

I have loved Monarch butterflies since I was a child when I marveled at one floating overhead during recess in elementary school. For the past 35 years I have enjoyed raising Milkweed and watching the caterpillars eat, grow, and metamorphose into butterflies. I also shared this amazing experience with hundreds of students when I taught science in the elementary school. My husband and I like to celebrate our milestone wedding anniversaries by taking special trips. When our 40th anniversary

was arriving in December 2019 I told him I would love to go to Mexico to see the overwintering Monarchs. We booked a trip with Natural Habitats Adventures, part of the World Wildlife Federation, to go in mid-January 2020.

We flew to Mexico City and enjoyed the Chapultepec Park and castle, marveled at the artifacts in the Museum of Archeology, and toured the ancient ruins of Teotihuacán the two days before going to the mountains to see the butterflies.

The town of Angangueo is located 3-1/2 hours northwest of Mexico City. It was a pleasant change to get out of the noisy traffic and air pollution we encountered there. Angangueo is a lovely town of about 15,000 people; due to the closing of the silver mines several years ago the people are highly dependent on tourism based on the overwintering Monarchs.

Getting to the mountain where the Monarch reserves are located involved riding several miles in the back of a pickup truck on steep, narrow roads. Once at the reserve we mounted small horses led by a “caballero” guide for over a mile on a dusty trail; the last half-mile we walked to get to the forests where the butterflies were. At first we saw a few butterflies sipping nectar on wildflowers and flitting around in the forest; when we reached the viewing area we were in awe of the millions of Monarchs covering the tree trunks and hanging in huge clusters on the branches of the Oyamel Fir trees. The guides told us to speak in whispers so we wouldn’t disturb the butterflies. When there was a moment of silence between the sound of clicking cameras, we could actually hear the flapping of the butterflies’ wings; this is the only place in the world this sound can be heard!

In 2009 entomologist Dr. Lincoln Brower dedicated the Monarch Waystation at Roan Mountain State Park during the Fall Rally. It was an honor to meet the man who had spent much of his life in the forests studying the monarchs. When I posed with him for a photo op I never dreamed I would ever have the opportunity to experience the marvel of seeing the butterflies too. Dr. Brower was well-loved by the people of Angangueo. They erected a beautiful memorial to him at the Sierra Chincua Monarch Reserve when he passed away in 2018. The Natural Habitat guides were amazed when I told them that we had the honor of meeting Dr. Brower!



Dr. Brower would have been dismayed to learn that the mountaintop overwintering areas are now under threat by the drug cartels in Mexico; these groups want to cut the huge Oyamel trees the butterflies depend on for their survival. The local people are often threatened, and sometimes killed, by members of the cartels. It is vital for these Monarchs that the forests are protected, without them the butterflies we love could become extinct. Ecotourism is extremely important for the economy of Angangueo to fund the guides, the souvenir sellers, the small hotels, and restaurants in the town.

I look forward to sharing the incredible experience Kenny and I had in Mexico with the Friends of Roan Mountain at the Spring rally!

Kris Light, naturalist, photographer and educator, has taught science to Tennessee elementary students for many years and led wildflower walks in our state parks for 34 years. Kris will present *Monarch Migration* on Friday, April 22, at the RMSP Conference Center at 7:30 pm.

Tardigrada in Tennessee and Beyond

--The Inside Story of My Life with the Bears

— Diane R. Nelson, Dept. of Biological Sciences, East Tennessee State University



Echiniscus front

Have you heard about tardigrades? From Star Wars to Neil deGrasse Tyson's popular television program *Cosmos: A Spacetime Odyssey* to children's tv shows and stuffed animals, tardigrades have invaded our media and our hearts. How did I get started studying them? I'll tell you the story.

"We will skip tardigrades because no one has been able to find them around here." That was my introduction to tardigrades (water bears), when I took the first course in my PhD program at the University of Tennessee-Knoxville. Always one to love a challenge, I responded, "I know a man who saw one once" and tardigrades became my special project (and later the focus of my dissertation). "The man" was Clifford Morefield, the director of the Erwin National Fish Hatchery, who had brought a slide with a tardigrade mounted in a drop of water to the Biology Department at ETSU where I was teaching. By the time I looked under the microscope, the water had dried, and I saw nothing but a blob. Once I found out where he lived at the fishery

in Erwin, TN, I knocked on his front door and said, "Excuse me, I'm looking for tardigrades." Mr. Morefield tore a hunk of moss off a huge oak tree on the hatchery grounds and took me into his lab. He said, "If it moves like an inchworm, it's a rotifer; if it wiggles back and forth, it's a nematode; if it walks, it's a water bear." When a water bear looked up at me in the microscope, it was love at first sight, and I've been hunting them ever since then.

