

WINTER 2022

field Tennessee notes

AMAZING APPALACHIANS

CONNECTIVITY | CLIMATE | COMMUNITIES

More than 400 million years ago, forces of nature combined in a way to create the Appalachian Mountains—spanning roughly 2,000 miles from Alabama to Canada. The ancient chain of forested mountains, abundant water, and variety of plants and animals puts it on par with the Amazon Rainforest and the Kenyan grasslands as one of the most resilient, diverse and productive places on Earth.

The Appalachian Mountains have provided refuge for wildlife since woolly mammoths and saber-toothed tigers roamed the landscape during the last ice age. It plays the same role today. Covered with the world's largest broadleaf forest, the area stores most of our nation's forest carbon and provides essential habitat for plants and animals shifting ranges in response to higher temperatures and weather changes.

However, the Appalachians have a tipping point. Growing development, resource extraction, unsustainable forestry and agriculture, and fragmented lands and waters put the region's economic and ecological health at risk. And right now, only 26% of the Appalachians is protected.

Losing the Appalachians means losing a magnitude of species, the fight against climate change and important natural resources promised to future generations. We must act now to protect and restore this globally important landscape before we lose what cannot be replaced.

IN THIS ISSUE:

- 2 Director's Note
- 3 Faces of Conservation
- 4 Partnership In Action
- 6 Biodiversity
- 7 Climate Solutions

The Nature Conservancy's mission is to conserve the lands and waters on which all life depends.

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FROM THE DIRECTOR

Director's Message



I am pleased that we are featuring the Appalachian Mountains in this issue of *Tennessee Field Notes* as they represent, for me, where my love for conservation grew as an undergraduate at Ferrum College in Virginia. Little did I know that someday I would play even the smallest role in protecting such a globally significant landscape.

As you might imagine, conserving the Appalachian Mountains—which comprise 16 U.S. states and three Canadian provinces—requires an all-hands-on-deck approach to working across internal and geographical boundaries, and alongside hundreds of partners and local communities. We are “all in” here in Tennessee, where our work touches in two sub-regions (the southern and central Appalachians) to advance The Nature Conservancy's strategy in three primary ways:



CONNECTIVITY

Protect a network of climate resilient lands and waters.



CLIMATE

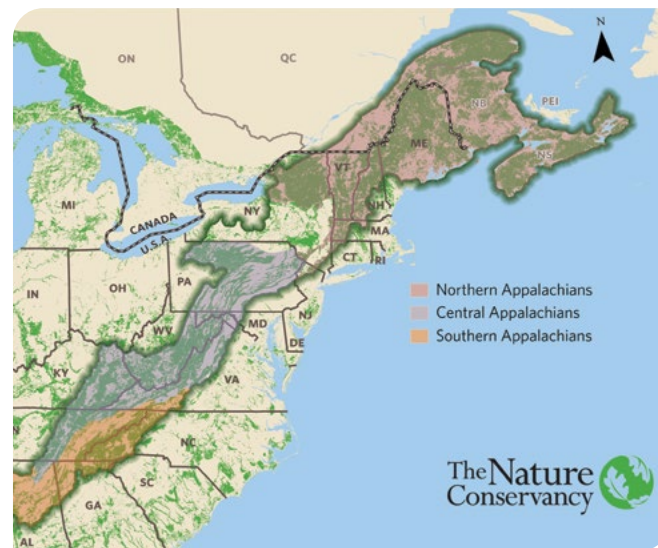
Improve land management for resilience and carbon storage.



COMMUNITIES

Support livelihoods, access and authority.

Throughout this issue, we highlight ways that are pursuing these goals here in Tennessee. For example, in the Cherokee National Forest, we are ramping up efforts to connect key aquatic habitats in Citico Creek. And at our Bridgestone Nature Reserve at Chestnut Mountain, graduate and undergraduate students are researching forest management strategies that could improve resilience and increase carbon stocks. Everywhere we work, we are strengthening and forging partnerships that will be key to meeting the scale and urgency that comes with conserving the Appalachian Mountains.



With this issue, I invite you to think big with us. We value your support, which not only benefits nature in Tennessee but is also critical to one of the most important land and water networks on the planet.

See You Outside,

COVER Snow in Appalachians © Creative Commons-Earrest Duffoo ABOVE © Courtesy/Terry Cook

FACES OF CONSERVATION



© Bill Frist

Tennessean leads global board of directors

Tennessee's own Senator Bill Frist, M.D. recently began a three-year term as Chair of The Nature Conservancy's global board of directors. As a father to three sons and grandfather (“Papa Doc”) to nine, he is committed to preserving the planet for future generations.

