

WINTER 2024

Tennessee field notes

LIFELINE
RESPITE
PLAYGROUND
HYDRATION
TAPESTRY OF AQUATIC LIFE
SOURCE OF PRIDE

Tennessee's freshwater resources—the 60,000 miles of rivers, streams and creeks that flow throughout our state—support fishing, paddling and other outdoor pursuits. Our waterways also generate power, harbor wildlife, irrigate crops and fuel state, local and municipal economies.

Demands for clean and abundant freshwater create challenges and opportunities for conservation work that benefits nature and people. The Nature Conservancy is stepping in and scaling up to meet those needs.

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

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From The Director



On the front page of this newsletter, we describe water – the theme of this issue – in many ways, all of them fitting. However, in recent months, Mother Nature reminded us about water’s power.

In September, Hurricane Helene brought devastation to lives and livelihoods in several Appalachian Mountain communities in East Tennessee and western North Carolina as a result of widespread flooding throughout the region’s rivers and streams. This deluge came on the heels of historically low water levels at the Duck River in Middle Tennessee, one of North America’s most biodiverse rivers, caused by a combination of extreme drought conditions and increased demand for drinking water.

The influence that water has on our landscape, and on surrounding communities, is real. Nature has a role to play in building resilience against what we are seeing in the headlines. Incorporating more nature into our watersheds allows the landscape to better collect, store and gradually filter clean waters entering rivers and streams to reduce flooding and handle droughts.

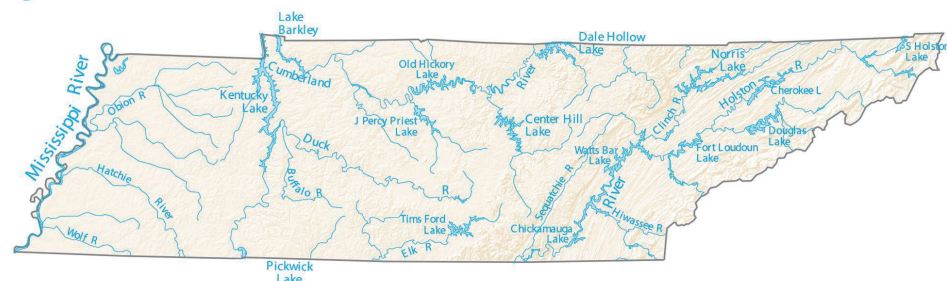
At The Nature Conservancy, we are on the case. Recently, our network of scientists completed a portfolio of conservation priorities around the state to inform where our work can have the greatest impact. This includes our efforts at some of the most biologically diverse watersheds on Earth located right here in Tennessee. Within these pages, I am excited to share how we are reconnecting, restoring and improving freshwater habitats in places like the Duck River, throughout the Southern Appalachians and in portions of the “Mighty Mississippi.”

As people are increasingly enjoying and appreciating the outdoors and especially our rivers, lakes and streams, it is an exciting time to pursue the work of conserving nature in Tennessee. This heightened engagement also brings an awareness of how the surrounding landscape influences our freshwater resources. Protecting the quality and abundance of Tennessee’s water depends upon what we are doing on farms and in forests, around cities and in our own back yards.

We all have a role to play. It is my hope that these pages inspire you to take action, in ways big and small. Thanks again for supporting this important work.

To a Healthy Today and Tomorrow,

Laurel Creech



COVER *Winter at Chestnut Mountain* © Britt Townsend/TNC
 ABOVE © *Courtesy/Laurel Creech*



Conserving Water Plays a Prominent Role In Jim Gerding’s Philanthropy Decisions

For those who live a long life, the journey includes many seasons. This is true for Jim Gerding, who at 96-years-young reflects on time spent as a soldier, a student, a teacher, an entrepreneur, an angler and most recently, as a philanthropist. The Nature Conservancy is grateful for his generous contributions to our freshwater conservation efforts in Tennessee.

After fighting in the Korean War and earning an MBA at the University of Indiana, Jim and his wife June moved to Gatlinburg, Tennessee to open the Pancake Pantry, a beloved local institution, and to pursue other business investments. Later in life, he also set his sights on sharing some of his success as a generous philanthropist.

“I decided that when you have enough, you should give the rest away,” says Jim. “So I set aside some assets for my two sons and decided to give some money to small, charitable organizations where I could become familiar with their leadership and causes.”

One cause that Jim wanted to explore, as a longtime angler, was removing dams and culverts that prevent fish from finding their historic spawning routes. He checked in with park rangers at the nearby Great Smoky Mountains National Park about whether there was a need to remove any of these structures within the park. They suggested that he talk with The Nature Conservancy.