For my dissertation, tardigrades were the perfect subject since I was teaching full time at ETSU while working on my PhD. My dissertation, "Distribution of Tardigrades on Roan Mountain, Tennessee-North Carolina," involved the collection, identification, and comparison of water bear species in epiphytic mosses on the bark of live beech trees at three different elevations on the north-facing and south-facing slopes of Roan. Previously there was only one report of tardigrades from Tennessee, in which three species were reported from Roan Mountain. With the mentoring of tardigradologist Robert Schuster, University of California-Davis, I identified 21 tardigrade species in over 5000 specimens from 84 samples on Roan Mountain. Roan has remained one of my favorite places on the planet, but "I see tardigrades" wherever I roam.

Overcoming numerous obstacles, I completed my PhD, despite the prediction of the UTK Zoology chairman who said I would never finish because I was a woman and not "in residence." Subsequently, I was invited to present my research at the 1st International Symposium on Tardigrades in Italy to honor the "father of tardigradology," Professor Guiseppe Ramazzotti on his 75th birthday. In Dr. Ramazzotti's second book on pipes (*La Pipa*), he proudly described the antique Tennessee corn-cob pipe that I gave him at the symposium for his birthday. Now I am older than Ramazzotti was when I first met him! I had never been west of the Mississippi River; but became an international traveler with a passport, beginning my lifetime journey of bear hunting and traveling to symposia in Italy, England, Denmark, Greenland, Germany, Poland, Sicily, Portugal, and soon to Japan.

So, what are these enigmatic and charismatic critters? Tardigrades are commonly called "water bears" because they are bear-like in shape with legs (8!) terminating in claws, but they have no backbone or fur. To be active, the body must be surrounded by water, but some survive in every habitat on the planet including fresh and salt water as well as terrestrial environments that are exposed to moisture. Once while I was giving a lecture in Gary Barrigar's ecology class at Elizabethton High School, a newspaper reporter took a photo and published it in the local paper with the caption "Dr. Nelson explains Fartigrades..." —the only time that nickname has been used! Microscopic in size, these tiny multicellular animals are best observed with various types of microscopes. Although they are closely related to arthropods, they are so different that they have their own phylum—Tardigrada. Currently about 1300



species have been described, but many more remain to be discovered.

Why are they called the “toughest animals on Earth”? Terrestrial tardigrades that typically live in mosses, lichens, liverworts, leaf litter, and soil can either dry up or freeze and survive extreme environmental conditions both on this planet and in space! This ability is called “cryptobiosis” and the dried/frozen blob is known as a “tun,” which can withstand very high and very low temperatures, as well as high pressure, radiation, and the vacuum of space. How? That’s the subject of much research being conducted in labs around the world and the reason they survive from the Arctic to the Antarctic in every terrestrial environment.

Have you ever seen a live water bear (tardigrade)? I’ll show you an easy method in the Sunday workshop, using Styrofoam plates, a petri dish, pipette, and a microscope. Learn how to find water bears in your backyard and make a simple screen to separate the tardigrades from mosses and lichens. Use a dissecting microscope to watch water bear behavior and have fun learning about these charismatic microscopic animals. You may find a new hobby or lifetime project!

Dr. Diane R. Nelson, Professor Emeritus at ETSU, received her PhD from UT- Knoxville in 1973 with her dissertation on tardigrades (“water bears”) of Roan Mountain. She has presented her research on tardigrades at 14 international symposia and is scheduled for a 15th in Poland in 2022. She has had 3 species and one genus of tardigrades named after her. Dr. Nelson will present *Tardigrades: Water Bears* on Saturday, April 23 at 7:30 pm in the RMSP Conference Center.

WINTER RALLY A SUCCESS!



Cade explains that beech trees retain their dried leaves during the winter.