Senator Frist lives in Franklin, Tennessee with his wife, Tracy, who is a member of TNC's Tennessee board

of trustees. He brings a wealth of experience to this new role as a heart and lung transplant surgeon and former United States Senator who represented the state of Tennessee for two terms. Senator Frist has been a member of TNC's global board of directors since 2015, where he has served as a leading authority and advocate on behalf of nature's important role to the health of humans and our planet.

TNC hires new Tennessee marketing manager

Jessica Underwood joined The Nature Conservancy as its marketing and media relations manager in Tennessee. Jessica attended Georgia State University, receiving a Bachelor's in Business Administration and Marketing. After a decade of working for fully integrated advertising agencies in the Southeast,

she hits the ground running in an effort to expand visibility and awareness around TNC's work in the Volunteer State. Jessica lives in Brentwood with her husband and young daughter. When she has time to get outdoors, her favorite spot in Tennessee is Radnor Lake.



© Courtesy Jessica Underwood

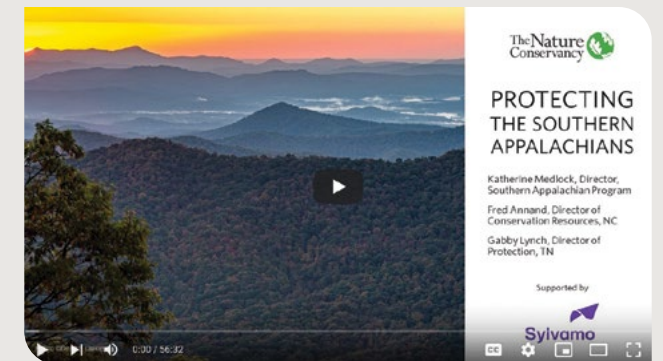


Love Letter to the Appalachians

The Appalachian Mountains are more than just beautiful. They are critical for people and nature. Visit nature.org/Appalachians to watch a video that highlights why there is an urgent need to protect them.



Learn more about the project at nature.org/Appalachians



Protecting the Southern Appalachians

In March, The Nature Conservancy hosted a webinar that highlighted how TNC is working across geographical and political boundaries to deliver bold solutions across the Appalachians landscape.



Check it out at nature.org/TNWebinars

Seeing the Forest Through the Streams

TNC and the U.S. Forest Service “strike while the iron is hot” on shared priorities

Deep in the heart of the Cherokee National Forest, the Citico Creek Wilderness is popular with outdoor enthusiasts, especially anglers who visit from around the world to catch wild trout in its upper reaches. From forested headwaters, the creek tumbles, rushes and trickles past fern-covered cliffs and mossy rocks into waterfalls and smaller tributaries that spread out across the 16,000-acre watershed. Along the way, it supports 67 fish and mussel species, including several designated as federally endangered like the Smoky Madtom, a fish found nowhere else in the world.

In spite of exceptional biodiversity, the Citico Creek watershed is hindered by stream barriers—usually old and poorly designed culverts that prevent fish and other aquatic species from moving throughout their native habitats. That is why the watershed is recognized as one of the highest priorities for protecting aquatic biodiversity in not only Tennessee, but in the nation.

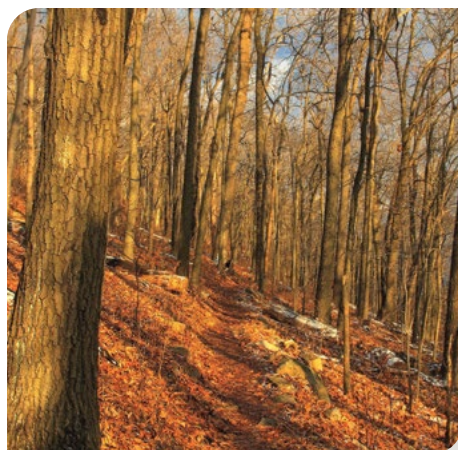
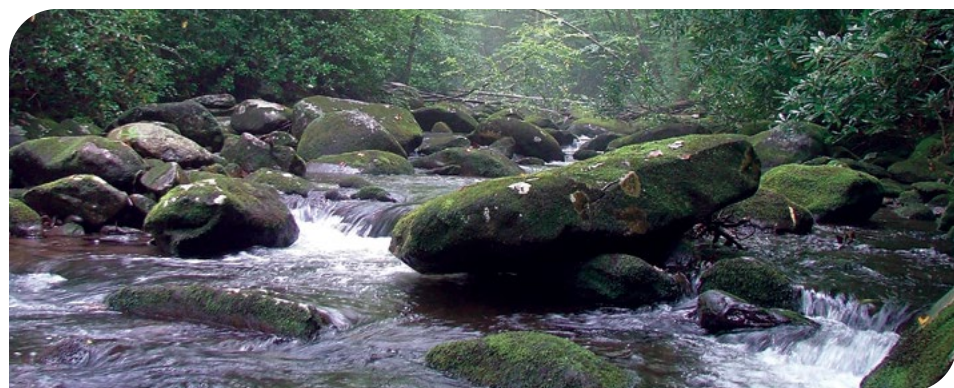
“National forests in the Southern Appalachians harbor some of the most important freshwater systems in the world,” says Rob Bullard, The

