

THE NEWSLETTER OF THE
KANAWHA STATE FOREST FOUNDATION

THE FOREST FRIEND

WINTER 2023 EDITION



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We don't inherit the earth from our ancestors, we borrow it from our children. Chief Seattle

We still do not know one thousandth of one percent of what nature has revealed to us. Albert Einstein

KSF Foundation
7500 Kanawha State Forest Drive
Charleston, WV 25314

Letter from the Chair

by John Hughes

Winter in the Forest

Winter time is a good time to get out in the woods. While the weather may or may not be perfect for outdoor activities, it is a good time to take a walk and get some exercise. With 60 plus miles of trails at Kanawha State Forest a brisk walk will warm you up in no time. So, get out and enjoy nature.



Photo by Dale Porter

In the past couple of weeks a new structure was installed. The ADA vault toilet was put in place at the playground at Salamander Trail area next to the parking lot. Funding for this project was provided by Christopher Reeves Foundation and Marmet Hospital Foundation. The toilet will be ready to be used once the unit has finished settling in place and connecting sidewalk is poured. This will finish the ADA area in the forest.

If you purchased a memorial brick from the That's My Brick project they are now on display in the Nature Center for your review. We are sorry they are not in the ground but we are still waiting



on DNR to bid out the new sidewalk renovation entry to the park office and Nature Center.

Speaking of the Nature Center, it is open seven days a week with support from local Master Naturalist on Saturday and Sunday. Hard work has gone into the Nature Center to provide displays of all aspects found at Kanawha State Forest. The foundation will also be providing outdoor classroom to all local schools with a four-hour program also developed by Master Naturalist. If you have not visited the Nature Center, I encourage you to visit the center for an enjoyable learning experience.

Don't let the weather stop you from enjoying nature, get out and walk, run, bike and hike in beautiful Kanawha State Forest!

Below photos by Jennifer Bauman



Fire Ecology in Kanawha State Forest

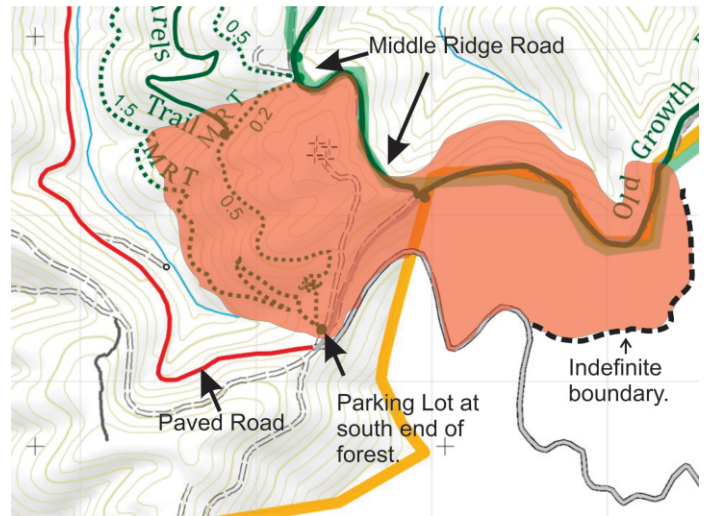
Text and Photos by Doug Wood, unless noted.

On November 10, 2022, a fire started in the southern portion of Kanawha State Forest on Middle Ridge between the headwater of Davis Creek and the southern segment of Middle Ridge Road. The ground fire burnt around the communications tower complex and Middle Ridge Trail before getting put out by fire crews and rain. Kanawha State Forest is no stranger to forest fires. In my lifetime I can remember at least a dozen fires burning typically small portions of the Forest, primarily in spring and fall. Most fires were somewhat easily put out by ground crews establishing exposed dirt fire lines atop ridges or along existing trails that tended to have less dried leaf litter on them because of human trampling. The Dale Porter photo below shows how exposed



dirt on a trail could serve as a fire-break in low-intensity fires. There is no ash on the dirt tread and berms. If a fire crew had been there during the fire, they could have patrolled the trail putting out fire starts on the unburnt side of the trail.