On the afternoon of February 12th, some friends of Roan Mountain gathered on the porch of the conference center to get ready for three wonder-filled winter field trips. After fueling up with coffee, cocoa and tea (including wild harvested chaga), participants met with their respective groups and headed out on their adventures. The weather was chilly enough to feel like winter, but very comfortable with the temperature reaching 55 degrees that day. Due to a sharp rise in Covid cases during January, we were unable

to have the morning portion of the rally with speaker presentations or lunch as usual. Registration was online, and the number of participants per trip was limited for safety reasons. Although the event was modified and very different from years past, many participants reported that they still had the opportunity to learn about and appreciate Roan Mountain.

Marty Silver took an enthusiastic group to track and find signs of animal activity along the Doe River. This trip has been a family favorite on the afternoon of the winter rally for several years, and the excitement and joy of discovery never wanes. Any trip with Marty means that not only do folks learn new ways to pay attention to the ecology of the mountain, but they also get to take great memories home with them. The birding trip was led by Debi Campbell and Roy Knispel, and their group ventured to Carver’s Gap. Driving up the mountain to the spruce fir forests and then working their way down, they found several species, including Red Crossbills and Pine Siskins. Cade Campbell took his group down through the Appalachian cove forests near Peg Leg Mine to find and identify winter trees and plants. They found numerous endemic species such as Fraser Magnolia and Yellow Birch, discussed traditional uses of several plants, and learned about some unique ecological roles played by the flora along the Doe River.

The current plan for the 2023 winter rally on Saturday, February 12th is to return to the traditional format, with friends meeting inside the conference center by the fireplace with speakers presenting and a catered lunch.

Between Friends

GIFTS AND MEMORIALS

Friends of Roan Mountain gratefully acknowledges these charitable gifts

Memorial Gifts

W. Mills Dyer, Jr. for Debbie Neves

Sierra Gaskins for Wayne Gaskins

Cheryl Glenn for Rose Koontz

Marian Hartman & Margaret Barber for

Rose Koontz

Herman & Gerda Metzler for Rose Koontz

Carol Nickle for Rose Koontz

Honoree Gifts

Don Fisher for Dr. Fred J. Alsop III

Donations

Lynn Brown

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David Kirschke

John and Carolyn Martin

John & Connie McLendon

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Shelley Stahlman & Allen Pickel for
Norma Morrison

Network for Good Anonymous for
Norma Morrison

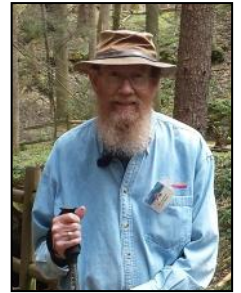
The Welch Family Charitable Fund

Nancy Wood & Betsy Thaxton

In Memoriam

It is with sadness we note the passing of the following members of Friends of Roan Mountain

Robert E. Whittemore (Whitt/Bob) who passed away February 13, 2022 at the age of 79, was Chief Geologist at General Shale in Johnson City from 1969—2007. Bob served on the board of Friends of Roan Mountain for many years and served as President of FoRM from 2000-2008. He led many geology field trips at our rallies and was a featured speaker at the Fall Rally. He gave “Rock Talks” to numerous groups in our area. Bob was an avid caver who enjoyed teaching new cavers the art of all aspects of caving. Anne, his wife of fifty-five years, previously served as treasurer of FoRM and continues to serve on our Board of Directors.



Rose Ellen Koontz passed away at her home in Laurel Springs, N.C., on February 14, 2022, at the age of 85. Rose, a teacher by profession, lived a very active life and enjoyed hiking, studying plants, and even off-road motorcycling. She was an expert in local botany and could identify almost any plant she encountered. She loved spring wildflowers. Rose was an excellent grandmother, taking Allen and Anne camping each year to the Roan Mountain Naturalists Rally and sharing her love of nature. In recognition of her love of nature, the family asks that in lieu of flowers, you may [donate](#) to the Friends of Roan Mountain.



TWIN SPRINGS GETS A SPRING CLEANING!

Many thanks to these volunteers who spent the morning of April 2nd at Twin Springs Recreation Area tidying up the picnic shelter and grounds, wielding paint brushes, saws, drills, rakes, and shovels!

Gary Barrigar, Chris Campbell, Randall Rogers, Chris Shattuck, Frank Shattuck,
Sharon Stafford, and Ken Turner.

