

## Conservation and the Streamside Salamander

Article and Photo by David Ian Withers

**W**hat does conservation mean to you? Large tracts of land set aside for our enjoyment but chiefly for the protection of archaeological, biological, and geological resources? These areas and their management are a priority for TDEC's Bureau of Parks and Conservation staff—caring for the natural world and interpreting its occupants to visitors.

But how do we accomplish conservation for species and habitats that are generally unseen, underfoot, and under cover?

For the state endangered streamside salamander (*Ambystoma barbouri*), protection and management of state-owned lands provides assurance that representative populations persist on the landscape. At present in Tennessee, three genetically distinct regions exist for the streamside salamander, as defined by populations analyzed in the Central Basin, the core of its distribution. Researchers have found that these three Evolutionary Significant Units (ESUs are a population of organisms considered distinct for purposes of conservation) are defined by major river barriers and hundreds of thousands of years of evolution. Populations north of the Cumberland River are one group, while two groups are described south of the Cumberland and are roughly separated by the Stones River.

We are fortunate to have two of the ESUs represented on lands owned and managed by TDEC and TWRA! But to date, no directed conservation for the populations north of the Cumberland has been achieved...or has it?

Enter TDEC's Bureau of Environment! Working closely with the Division of Natural Areas and partners at TWRA and local stormwater programs, the Bureau of Environment's Division of Water Resources (DWR) structures certain land and water disturbance



**Courtesy of David Withers:** An adult *Ambystoma barbouri* seen at a monitoring site in Sumner County.

permits to accommodate the needs of the salamander when known from properties pending development.

*Ambystoma barbouri* is the quintessential fossorial species—out of sight and out of mind—for most of the year, anyway. Adults emerge from earthen burrows from December through March to breed in seasonal headwater streams of Middle Tennessee—those that flow roughly from Thanksgiving to June—and then promptly resume their fossorial lifestyle. A dry phase in August–September–October ensures that no predatory fish interrupt successful breeding, hatching, and larval development. Females commonly lay eggs under slab rocks atop bedrock, but when such structure is lacking will drop eggs gently on other substrates of gently flowing channels.

At the behest of TWRA, DWR permits construction activities within occupied channels only after most larvae have already transformed and left the channel to begin their lives as terrestrial juveniles. After a few years of growth, they are drawn back to their streams to start the process anew!

For conservation to be meaningful for *Ambystoma barbouri*, we must count on our public lands to guarantee some security for the species but also look to proactive regulatory measures to ensure their presence on a broader landscape.

As evidenced by surveys undertaken

in recent years, this species has an affinity for agricultural landscapes, many of which in greater Nashville have been re-imagined for residential, commercial, or industrial purposes.

And while some populations have been unintentionally impacted by land conversion, this affable and capable animal has shown resilience and the ability to live alongside us, turning up in flower beds, garages, and even one medical center!

Recent surveys conducted by TDEC and TWRA staff have found a few hidden gems in urbanized Nashville, where modest populations persist in residential, commercial, and industrial areas where streams function well enough to support successful breeding and development.

There remains hope for this elusive Tennessee resident, especially if we are thoughtful about the ways in which we move more deeply into their environs.

Read more: [hvilletn.org/departments/public-works/stormwater/streamside-salamander](http://hvilletn.org/departments/public-works/stormwater/streamside-salamander).

LEARN  
MORE



(David Ian Withers has served as Natural Heritage Program Zoologist with the Division of Natural Areas since 1993, specializing in rare species data management and inventory of some of Tennessee's "lesser-known life forms.")



# THE TENNESSEE conservationist

JULY/AUGUST 2022 • \$4.95

## Making a Difference on the Cumberland Trail

Microplastics Are Flooding Our Waters:  
Tiny Changes Could Stem the Tide

Butterfly Viewing Options in  
Tennessee State Parks and Natural Areas

Hidden History of  
Montgomery Bell State Park

CELEBRATING 85 YEARS OF CONSERVATION 1937-2022