The presence of Shortleaf Pine and Pitch Pine mixed with thick-barked oaks on several ridgetops in the Forest is evidence of the long history of low-intensity, frequent ground fires in the past. In 2021, one Shortleaf Pine in a mixed Pine-Oak stand was determined by Professor Thomas Saladyga of Concord University, via core-boring, to have started life about the year 1840, a clear



Burned Area Shown In Pink

indication that fire was part of the landscape in the pre-Civil War years. Fire-induced native canebrakes (*Arundinaria gigantea*) were once common scattered around the Kanawha Valley area and southward, one of which lent its name to Cane Fork of Davis Creek during the early Virginian settlement period of the Valley in the late 18th century. Mounting archaeological evidence from the middle Appalachian Mountains show that beginning in the late Archaic Period around 3,000 B.C. humans fired the landscape on a regular basis, converting forested hills into nut-producing grocery stores of oaks, hickories, and American Chestnut.

Humans have had a love/hate relationship with fire for a very long time. Since the first technologies were invented by humans to create fire on demand thousands of years ago, we Homo sapiens have loved our ability to render food more digestible by cooking, warm our cold bodies fireside, drive away biting insects with smoke, occupy inhospitably cold regions of the globe, and manage landscapes for fire-dependent plants that provide us with a myriad of food, fiber, and medical products. However, we hate having our homes burnt down, breathing the smoke of landscape fires, and losing our timber land investments to intense forest conflagrations, as often occur in drier regions than the Appalachian Mountains. From an ecological perspective, human-set fires in the middle Appalachians over thousands of years resulted in unique vegetation communities that favor certain species of wildlife, thus generating greater biodiversity in the region

than would occur without human-induced fires. In fact, many of our plant and animal Species in Greatest Conservation Need are species that do best in habitats occasionally visited by low-intensity fires. The two rarest rabbits in West Virginia, the Appalachian Cottontail and the Snowshoe Hare are prime examples of the decline in our native fauna due to a decrease in occasional ground fires. The early successional habitat they require is becoming less common as our young forests grow into mature forests and the closing canopy shades out dense understory plants favored by the two rabbits for food and cover. Adding insult to injury, thousands of acres of land in the coal fields once supporting young and old forests dominated by an incredible diversity of native plant communities have been converted through surface mining into grasslands dominated by alien invasive, plant species. This has created habitat for grassland birds, but it is not high-quality habitat, so the sites act as population sinks meaning, those species do not have much success in raising young there.

The low-intensity, ground fire that occurred in KSF recently, will support some bird species that specialize in ephemeral habitats. The fire's heat likely dealt a death blow primarily to shrubs, and small, thin-barked trees. The fire probably did not burn hot enough to destroy most below-ground tubers and bulbs of annual spring wildflowers. Watch the hillside this spring and see what pops up. Pine Warblers do well in fire scaped areas that



favor Shortleaf and Pitch Pines. I would expect to hear Prairie Warblers (photo on left from <https://ebird.org/species/prawar> and a Whip-poor-will or two singing over disputed

territory on the burn-site for a few years after the first blackberry patches and greenbrier thickets start growing.

Even old-growth forests are not altered greatly by low-intensity ground fires. Moderate-intensity

fires can cause greater damage to mature trees, often resulting in a "cat face" scar at the base, allowing heartwood-eating fungi to invade and slowly hollow out portions of the tree trunks. The photo below shows a 60-inch d.b.h. Tulip Tree in



the Eastern Watersheds Old-Growth Forest that has heart rot likely caused by a fungus-infected burn scar a few decades ago in the head of Hoffman Hollow, but high-intensity crown fires that often destroy large acreages in drier regions, hardly ever strike in WV, especially west of

the Allegheny Highlands. A period when high-intensity fires swept through the Allegheny Highlands, was during the decades surrounding 1900, when industrial logging denuded great swaths of the mountains, leaving extensive slash piles and exposed forest floor duff to dry out in the sun and feed frequent conflagrations. In the two or three decades after the really big fires, shrubland expanses formed in many places and early succession forests eventually began to get established, some by humans and some by nature. In that period, the two rabbit species mentioned earlier, flourished for a few decades, until the forest canopies began to close and the food and cover for those species diminished.