Nature Conservancy’s Tennessee and Cumberland Rivers program director. “For this reason, the United States Forest Service is an important partner. In fact, we’re aligning our strategies, people and funding across Southern Appalachia to identify priorities and focus on the right places, like Citico Creek.”

Specifically, the partners are designing a plan to remove barriers—seven culverts and a dam—to connect aquatic habitat and control erosion in a key stretch of the creek. But that’s only part of the story. In addition to restoring a more natural water flow, the partners are looking more broadly—to the surrounding forest—to address an important source of cool, clean waters flowing into the creek.

“The quality of these waters is directly dependent upon the health of the surrounding forest,” says Katherine Medlock, TNC’s Southern Appalachians program director. “A diverse tree canopy and understory is key to cooling and slowly storing and filtering the water. When healthy, our forests also perform double duty as important carbon sinks for the planet.”

continued on the next page



Partners in Paper

Earlier this year, the Memphis-based Sylvamo paper company committed \$1 million towards advancing The Nature Conservancy’s mission in the Appalachian Mountains and in Tennessee. In the Appalachian Mountains, Sylvamo’s gift supports efforts to identify, conserve and enhance lands located within a network of natural highways where plants and animals have the best chance of thriving in the face of a changing climate. Sylvamo also dedicated 10% of their gift to advancing priorities in Tennessee.

“The future of paper depends upon the success of the entire ecosystem, and we know that healthy forests play a critical role in mitigating climate change, and in protecting water quality, clean air and biodiversity.”

—JAMES MCDONALD, CHIEF SUSTAINABILITY OFFICER AT SYLVAMO



Since more than two million acres of Forest Service land in this region is naturally fire-adapted, the partners are also committed to delivering fire to support the type of native, diverse forest required for wildlife and water quality.

“Fortunately, our strong partnership with the Forest Service already supports TNC burn crews who are implementing this important tool in other parts of the Southern Appalachians, and we intend to pursue that in the Citico Creek watershed too,” adds Medlock. She confirms that, similar to their approach to removing stream barriers, the partners are identifying priority sites where restoring native forest with fire will have the most positive effect on water quality and quantity in Citico Creek.



The same goes for ranking and acquiring Cherokee National Forest land inholdings key to expanding and connecting wildlife habitat and providing more public land for outdoor recreation.

“The science and on-the-ground work related to removing stream barriers, delivering fire or acquiring land might be different,” says Gabby Lynch, TNC’s director of protection in Tennessee. “But our joint effort to work in the right places, and with enough people and funding, works the same. It is invaluable, and the timing for making a difference is now.”

TWO YAMAHA GRANTS PROVIDE \$78,000 IN CONSERVATION SUPPORT

Yamaha Motor Corp., USA recently awarded The Nature Conservancy a \$40,000 Outdoor Access Initiative grant that supports the second phase of off-highway vehicle (OHV) trail restoration and erosion control at the 43,000-acre Ed Carter Unit of the North Cumberland Wildlife Management Area (WMA). This follows on the heels of a \$38,000 grant in 2021 that jump-started efforts to clean up and improve trails located near fragile habitat. TNC and the Tennessee Wildlife Resources Agency also established a permanent conservation easement for the WMA, which is part of TNC’s 250,000+ acre Cumberland Forest Project, a network of high conservation value lands and waters located in the Central Appalachians that represents the single most critical landscape east of the Mississippi River for climate resiliency and significant plant and animal diversity.



Species We Protect



Bog Turtle © Timothy Calhoun

Trudging through wet bogs to save a turtle

Last summer, The Nature Conservancy enlisted a University of Tennessee graduate student willing to wade through tall grasses, cushiony sphagnum moss and wet, muddy meadows to locate federally-threatened bog turtles at restoration sites in Northeast Tennessee. Perseverance paid off when our researcher found and fitted 20 turtles with transmitters that communicate with the Motus wildlife tracking system, a remote tool that helps to inform land acquisition and management strategies tailored to keep the turtles safe.