“I had been a member and donated annually to The Nature Conservancy for many years,” says Jim. “After visiting with their freshwater expert and state leadership, I decided to support that work. It helps with flood control, makes fishing better and has other impacts that will carry into the future.”

Thoughtful about the causes he supports, Jim also dedicates resources towards helping the Knoxville Children’s Theater and Newbury College, a small, rural liberal arts institution in South Carolina. He also supports Friends of Disabled Adults and Children (FODAC) and efforts by the Southern Environmental Law Center to protect the Okeefenokee Swamp, both located in Georgia where he now resides.

“My hope is to make a difference, maybe with one individual like at Newbury College or FODAC or maybe with larger communities through the freshwater conservation work of The Nature Conservancy,” Jim adds. “You can’t change the world, but maybe I can do a little in my corner of it.”

Harms Mill Dam © USFWS/Andy Ford

Leaving a Legacy

Jim Gerding’s support has made it possible to pursue several projects that improve the quality and flow of Tennessee’s freshwater resources. These include projects in the Cherokee National Forest and efforts to remove Harms Mill Dam, located along the Elk River. To date, TNC has played a significant role in securing grants and private gifts to cover the design and construction costs of removing this dam. Once complete, it will represent the largest dam removal in Tennessee history, resulting in the reconnection of 382 miles of valuable stream habitat.



Sustainable Rivers

Jim Howe manages TNC's groundbreaking partnership with the U.S. Army Corps of Engineers.

Since its early efforts to improve navigation on the Ohio River in the early 1800s, the U.S. Army Corps of Engineers (Corps) has built thousands of locks, dams and other structures to meet our nation's demand for water, food, power and navigation. However, some of these structures have become outdated while others have been found to jeopardize wildlife habitat and local communities that are prone to flooding. In response, The Nature Conservancy, through the Sustainable Rivers Program (SRP), partners with the Corps on modernizing this national system of water control projects to improve and enhance social, economic and environmental benefits for people and wildlife. Jim Howe, TNC's Senior Advisor for North America Policy and Government Relations, leads that charge on behalf of TNC.

The Nature Conservancy: What is your role in this partnership between TNC and the Corps?

Jim Howe: We are collaborating on projects in 30 states. In those places, I help TNC's local program coordinate with the Corps and other partners and stakeholders to look at a waterway through a new lens. Together we rely on current science and local input to identify ways of managing flows to support nature as well as the needs of surrounding communities.

The Nature Conservancy: Where is the SRP working in Tennessee?

Jim Howe: We are working on the Cumberland River, which like most waterways flowing out of the Appalachians, supports a variety of fish and mussels. Currently we are in the information collection phase, assembling data about the local ecology and needs of species. We are also listening to stakeholders about perceived challenges and opportunities. To be thorough and thoughtful, the Corps and TNC will spend up to two years on this phase before moving ahead with a new strategy.

The Nature Conservancy: Does this partnership get TNC closer to its global goal of improving the management of more than 620,000 miles of rivers by 2030?

Jim Howe: As the largest water manager in the United States, the Corps oversees an infrastructure that influences more than 52,000 miles of rivers. So far, about 25 percent of their portfolio is enrolled in the SRP. Our hope is to expand and replicate this collaborative and science-based approach with other federal agencies and water managers, both in the U.S. and globally. Together, we are creating a hopeful blueprint for the future of freshwater conservation.



Jim Howe © Courtesy/Jim Howe; Sustainable Rivers Program Cumberland River Workshop © Jim Howe/TNC

“If you want to see how the world is changing, follow the water. Helping waterways more closely mimic natural flows and patterns is one of the most important things we can do to secure rivers, lakes and streams to support wildlife and our own lives and livelihoods in the face of changing weather and climate conditions.”

— JIM HOWE, SENIOR POLICY ADVISOR,
NORTH AMERICA POLICY AND
GOVERNMENT RELATIONS



Combining Efforts Takes Work To The Next Level In The Southern Appalachians

Deep in a remote portion of the Cherokee National Forest, our Nature Conservancy staff and peers from the U.S. Forest Service (USFS) are getting their hands dirty (and probably wet) now that they have the green light to step up restoration work in the Citico Creek watershed.

“When we compared priorities as part of our new Watershed Restoration Partnership, Citico Creek came out on top—as a regional priority—for both of us,” says Lucas Curry TNC's watershed restoration engineer in Tennessee. “As a result, we've assembled staff and resources around elevating the pace and scale of what is required to improve the health and function of this watershed.”