***Entomophthora muscae* (ent-uh-MOF-thor-uh MUSK-eye)**

Text by Jamey, pics by Larry McDaniel

Zombie Flies

On Roan Mountain's sides

Abides, multitudes of flies

Flies... sporulating

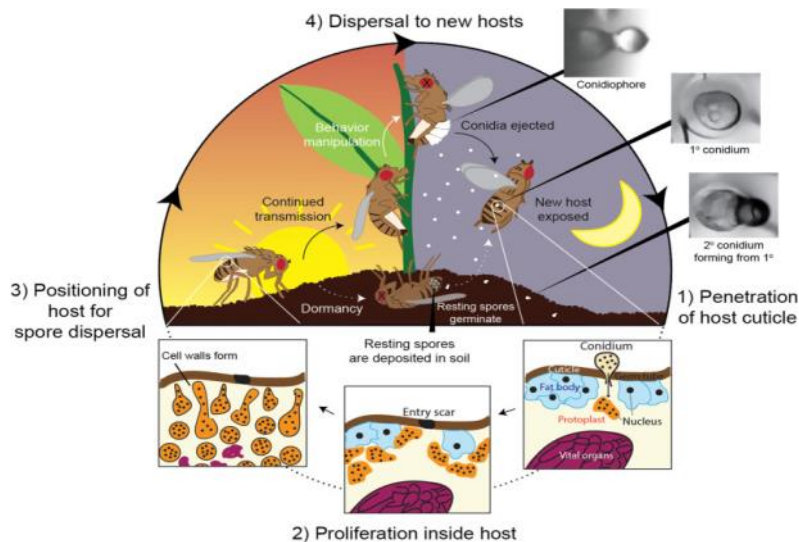
The many fly species on Roan are a boon to the rare Alder Flycatcher and include Cluster Flies (*Pollenia* sp.), which are larger than common house flies, and Blow Flies (*Calliphoridae*). I first became familiar with Cluster Flies after finding them in an outhouse at one of the Appalachian Trail shelters in the Jefferson National Forest while working summers during college. Another Forest Service employee told me their name. It is an apt common name as they were clustered even in death.

I became even more familiar with the Cluster Flies while tending the goats on Jane Bald during the Baatany Project. The Cluster Flies often ended up dead and stuck to undersides of leaves, blackberry stems, and the goat fence. One of those summers when the goats were on the balds there were so many flies that they made the local news. Flies were stacked upon flies, sometimes several flies deep. Hikers said they were as thick as twelve flies deep in the Roan High Knob shelter leading them to camp somewhere else.



Larry's fly pics: left: Blow Fly (*Calliphoridae*?) on Timothy Grass; Fly-Killing Fungus spores are released from the fungal yellow-orange bands around the abdomen. Right: a Cluster Fly (*Pollenia* sp.?) on Goldenrod.

The flies are attached to surfaces with what looks like fine spider silk emerging from the abdomens, but it is fungal hyphae produced by the Fly-Killing Fungus, *Entomophthora muscae*, not silk. The genus, whose name translates as “insect destroyer,” contains over fifty parasitic species including *E. maimaiga* which infects Gypsy Moths. It was Larry McDaniel who told me the *E. muscae* species name back in 2016. The fungus hijacks the flies, can grow into their brains, and alters their behaviors including making the flies land and crawl up surfaces to high points, known as “summit disease,” where they become attached and assume a posture with wings outstretched and legs spread and extended. The fungal hyphae consume the fly guts and haemolymph, and the flies die five to seven days later. Being high off the ground helps disperse the asexually-produced fungal spores (conidia) that are later produced. The spores are forcefully ejected from the spore-launching structures (conidiophores) using a water cannon mechanism. Cool and humid conditions, which often occur on Roan's summits, promote the fungal infection. Figure 5 from Elya and De Fine Licht (2021) illustrates the infection cycle:



Based on personal observations, the Alder Flycatchers will still eat the flies during initial stages after the flies become attached to surfaces. Eventually the flies start morphing into another form entirely that reminds me of “silly putty” fungal bands around the abdomens as the fungus makes spores that will continue the infection cycle. At this point the Alder Flycatchers stop eating them.

The fungus survives the winter by going into a dormant state with thick-walled resting spores that over-winter in the soil.

It might sound tempting to use this native fungus as a biological control agent, but the infective spores have a short life span and it is hard to cultivate and must be maintained in live fly colonies in labs, thus no commercial supplies are currently available. Flies play important

ecological roles such as pollination and as food sources so perhaps it is best if we let the natural cycles continue without human coopting for our own use (typed this last sentence while wishing the Asian Ladybeetles (*Harmonia axyridis*) introduced for biological control had never come inside the house).