In recent years, the U.S. Forest Service and land management organizations like The Nature Conservancy have begun to use prescribed burns, sometimes called controlled burns for managing early succession habitats for such species. Such burns are planned in minute detail by people with proper training. Prescribed burns are used only under weather conditions considered most likely to prevent the fires from jumping the boundaries established for them. For many years, the WV Dept. of Natural Resources Wildlife personnel recognized the benefits of using prescribed fire for habitat manipulation, but the WV Division of Forestry (WVDFO) was adamant against it, due to

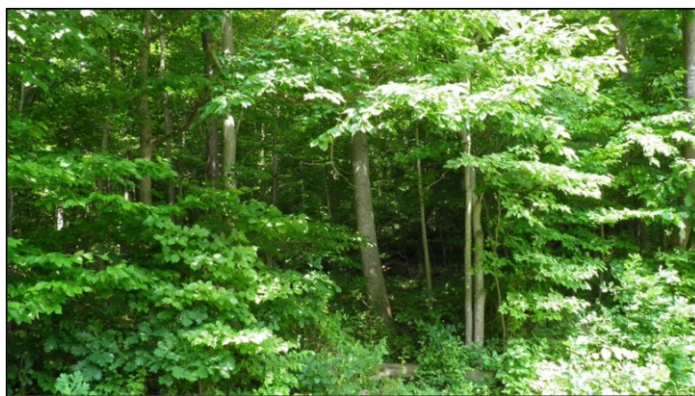
concerns about uncontrolled spread. Forestry agencies in WV's surrounding states are increasingly accepting the practice as legitimate, not only for enhancing habitats for rare species of plants and animals, but also for controlling invasive alien plants, and in the driest regions, for decreasing forest fuel (dead wood and deep leaf litter) to prevent high-intensity fires that often destroy homes.

Some cracks in the "Never Fire" armor of the WV DOF are forming, but in the meantime, small intensity ground fires will continue to alter the landscape in the Mountain State, whether prescribed or random, and our love/hate relationship with the powerful force may mature into a relationship of mutual respect.

Below are some photos to help you understand what the KSF burned patch will look like a few years down the road.



BEFORE: (L) The November 2022 low-intensity burn in KSFF. The twin Red Maple in the center does not appear to have even its lower bark burnt. Dale Porter photo. (R) A December 2012 burn near the author's home in Putnam County.



AFTER: (L) The Putnam Co. burn site in July 2014. (R) The forest beside the Putnam Co. burn site on the same day. Quite different habitat structures, wouldn't you say?

The Wheeling Daily Intelligencer, December 28, 1885, Page 4
Bettie furnace, near Charleston, W. Va. is now in blast, using as fuel raw coal from the mines of the Black Band Iron & Coal Company.

Outdoor Classroom Opportunities at KSF

By Rebecca Linger, Coordinator of the Kanawha Valley Master Naturalists

Our goal with the Kanawha Valley Master Naturalists is to impart a love of nature to our fellow citizens. Teaching our children early to love nature will impart a life-long appreciation of our natural environment. To this end, the KVMN is offering to hold Outdoor Classroom activities for school groups. If you're a teacher or a principal at one of our area's elementary, middle, or high schools, you can contact us to schedule a day to have your students come to the forest. We have the following learning activities:

Trees: Students will be guided on a walk through the Arboretum behind the Nature Center where they will be shown examples of trees, their bark, and leaves to help them learn to identify trees by name. In addition, "tree cookies" will be used to talk about how a tree grows, how the sap moves in the tree, and the uses of the wood in a tree.

Aquatic Habitats: Students will observe demonstrations of water quality testing to better understand the need to protect our waterways from



Photo by Jennifer Bauman

run off. Volunteers will gather aquatic life from the creek and bring it to the students to show what is growing in Davis Creek. We will dissuade the students from getting into the creek.

Insects: Students will be given butterfly nets and insect viewers to capture insects in the forest and study them. Insect morphology will be discussed as well as the diversity of this family.

Owl Pellet Dissection: Each student will receive a commercially obtained sterilized owl pellet (wrapped in aluminum foil and autoclaved) and implements to help tease the pellet apart. Owls swallow their prey whole and regurgitate pellets of the fur and bones. Students will find rodent and small bird skulls as well as the bones of these animals in the pellet. Description

of owl digestion and bone identification sheets will be provided. Students may keep what they discover in the pellets.

Cyanotyping: Using photosensitive non-toxic chemicals, students will make cyanotypes of leaves using watercolor paper prepped with chemicals. By laying



Photo by Jennifer Bauman

materials on the prepared paper and letting it dry in the sun, the light exposed paper will turn blue, while the covered areas will remain white. Further treatment of the papers fixes the color. The students can keep their work.