At the heart of these efforts is removing barriers to the natural flow of water

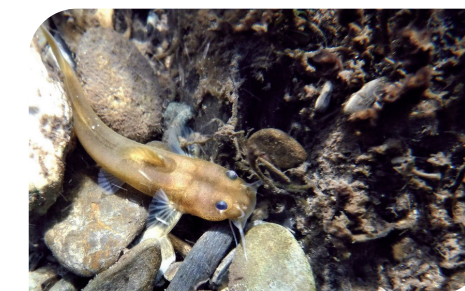


Lowhead Dam at Citico Creek © Lucas Curry/TNC; Undersized Culvert at Citico Creek © Lucas Curry/TNC; Smoky madtom © iNaturalist/Robert Lamb

to support the life cycles of numerous aquatic species. The partners are also improving infrastructure, including stream crossings, for people who visit this wilderness area for hiking, fishing and backcountry camping.

For starters, TNC and the USFS identified several undersized or outdated culverts, built to direct water around or under roads or embankments, that no longer perform their intended purpose. When culverts do not fit the space correctly, they hinder wildlife passage. They also accumulate debris flowing from upstream and, in the case of a collapse during a weather event, can add a significant amount of sediment to the local ecosystem.

In addition to updating culverts, the partners are closing in on a final design for removing Citico Creek's last remaining dam. Removing this barrier will reconnect 38+ miles of stream to mimic the creek's natural flow pattern. Also included in these efforts is pursuing habitat restoration projects throughout Citico Creek, which supports 67 fish and mussel species that include the federally



endangered Smoky madtom (*Noturus baileyi*), Citico darter (*Etheostoma sitikuense*) and Yellowfin madtom (*Noturus flavipinnis*). TNC and the USFS are also setting sights on additional opportunities to restore habitat in the creek's tributaries.

“Initially we didn't think that there was much in the way of aquatic species in Citico Creek's tributaries until USFS biologists found two Smoky madtoms upstream of a washed-out culvert,” adds Curry. “It helped us see why removing barriers and installing crossings are so important. Previously we tackled this work in a piecemeal fashion. It is exciting to be working together to find ways that will have an impact on the watershed's function and health, on a much larger scale.”

Development and Climate Change Pose Challenges for Conserving the Duck River

The 284-mile long Duck River, entirely situated within Tennessee’s borders, is rife with superlatives. As one of the most biodiverse rivers in North America, the Duck supports 60 species of mussels, including 19 listed as federally threatened or endangered. These mussels represent a building block in the health, resilience and proper functioning of a larger ecosystem that includes fish, snails, insects and other species. The mussels also naturally filter what serves as the main source of drinking water for 250,000 people residing in rapidly developing Middle Tennessee.

Unfortunately, the Duck River is in trouble. This year a severe drought, coupled with withdrawing more water to meet the needs of local communities, signaled a potential crisis for the river’s ecology and its ability to support wildlife and people.

“We know that demand for drinking water is going to increase, and this drought highlighted the Duck River’s

limits as a sustainable water supply,” says Rob Bullard, The Nature Conservancy’s director of water in Tennessee. “We have to be proactive in developing the science and tools required to understand how much water can be withdrawn before this globally significant freshwater ecosystem begins to collapse.”

To this end, TNC is working with Tennessee Tech University, the Tennessee Wildlife Resources Agency, the U.S. Fish & Wildlife Service (USFWS), and others to assemble data that illustrates why protecting nature in and around the Duck River provides long-term resilience to extreme weather events and cleaner water throughout the watershed. Achieving this requires setting limits on how much water can be removed from the river, particularly during a drought.