References

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The Southern Appalachian Highlands Conservancy conserves unique plant and animal habitat, clean water, farmland, scenic beauty, and places for people to enjoy outdoor recreation in the mountains of Tennessee and North Carolina.

SAVE THE DATE — Volunteer Work Days

April 29 @ 9:30 am — 2:00 pm: Garlic Mustard Pull

Help remove invasive garlic mustard from the Park and heavily trafficked highways around Carver's Gap and SAHC conservation properties in the Highlands of Roan. Plucking out the pesky invaders when they're young and tender isn't hard work, but it does take a lot of hands!

Grassy Balds Management Volunteer Work Days

July 15-16 Round Bald, July 18-22 Engine Gap, July 23-24 Grassy Ridge

Volunteers work to maintain the globally rare grassy and shrub balds found on Grassy Ridge, one of the most beautiful and ecologically significant sites in the Roan Highlands. We'll cut invasive blackberries and other shrubs using weed whackers and brush cutters. Visit Appalachian.org for updates.



Land protection updates in the Roan for Southern Appalachian Highlands Conservancy

#1 - SAHC purchased 134 acres at Big Horse Creek -

This stunning 134-acre mountain cove harbors the cool cascades of a trout stream and plentiful places for birds and wildlife to thrive. Southern Appalachian Highlands Conservancy purchased the tract to permanently preserve habitat along the edge of the national forest, mountain stream headwaters that support wild trout, and views from the Appalachian Trail. If you've ever hiked along the AT at Little Hump Mountain, you've probably looked down on this property.

"Over a half mile of Horse Creek flows along the edge of the property," says Land Protection Director Michelle Pugliese. "Its rushing wild trout waters, and those of its tributary Camp Branch, are now protected forever. These waters originate on the eastern slopes of Big Yellow Mountain and Little Hump Mountain. The Big Horse Creek property joins an extensive network of protected land in the Roan Highlands, with its high elevation 4,100-foot ridgeline lying in the shadow of the Appalachian Trail."

The Big Horse Creek Preserve is located within the Audubon Society's Roan Mountain Important Bird Area. A former tree farm area and openings along the forest edge create early successional habitat that supports neo-tropical migratory songbirds, along with a variety of other wildlife that depend on young forests. Securing this large-acreage tract with ridgelines, varied topography, and thriving habitat in an important network of conserved land helps preserve critical corridors for wildlife movement in the region.

SAHC is excited to be working with our new neighbors on Big Horse Creek to conduct a bioblitz to inventory the species found onsite, and we will continue to manage the property to protect the natural resources in perpetuity. We look forward to sharing the property as part of our outings and education programs in the future.

#2 - SAHC acquires total of 325 acres in Avery County

Southern Appalachian Highlands Conservancy worked with multiple landowners in these acquisitions, which honor their parents Bruce and Barbara Zobel. Distinguished NC State Forestry professor and tree geneticist Bruce Zobel invested in a legacy for his children — one of rocks and dirt and living organisms rather than paper stocks. Now, his children have secured that legacy for future generations to enjoy — for natural communities to prosper and for hiking enthusiasts to enjoy protected views from the Appalachian Trail. Bruce John Zobel (1920-2011) served as the E.F. Conger Distinguished Professor of Forestry at North Carolina State University and was a pioneer in the field of forest genetics. In 1957, he joined NC State University and led the cooperative research program with the forestry industry. In 1979, Bruce retired as director of the research cooperative, but continued to teach part-time for about 25 years. He also brought his expertise to many parts of the world as a consultant. Barbara often joined in his worldwide travels, assisting in his work in forest genetics. Bruce and Barbara had purchased land in the mountains of Avery Co. NC, and Bruce loved to work improving his forests, planning the house that was built for the family, and fishing the Elk River. Their children — Don, Kathy, Lois, and Julie — carry forward their legacy of forestry and conservation.

87 acres on Elk River and 46 acres on Little Horse Creek Landowner Don Zobel worked with Southern Appalachian Highlands Conservancy to permanently protect the land at Elk River and Little Horse Creek as a memorial and tribute to his parents. Less than two miles upstream from the rushing torrent of Elk River Falls, Southern Appalachian Highlands Conservancy's new 87-acre preserve on the Elk River harbors rich plant and animal biodiversity.

