalis dorsalis*). In fact, any preserve open to public access is more susceptible to invasive plant species and must be monitored to ensure that invasives are detected early and eradicated. Similarly, while high-elevation rock outcrops are a natural draw for hikers, the rare plant communities that inhabit these exposed, thin-soiled environments are especially susceptible to foot traffic. Plant communities that took millennia to become established can be converted to bare, eroding soil and rock within a few years of open access and increased foot traffic.

We are working to ensure that when open access is feasible, the degree of access and types of use are carefully paired and limited as needed based on the rare plant and animal species protected by the preserve. Management is continually adapted in light of encroaching development, invasive species, and climate-change stressors so that our primary goal—protection and management of rare biodiversity—is achieved while

offering visitors unique nature-based experiences. Your Natural Heritage Program is constantly working to strike this balance, so we continue to protect our natural heritage resources and share our successes as well.

Jason Bulluck is director of the Virginia Natural Heritage Program. Learn more about Virginia's Natural Area Preserves at www.dcr.virginia.gov/natural-heritage



Recently acquired Deep Run Ponds Natural Area Preserve, in Rockingham County, is one of the largest remaining Shenandoah Valley sinkhole pond systems in Virginia. (Photo by Nancy Sorrells)

At our Annual Meeting, I had the pleasure of going on a field trip at Wildwood Park led by Radford University senior Ryley Harris, a budding botanist. I was impressed with his knowledge and enthusiasm and wanted to learn more. We engaged in an online interview.

Nancy: How did you get interested in nature and botany?

Ryley: Throughout my childhood I was influenced heavily by my experiences of the natural world. Hiking and exploring the baldcypress swamps around Virginia Beach were a regular activity. From a young age, I was enthusiastic about ethnobotany. The first botany course I took at Radford was “Plants in Society,” where I learned about the cultural uses of plants, and also about nontimber forest products like Black Cohosh and Ginseng. That class was great, but it wasn’t until later that I learned to ID plants. The next class I took was “Flora of Virginia,” taught by VNPS member John Kell. It was the only time the class has been taught at Radford, so I am very glad I was able to take it. It was through this class that I was able to learn botany in a way that meshed with my style of learning. Looking for patterns among plant families made plant ID a lot more intuitive for me.

Nancy: What kind of childhood did you have?

Ryley: I was born and raised in the oceanfront area of Virginia Beach. In a way, the ocean first taught me to appreciate nature. Throughout my childhood education, I was given ample opportunity to explore and learn from local science experts, and I spent a good amount of time at the Virginia Aquarium on school field trips. I attended First Colonial High School, where several teachers inspired me to pursue a career in the ecological sciences. My parents have been major supporters throughout all of my educational endeavors. My mother is the school improvement specialist at Green Run High School in Virginia Beach, and my father owns an outdoor adventure and ecotourism company called Rudee Inlet Stand-Up Paddle, also in Virginia Beach. If you’re ever in the area, pay him a visit and explore the amazing salt marsh Owl’s Creek watershed. My grandfather Dave Harris was director of land protection for the Virginia Coast Reserve office of

The Nature Conservancy for over 14 years. He has always been a major influence on me and taught me the importance of conservation. I also spent a lot of time exploring the maritime forested areas in the northeast corner of North Carolina. My mother’s parents have a house in the woods there, 20 miles from any paved road. Spending time there definitely gave me an appreciation for rural living.

Nancy: Why did you choose Radford, and what are you studying? What kind of career do you see for yourself?

Ryley: From some older friends, I heard Radford was a great and affordable school, surrounded by really biologically interesting areas. Also, I have always felt drawn to the mountains. It may be all the time I spent in the rural Outer Banks that gave me an appreciation for the isolation and serenity being in nature provides. I also am in charge of running Radford’s first sustainable garden, located at Selu Conservancy. We grow food using intensive planting methods and donate the produce to those in need in the community. We plan to create a permanent teaching garden, in which native plants can be showcased for classes that come to tour the garden.

I have several mentors, the first of whom would have to be Dr. Christine Small, an accomplished forest ecologist and former chair of Radford’s biology department. In my sophomore year, I wasn’t sure what direction I wanted to take with my biology career. She got me involved with some of her research at Selu Conservancy, looking into how plant communities respond to the introduction of an invasive species, in this case *Rosa multiflora*, which got me interested in the complexities of the plant world. Her husband, Darrell White, Radford’s greenhouse manager, has also done a lot for me.

Another influential person in my academic life has been Mr. Kell, who taught the class that transformed my perspective on botany. I am happy to say I learned and retained more in his class than in any other class I have taken. He has continued to work closely with me to refine my plant ID skills, often taking the time to join me for

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EMILY SIELLER

A Visit with Ryley Harris, a Young Botanist at Radford

By Nancy Vehrs

Ryley Harris, continued

plant ID walks in Wildwood Park and around Radford.

I am hoping to find some sort of career where I can apply botanical skills. I'm studying data modeling and GIS systems so I can develop a broad skill set.

Nancy: *How did you happen to get involved as a field-trip leader for the Annual Meeting?*

Ryley: I met Mary Rhoades, head of the New River Chapter, while working on a flower phenology project for the University of Virginia's Mountain Lake Biological Station. We hiked from the biological station to Bear Cliffs, an overlook at 4,000 ft., and identified every flowering plant we could. This was this past May, a great time to observe and catalogue the amazing floral diversity of springtime in the mountains. After talking for a while, she asked me if I'd like to lead a walk at the Annual Meeting, and I enthusiastically accepted.

Nancy: *The VNPS is struggling to engage a younger demographic. What advice do you have for us and why?*

Ryley: Unfortunately, a lot of people truly have no idea how simple and fun plant identification can be. I think this is because these skills are rarely taught in a university

setting now. I think holding well-publicized events showcasing different topics revolving around native flora would draw a lot of interest from a younger demographic. Going through university channels to get the word out, or having a university-sponsored event, could also help.

I recently worked with a woman in Floyd County, leading a yoga/plant hike. A lot of younger people were there. They're out there—it's just a matter of getting networked. On a larger scale, I think we seriously need to rethink the way sciences are taught in schools. Standardized testing in this country represses curiosity from a young age, and I think it's responsible for a lack of interest in some fields. Instead of sitting in a classroom learning about nature, children should be actively engaging in outdoor educational activities. I firmly believe that when it comes to botany, nature is the best environment for learning. It is vital to the future of many fields that we teach them in a manner that inspires interest and sparks curiosity instead of suppressing them, and I think the way to do this is to show people how these fields, including botany, relate to our everyday lives. ❖

Nancy: *Thank you, Ryley! We wish you the best and hope that you continue to engage with VNPS.*

Ryley: Thank you. ❖

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