Mushrooms: Students will be guided on a walk to find mushrooms growing in the forest. Mushrooms will be identified as edible or nonedible but will not be picked. The role of mushrooms in the forest will be described.

Useful Plants: Students will be guided on a walk to learn about the variety of plants that grow in the Forest and how they are used for food, shelter, and medicine. No plants will be picked. Stories of forest economy will be described, especially the role of ginseng, mayapple, and goldenseal.

In addition to an introduction to these topics, the Master Naturalists would focus on messages of conservation and ecological practices to ensure that our natural spaces endure for future generations. We encourage you to contact us for more information at: info@mnofwv.org.

Bat Conservation in Kanawha State Forest

By Doug Wood

As of 2022, the West Virginia Dept. of Natural Resources' Division of Wildlife Resources knew of 14 bat species that are supported by a variety of habitats in the Mountain State. Of the 14, Kanawha State Forest is known to support 9 species:

- Indiana Bat (classified as endangered by the U.S. Fish and Wildlife Service)
- Northern Long-eared Bat (endangered)
- Tri-colored Bat (proposed for endangered status)
- Little Brown Bat (under review for potential proposal)
- Evening Bat
- Big Brown Bat
- Silver-haired Bat
- Red Bat
- Hoary Bat

You may wonder why some of these bats are endangered and being studied for possible inclusion on the endangered species list. In the vicinity of KSF, one of the main contributors to their decline is mountain-top removal coal mining. Extensive mines east and south of KSF have destroyed above ground bat habitat and below ground bat hibernation habitat in abandoned deep mines. However, the most recent contributor to bat declines is White-nose Syndrome caused by a fungus that is particularly deadly to hibernating bats. Originally residing in European and Asian bat populations as a non-deadly infection, *Pseudogymnoascus destructans* spores were likely carried to North America by cavers who had explored caves in France and then came back to New York with the spores on their cave clothing. The first infections in North American bats were

discovered in 2006 in New York state. North American bats have poor defenses against the foreign fungus, so it has spread rapidly and is now found from coast to coast. The bats pictured at below left have the typical early signature of the infection. The image is from a very informative National Park Service website:

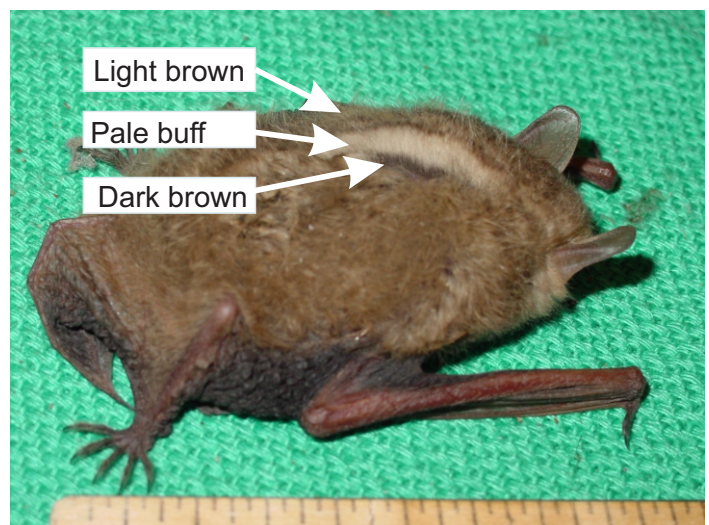
<https://www.nps.gov/articles/what-is-white-nose-syndrome.htm>

Some of these bats, like the Hoary Bat (the largest bat in KSF, shown in the photo below) have distinctive characteristics to help distinguish them



<http://www.factzoo.com/sites/all/img/mammals/bats/hoary-bat-wings-flight.jpg>

from other species. Like hoarfrost, the Hoary Bat' fur has a frosty appearance. On its surface, the Tri-colored Bat (shown below) has brown fur, like several other species. But a gentle finger-stroke reveals that the hairs are dark brown at the base,



pale buff in the middle, and light brown on the surface, hence the common name.