"Elk River Falls, also known as Big Falls, is a spectacular 50 ft. high waterfall in Pisgah National Forest that draws visitors for its dramatic cascade and clear water," says Land Protection Director Michelle Pugliese. "In addition to preserving the rich biodiversity of this beautiful forested tract, this project was an exciting opportunity to protect the water that feeds Elk Falls."

Almost a half mile of the Elk River flows along the edge of the preserve, and the tract contains the point at which Cranberry Creek flows into the Elk River. Both watercourses are classified as Trout Waters by the NC Division of Water Resources.

Landowner Don Zobel donated the 46-acre tract at Little Horse Creek to SAHC. It is loosely surrounded by national forest land and other SAHC conservation easements and preserves, including the 151-acre Belview Mountain tract that his sisters Julie Zobel and Kathy Ball sold to SAHC. The property contains over 600 ft. of Little Horse Creek, a tributary of the North Toe River classified as Wild Trout Waters by the NC Wildlife Resources Commission.

Belview Mountain - 151 acres

Southern Appalachian Highlands Conservancy purchased 151 acres of mountain habitat near other SAHC nature preserves. Tucked away in the rugged mountains of Avery County, near the communities of Elk Park, Cranberry, and Minneapolis, the forested tract provides habitat for diverse amphibians, reptiles, birds, and mammals. Landowners Julie Zobel and Kathy Ball sold 151 acres to SAHC on Belview Mountain, for SAHC to own and manage for the long term as a nature preserve. The property reaches elevations of 4,400 ft. and can be seen from the Appalachian Trail on Hump Mountain. It boasts 10 headwater tributaries and the main branch of Cranberry Creek. The pristine creek waters support populations of wild trout.

"This is an enormous win for conservation, and we hope to work with other landowners to preserve the rest of this iconic mountain," says Land Protection Director Michelle Pugliese. "This property adjoins the site of the proposed gravel mine that was the subject of Jay Leutze's book *Stand Up That Mountain*. Like the proposed mine that was defeated, development of this property would have degraded views from the Appalachian Trail."

The Appalachian Trail Conservancy (ATC) awarded SAHC a \$50,000 grant to help SAHC purchase the new preserve. The ATC Wild East Action Fund seeks to accelerate the pace of conservation within the Appalachian Trail landscape. The acquisition was made possible also through generous gifts from other SAHC philanthropic donors.



Why Kids Need Nature Adventures!

According to a recent article “people today spend up to 25 percent less time enjoying nature than people did just 20 years ago.” Another survey found “sixty-seven percent of children ages 6 – 12 cited friends and family as the biggest motivator” in getting them outdoors.

Some of the benefits of kids exploring nature are:



- Exploring nature improves creativity and problem-solving skills. *“What is the best way to cross a small creek or crack open a nut? When children get to choose how they connect with the natural world, they gain confidence in their abilities.”*
- Being outdoors in nature can improve our mood and generosity. *“Direct association with nature has both mental and physical benefits. It has been proven to improve mood, reduce depression, and also reduce mental fatigue.”*
- Being outdoors can rejuvenate physical energy. *“Being in nature can restore our mood, give us back our energy and vitality, refresh and rejuvenate us.”*
- Exploring nature helps to focus attention. *“Outside, children have a chance to share what they have learned about an interesting flower or insect. They become both teachers and learners, sharing their knowledge to accomplish a task or make sense of a new discovery.”*

- Being in nature instills a better adaptation to stress. *“A walk in the woods produces the same sense of well-being and ease as relaxing in a hot shower. Researchers have referred to this as a state of “soft fascination,” where the mind is engaged without being strained.”*
- *“If we want children to grow up to value and protect nature, they must first be given the chance to connect deeply with a small patch of woods. Nature needs the love of kids, just as much as kids need nature.”*



The Xtreme Roan Adventures is a great place for the whole family to benefit from all these, and more. You choose from over twenty Adventures. The Adventures are designed for all sizes of legs and attention spans.