Southern Appalachian Mountain bogs, like those navigated by TNC’s researcher, represent some of North America’s rarest and most fragile habitats, and contribute to the critically threatened status of its smallest turtle. Once common, these bogs have been drained and developed, putting rare plants and animals in jeopardy. Bog turtles are also threatened by poor water quality, roadway mortality, predators and the illegal pet trade.



Tricolored Bat © Cory Holliday /TNC

Bat Conservation Ramps Up

When cooler temperatures send most of us to snuggle up indoors, The Nature Conservancy’s bat expert, Cory Holliday, heads underground to monitor bats. His efforts, implemented with partners from around the state, provide more data to the United States Fish and Wildlife Service (USFWS) than anywhere else in the region. The information is critical to recovering species impacted by deadly white-nose syndrome, the reason why the USFWS recently proposed listing tricolored bats as endangered under the federal Endangered Species Act.



Olive-Sided Flycatcher © David A. Hofmann CC BY-NC-SA 2.0

Surprise Sighting

Last summer, a volunteer bird researcher recorded an Olive-sided Flycatcher at a shortleaf pine-oak restoration site located at The Nature Conservancy’s Bridgestone Nature Reserve at Chestnut Mountain. According to TNC scientists, this bird, which is declining and rare in the Cumberland Plateau, prefers open woodland habitat that has been recently burned. Since 2018, TNC has used controlled burns to restore shortleaf pine-oak woodlands at Chestnut Mountain to slowly create ideal conditions for this and other rare species.



Morefield’s Leather Flower © Creative Commons/Todd Crabtree

Filling In a Protected Lands Puzzle

This fall, The Nature Conservancy joined forces with The Conservation Fund and TennGreen Land Conservancy to acquire a 479-acre tract located within a mosaic of conservation lands established to protect wildlife habitats ranked as “high” or “very high” priorities in Tennessee’s State Wildlife Action Plan. A beneficiary of this purchase includes the federally endangered Morefield’s leather-flower and three state-endangered plant species. This property’s dramatic elevation changes and diverse forest make it a conservation win within a landscape intended to safeguard native wildlife and stand up to climate change.

Climate Smart Forestry

A new generation of scientists advances thinking on climate solutions

The Nature Conservancy and the University of Tennessee Institute of Agriculture (UTIA) are teaming up to tackle climate change with three potent tools: 1) science 2) forests 3) a new generation of leaders. Through the Climate Smart Forestry Fund, the partners are supporting graduate and undergraduate students (future leaders) who are conducting research that advances knowledge around conserving forests to mitigate climate impacts (science + forests). Meet the 2022 Climate Smart Forestry Fund Scholars:



© Courtesy/Melody Mount

Melody Mount

Carbon Capture and Carbon Losses Along Forest Edges

“Recent advances in understanding carbon sequestration in forests provided an opportunity to incorporate my undergraduate work in atmospheric science and an evolving interest in forestry into one meaningful project. There have been studies that looked at carbon storage along forest edges in more extreme climates, but what does that mean for more moderate climates such as those in Tennessee? Hopefully this study will answer that question and help managers across the region with planning. Who knows, maybe someone smarter than me can incorporate findings from this study into improving climate sequestration models across the globe.”



© Courtesy/Jareth Beeler

Jareth Beeler

Effects of managing East Tennessee forests for both timber and carbon sequestration payments: management and ownership concerns on prolonged rotation length, species composition, and wood products output.

“The dynamics of carbon sequestration, storage, and processing are at the forefront of natural resources studies right now. Though not a new concept, the recent uptick in carbon focus has generated a lot of intrigue and business. I chose this project because I would like to direct my career towards the emerging carbon field. Furthermore, I am local to East Tennessee and interested in how this emerging field applies to the area I know best.”



© Courtesy/Sakar Jha

Sakar Jha

Quantifying above ground biomass using remote sensing and ground measurements for mixed-hardwood forests

“There have been great advancements in remote sensing and machine learning in recent decades. These fields of study have helped to solve a number of real-world problems separately or in combination with each other. We are also combining satellite remote sensing and machine learning with traditional forest measurements to make accurate predictions of forest above ground biomass (AGB), which is essential to quantifying a forest’s productivity and monitoring its carbon dynamics in order to predict the AGB of a forested area as accurately as possible.”



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Where's **The Nature Conservancy's Impact Report?**

Stay tuned for a new look in the new year. Our *Tennessee Year In Review* hits members' mailboxes in early 2023!



Cumberland Forest Ataya Tract © Byron Jorjorian

INSURANCE POLICY FOR THE PLANET

Your support helps to preserve one of our planet's most important landscapes for fighting climate change and protecting key pathways for a variety of plants and animals.

Every tax-deductible gift advances The Nature Conservancy's mission to conserve the lands and waters on which all life depends.

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