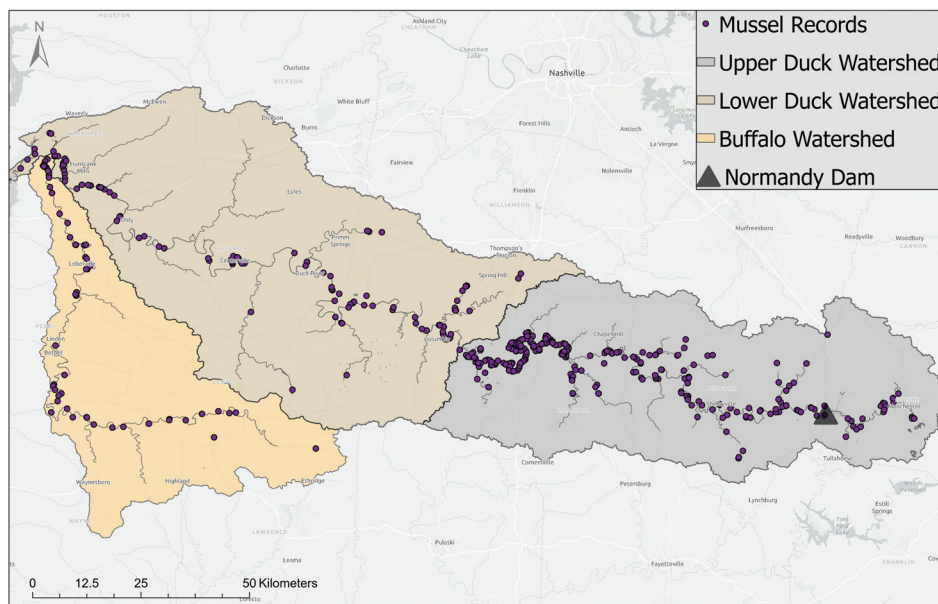
Dr. Amanda Rosenberger from Tennessee Tech is supporting this effort through research that aims to build a greater understanding about freshwater



mussel distribution and needs throughout the Duck River system. The comprehensive study taps into historic data from USFWS mussel surveys and the mussel collection at University of Tennessee’s McClung Museum of Natural History and Culture.

“We want to learn more about what we have and what we should have in this system—and where protecting and restoring nature might be most successful and beneficial,” says Dr. Rosenberger. “This information should inform water management decisions, including where and how much water should be withdrawn to maintain the system’s health, function and resilience.”

Dr. Rosenberger is also conducting a literature review of the current science around how mussels respond to reduced river flows and drought. She adds, “The Duck River’s unique standing in the global freshwater community demands that we pay attention and make informed decisions about its management. It is imperative that we do our homework and plan for the future proactively, and responsibly, to protect this truly unique natural legacy that we have right here in Middle Tennessee.”



Tennessee harbors more mussels than exist in the entirety of Europe. While the entire Duck River supports these mussel populations, a few critical stretches hold most of the river’s biodiversity.

Plain Pocketbook Mussel © USFWS-Ryan Hagerty; © Kristin Womble and Amanda Rosenberger with baseline data provided by the McClung Museum Map of the Duck River (Gerry Dinkins)



Floodplain Management in West Tennessee Is a Model for Action Around the State

As the saying goes, “If it ain’t broke, don’t fix it.” However, what if it is working really well? The Nature Conservancy and partners working to restore and reconnect floodplain habitat in West Tennessee would say, “Let’s build on the success.”

For more than 15 years, TNC has participated in a collaborative effort – led by the West Tennessee River Basin Authority (WTRBA) – to implement floodplain management projects that preserve or restore the natural flow and function, and ecological health, of West Tennessee’s streams and rivers. Now the partners are taking steps to determine whether this model could be replicated in other parts of Tennessee since the WTRBA only operates in 20 counties located in the western portion of the state.

“We are interested in building on more than a decade of collaboration around floodplain management to make systemic changes that would benefit watersheds, wildlife and communities around the state,” says Shelly Morris, TNC’s director of freshwater conservation in Kentucky. “This effort is in the early stages, but we feel hopeful.”

A first step included commissioning a study to explore the feasibility of creating new basin agencies elsewhere in the state to oversee restoring and reconnecting floodplain habitat, which is known to reduce flood risk, improve water quality, support agriculture and enhance recreation opportunities along local waterways. The research included identifying partners and stakeholders in key areas of the state and reviewing potential public and private funding mechanisms that might support this goal. The study, released in October, concluded that the state could benefit from creating regional basin authorities in Middle and East Tennessee to achieve more integrated floodplain management at a larger scale.

Morris adds, “While preliminary, the study validates the need for working at larger scales to achieve more comprehensive floodplain management throughout Tennessee. It represents a step forward that would benefit our state’s lands, waters, wildlife and local communities.”



Gold Standard For Integrated Floodplain Management

In August, the State of Tennessee introduced the Middle Fork Bottoms Recreation Area as the newest addition to its system of state parks. Tennessee State Parks is focusing on expanding public access and enjoyment opportunities at this 860-acre public land. The Nature Conservancy will also continue to help manage a wetland within the park that is key to retaining and slowly filtering floodwaters that once regularly inundated this property, which was previously a working farm.

Mississippi River Floodplain © Rory Doyle; Kayakers at Middle Fork State Park © Tennessee State Parks



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Box Turtle © TNC Photo Contest-Vincent Eng

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