More information can be found at XtremeRoanAdventureus.org
Or just give me a call or email. ~ Ken Turner
423-538-3419 - Ken@XtremeRoanAdventures.org

ROAN MOUNTAIN STATE PARK HAPPENINGS



Roan Mountain State Park recently acquired a 150-acre property for the park. This valuable land purchase that was made possible through a partnership with the Southern Appalachian Highlands Conservancy (SAHC). SAHC purchased the land in July 2021 to secure the property for the state to purchase back from the conservancy at a later date. On Feb. 8th the 150-acre tract officially became part of Roan Mountain State Park. The tract contains richly biodiverse habitat and mountain wetland areas. Five rare species have been identified so far on the property, including the Round-Leaf Bittercress and Roan Mountain Sedge. Acquiring this land was key to protecting critical habitats for sensitive species found throughout the property.

The property is located on the eastern edge of the park and rises approximately 2,000 feet behind our Visitor Center, and stretches from Sugar Hollow Road to Hampton Creek Road. The 150-acre addition will provide visitors an opportunity to reach a view of the Roan Highlands via trail access from our visitor center once the new trail is complete. The new property will also allow Roan Mountain State Park to offer backcountry camping to visitors in the future.



Rare Plants of the Black Valley/Sugar Hollow Tract

— Frosty Levy

In the summer of 2020, Roan Mountain State Park superintendent and FoRM contacted me about an opportunity for the park to acquire 160 acres of land adjoining the east side of the park (over the ridge from the Visitor's Center). I was happy to scout the land to see if there were noteworthy plant species that would enhance the local effort to convince the state this would be a worthwhile addition and use of state funds.

When we first visited the 150-acre Black Valley Tract off of Sugar Hollow, in July 2020, we were expecting to find some of the rare plant species that occur in the adjoining Roan Mountain State Park. We also hoped the land was not overly abused, heavily timbered, or overrun by exotic species. After entering through a gate and a very short walk uphill, I decided to take a look at a small, narrow, shaded drainage. In that drainage there was *Cardamine rotundifolia* (Roundleaf Bittercress), a species common in similar drainages in the park, listed as Threatened in Tennessee, and a central-southern Appalachian endemic (located exclusively in this region). The drainage also had good diversity of wetland sedges and native grasses, so the early signs were encouraging.

The hike up a grass road was flanked by relatively intact forest; no huge trees but most in the 12–20" diameter class. The forest trees were those expected for that elevation and exposure. Beyond the areas near the borders of the property, there was no evidence of recent logging or forest destruction. These were also good signs.

During a series of visits that summer, we found fine examples of southern Appalachian mixed mesophytic forest typical of coves, and at the upper slopes and ridges, Beech, Sugar Maple, and Oak-dominated forests. But most encouraging was what was

not there—no Kudzu, very little Asian Bittersweet, no Japanese Knotweed—a group of some of our region’s most problematic exotic weeds. The absence of these species meant that if the state acquired the tract, it would not be necessary to spend park funds on land rehabilitation. Rather the money could go towards conservation of what was already present and managing for recreation accessibility.

That summer of 2020, we found a handful of additional plant species listed as rare in Tennessee; *Carex roanensis* (Roan Mountain sedge), *Oenothera parviflora* (Northern Evening Primrose)—both listed as Tennessee species of Special Concern—and the recently de-listed, *Hieracium scabrum* (Rough Hawkweed). After some intensive searching, a few cove drainages had populations of *Carex bromoides* ssp. *montanum* (Brome-like Mountain Sedge), a Tennessee Threatened species with a geographic distribution similar to that of Gray’s Lily, only known from northeastern Tennessee, northwestern North Carolina, and southwestern Virginia.

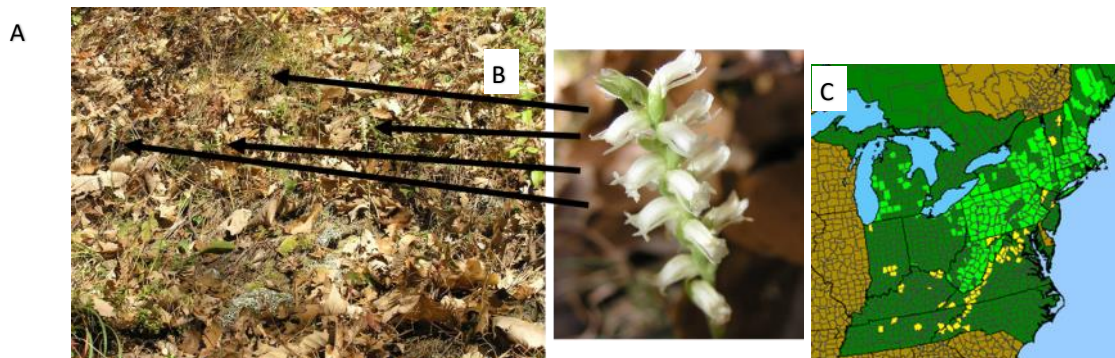
Although field season was far from over, word was that the state appraised the property somewhat below the asking price. The acquisition process appeared dead, certainly at least stalled. With the real estate market red hot from Covid, the possibility of state acquisition seemed doomed. At that point, we stopped the plant survey and were fairly discouraged. But in October, 2021, we found out SAHC had stepped in and mediated a purchase with plans to transfer ownership to the state. So we were back out in the field for the last week of the growing season.

