

TENNESSEE BIODIVERSITY PROJECT: The Tennessee Wildlife Legacy Plan—integrating wildlife and human needs

by Gregg Elliott & Gabrielle Lynch

Tim Churchill, chief of the Tennessee Wildlife Resources Agency's federal aid and real estate division, knows that as the most diverse inland state in the U.S., Tennessee has many high priority, competing needs for protecting land. In 2015, with data from the 2015 updated State Wildlife Action Plan (SWAP) newly available, he decided it was time to create a land conservation priority tool to help guide critical real estate and restoration investments across the state.

That's why, in 2016, he called up Gabrielle Lynch, Director of Protection for The Nature Conservancy in Tennessee (TNC). "He told me TWRA has an awesome SWAP, we use it all the time, and it would be great if TNC could help develop a 10-year land protection priority tool based on SWAP plus some additional data," explains TNC's Lynch. "TWRA is one of our closest conservation partners, and we embarked on a 1-year contract with TWRA to pull together the best available science for this purpose."

In Boston, Mark Anderson, Director of Conservation Science for TNC's Eastern North America Division, had led a team in developing some of that best available science. They created a [climate resilience model](#) for the entire eastern U.S., which went beyond looking at the current location of vegetation types and sensitive species. Resilience refers to the capacity of a site to adapt to climate change while still maintaining diversity, though not necessarily the same suite of species through time. The team's analysis showed that protecting areas on the basis of geophysical factors such as diversity of landforms, elevation, and latitude can "[conserve the stage](#)" for current and future biodiversity.

Added to the SWAP GIS data showing current habitat types and priority areas for declining species, the resilience data help to highlight areas that are likely to remain or to become significant strongholds of biodiversity across Tennessee even as temperatures and microclimates change.

Incorporating people priorities into conservation planning

In addition to climate resilience, Churchill wanted to incorporate more information to inform not only TWRA's land acquisitions, but also habitat restoration and other conservation activities. Additional datasets that highlight the value of watersheds to people could make a stronger case for TWRA's expenditures in acquiring, restoring, and managing critical habitats for wildlife.



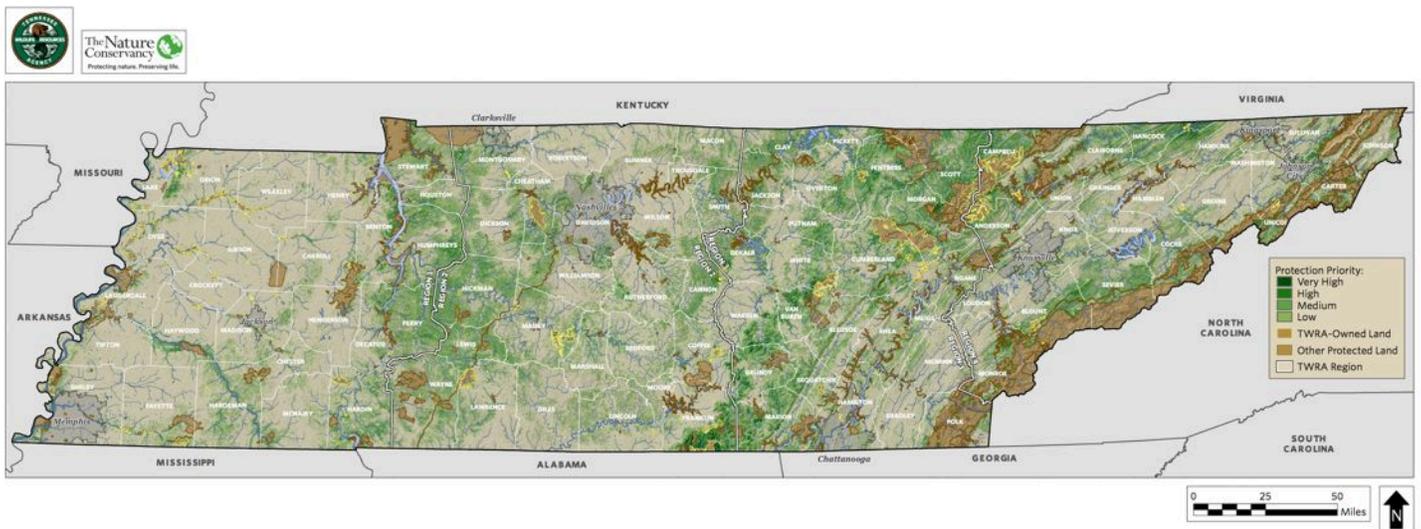
Healthy mussel populations are a sign of good water quality—Bobby Brown, TWRA.

The most astonishing message coming out of the Wildlife Legacy Plan is the sheer number of acres across Tennessee, in all four regions of the state, that score very high and high.

TNC held a series of planning workshops that included TWRA staff from Wildlife, Fisheries, and Nongame Divisions along with managers of state Wildlife Management Areas. Using the 2015 SWAP as a base layer, the team added in TNC's climate resilience data. Next they added datasets on the locations of reservoirs and rivers used to supply Tennesseans with water. Finally, they incorporated data on recreational access and needs for major metropolitan areas—measuring, for example, the driving distance required for people in Nashville to reach hunting, birding, and fishing areas.

The resulting Tennessee 2017 Wildlife Legacy Plan has become TWRA's new win-win-win-win approach for identifying areas critical for wildlife habitat, climate resilience, water supply, and recreation. "The bottom line," explains Lynch, "is that the agency can now show the Wildlife Commission and the state legislature why proposed new land acquisitions, conservation easements, or restoration and management projects are important to both wildlife and people."

The map below shows in darkest green the highest priority areas where all 4 major criteria overlap in one zone. The new datasets changed priorities outlined in the SWAP somewhat. Lynch explains, "Looking at the North Cumberland Plateau, for instance, which is already off the charts for SWAP species of greatest conservation need, some areas now actually score higher in the Legacy plan compared to the SWAP, while some score lower."



"The most astonishing message to me coming out of the Wildlife Legacy Plan is the sheer number of acres across Tennessee, in all four regions of the state, that score very high and high. It adds up to about 2.2 million acres, almost one-quarter of the state! Tennessee is extraordinarily rich in wildlife benefits compared to many other places. We've always known Tennessee has awesome biodiversity. For the first time, the Legacy Plan shows the human benefits that can come from protecting our high priority areas, but it also made us realize how much work we have to do. That's my takeaway from this project."

"For the first time, the Legacy Plan shows the human benefits that can come from protecting our high priority areas, but it also made us realize how much work we have to do. That's my takeaway from this project." - Gabrielle Lynch, Director of Protection, The Nature Conservancy