Wildlife Resources biologists know about these bats in Kanawha State Forest (KSF) from two types of surveys: live-capture and detection with special sensing equipment that can interpret bat echolocation sounds. A third survey technique, finding them in underground hibernation spots, is not used in KSF because the abandoned deep mines are too dangerous to survey. Nonetheless, spring emergence surveys using echolocation detectors at the mouths of these mines can tell which bats are hibernating underground in KSF. While the state wildlife biologists have conducted numerous echolocation detection surveys, several capture surveys have been funded by industries, such as mining companies abutting KSF and power transmission companies expanding powerlines within KSF. One spring emergence survey was funded by the Mary Ingles Trail Blazers, the Kanawha Forest Coalition, and many individual donors. That survey confirmed by live-capture that the Northern long-eared Bat was hibernating in an abandoned coal mine in KSF. The healthy female captured as she exited her hibernaculum in April and nicknamed Nora Lea, is shown in the gloved hand of a bat biologist in the Jesse De La Cruz photo below. Several other species were detected via echolocation in the



vicinities of the mine portals. Capture surveys have been used to place radio wave transmitters on bats and then to trace them to their summer daytime roosts. Researchers have found a few maternity colonies of the Indiana Bat and the

Northern Long-eared Bat in and near KSF using that technique.



The Kevin Dials Bat Trail is located just off of Middle Ridge Service Road near that road's gate beside Range Road. It is only a couple of hundred yards long and leads to the mine portal where the emerging Northern Long-eared Bat was captured. That portal was subsequently closed with a special bat gate that allows bats to fly in, but keeps people out. The gate does not alter the flow of air substantially, so hibernating bats can detect air flow directional shifts and temperature changes, signaling when they should emerge to feed again in spring. The Bat Conservation Trail has six interpretive sign panels on three bases along the way to the bat gate, telling a great deal about KSF bats. The trail is an excellent learning tool for teachers and students (see the right photo by Dianne Anestis of visitors checking out the bat gate portal along the trail). The bat gate was funded by the Maier Foundation, the Dickenson Family Giving Circle, and the Rock the Park Group. The Maier Foundation grant also funded a secondary education component, which ultimately resulted in recruitment of biology class students from the University of Charleston and West Virginia State University to assist volunteers of the Kanawha State Forest Foundation, the Mary Ingles Trail Blazers, and the Kanawha Valley Master Naturalists in developing the Bat Trail and in assisting the consultants who constructed the bat gate.

A more recent development in bat protection in KSF is planning by the Abandoned Mine Lands Office of the WV Dept. of Environmental Protection to oversee closure of other mine portals in the

Forest. Some portals will be completely sealed and others will receive bat gate closures. The portals to be closed are dangerous “attractive nuisances” that might entice a teenager or unthinking adult to crawl into them and get crushed by a roof fall. The mines that are known to provide hibernation quarters to bats will be gated. The planning may take a year, so the physical will not likely begin until 2024. In the meantime, check out the Kevin Dials Bat Trail and learn a great deal about the bats of Kanawha State Forest. And don’ forget to watch for advertisement of our annual Bat Night celebration, usually held in October. It is a fun way to learn about our insect-eating winged wonders.

Kanawha State Forest Foundation Membership Renewal

We ask our members to renew their membership each year in January. If you have not recently done so, please renew your membership now. An Individual Membership is only \$15.00 and a Family Membership is only \$25.00. Members can do so by writing a check payable to Kanawha State Forest Foundation and mailing it to:

John Fischer, Treasurer
100 Wills Drive
South Charleston WV 25309

You can also pay conveniently online with a credit or debit card by going to the Membership Tab on the Foundation’s website – ksff.org

Donations are always appreciated so we can continue our educational programs and various improvement projects at the Forest.

Thank you for your continued support of the Foundation.



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UPCOMING EVENTS

April 22 9:00 a.m. Osbra Eye Spring Nature Walks
June 18 11:00 a.m. West Virginia Day Celebration
August 12 11:00 a.m. Rock the Park Concert

NEWSLETTER ARTICLE SUBMISSION

- When submitting articles for the newsletter, please submit photos as separate files. Do not embed them in the article. It makes it very difficult or impossible to place in the newsletter format.
- Please identify the photographer.
- Identify persons featured in photo when possible.
- Submit articles and photos by deadline.

The Foundation reserves the right to accept or reject any article submissions.

Deadline for Spring Edition of the *Forest Friend* is April 10, 2023 for early May publication.

The Forest Friend

Edited by Rebecca S. Linger
Layout by Dale A. Porter

We are looking for a volunteer to take over the layout of the quarterly newsletter. If you are interested, please contact Rebecca Linger.