On October 21st, after some wet snow had fallen, Elaine and the dog were walking behind me when she said, “Isn’t that an orchid?” Considering the lateness of the season, I figured it must be *Corallorhiza odontorhiza* (Autumn Coralroot), a species not uncommon in our region and a very late bloomer. When I turned around, there was a clump of 8–14” tall plants with small but showy, creamy-white flowers. It was clearly an orchid and certainly a species of *Spiranthes* (Ladies'-Tresses). Between the location in an upland area at ~3100’ elevation and the lateness of the season, it was most likely *Spiranthes ochroleuca* (Yellow Ladies'-Tresses), a species listed as Endangered in the state, the category of the rarest plants in the state. Then we found another population lower down, but just outside the property boundary, and after eating lunch at the Miller Farmstead, we located a third population, just feet away from a spot where lots of walkers pass by. The species identification was confirmed upon further examination.

When we found a population of *Spiranthes ochroleuca* at Rocky Fork in 2011, it was the first time the species had been recorded in the state in many years. The identity of that specimen was confirmed when I sent a sample to one of North America’s native orchid experts, Dr. Charles Sheviak, then with the New York State Museum. We have since found other populations on Unaka Mountain, Holston Mountain, and near Carver’s Gap on the Roan. The three new populations, two on RMSP property, significantly increase the number of occurrences of this northern species in Tennessee.

In addition to the rare species, the tract had 11 species new to the park and to the Roan, all but one, *Salix cinerea* (Pussy Willow), native. These included some surprises in the form of species not expected for the area such as *Ceanothus americanus* (New Jersey Tea), *Aralia spinosa* (Devil’s Walking Stick), *Hylodesmum pauciflorum* (Few-flowered Ticktrefoil), and *Penthorum sedoides* (Ditch Stonecrop). I particularly like the grasses and was glad to find *Dichanthium linearifolium* (Linear-leaved Panic Grass), a species not typically found in the Blue Ridge.

With our botanizing having taken place in the mid-late summer to fall, it is likely there will be other noteworthy plants from the tract. We are thrilled to see this exquisite example of the mountain flora preserved and open to the public.



A. Photo of *Spiranthes ochroleuca* on a south-facing hill at Rocky Fork, B. close-up of flowering inflorescence, and, C. map showing the geographic distribution.



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Friendly Reminders



Deadline for Spring Rally Meal Orders – Payment for rally meals must be received by Tuesday, April 19. The reservation form can be found in the brochure or on our website. Mail your check and reservation form to Nancy Barrigar, 708 Allen Avenue, Elizabethton, TN 37643.

You can now register online. Follow the [link](#) on our website's homepage.



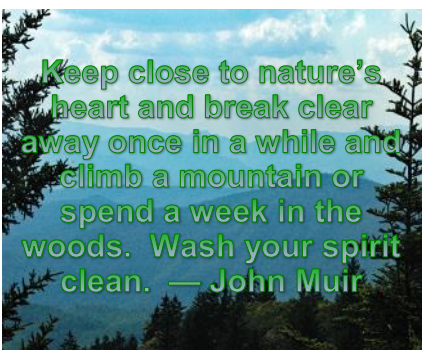
Door Prizes -- We gladly accept items donated for door prizes. These will be given away on Friday and Saturday prior to the evening programs. Ideas: nature-related books, photos or art, outdoor gear, plants, homemade goodies . . .



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Spring Rally	Last Friday - Sunday in April	April 22 - 24, 2022
Youth - XRA	Last Friday—Saturday in July	July 29-30, 2022
Fall Rally	Friday - Sunday in September after Labor Day	Sept. 9—11, 2022
Winter Rally	Saturday in February near Valentine's Day	Feb.12, 2023