

The Lee Redmond Citizen's award is presented to a person or persons not directly employed in the aquatic field and who make a substantial or long-term contribution to the field of aquatic resource conservation.

This year's recipient of the Lee Redmond Citizen's award is Tom and Cathy Aley.

Tom and Cathy Aley have been national leaders in cave and karst research, conservation, and education for 45 years, largely focusing on aquatic resources. In 1966, Tom (a hydrologist) purchased land above a cave system (Tumbling Creek Cave) in eastern Taney County for the sole purpose of establishing the Ozark Underground Laboratory and research field station. Ever since, the Aley's have dedicated their lives to protecting caves and karst, with a strong focus on public education. For four decades, they have conducted, and consulted on hydrogeological studies of caves and karst systems across the globe. Much of their innovative work has become standard practice in the field of dye-tracing, and their services have been contracted by the U.S. Forest Service, National Park Service, Missouri Department of Conservation (MDC) and other states, counties and municipalities.

In addition to all their professional successes, the Aleys have dedicated a majority of their income and personal time protecting the cave and karst features on their own property. Little was known about Tumbling Creek Cave prior to their purchase of the property, but they have discovered much about one of Missouri's most unique karst features. They catalogued >115 species in the Cave, including Federally Endangered snails and bats; Tumbling Creek Cave is now recognized as the most biodiverse cave west of the Mississippi River, and was designated a National Natural Landmark in 1981. The Aleys have conducted over 60 groundwater traces to delineate the Cave's nine square mile recharge area, linking important surface features to the health of the Cave. They've invested much of their own personal funds into acquiring and restoring >3,500 acres of land in the recharge area, and in 2004 they established the Tumbling Creek Cave Foundation to ensure the future protection of the Cave and associated lands.

Through their hard work, and an impressive network of partnerships they have created, the Aley's and their Foundation have implemented a multitude of conservation practices on their acquired lands in the recharge area of Tumbling Creek Cave. These efforts include restoration of over 13,000 feet of eroded gully and 1,600 feet of eroded stream banks, hand-planting >75,000 trees to re-establish riparian corridors, converting hundreds of acres of fescue pasture into native grasses, restoration of glades, and removing over 100 tons of refuse and 100 gallons of hazardous liquids from >30 dumps and sinkholes. When nearby Mark Twain Elementary School, located in the Cave recharge area, was at risk of shutting down for a failing sewage system, the Aley's leveraged the endangered Tumbling Creek Cavesnail to find partner funds to replace the wastewater system and keep the School open. The local newspaper reported that the endangered snail saved the school and the Aley's prevented further pollution of the groundwater going into the Cave. Through their Foundation, the Aleys have also used partner funds to pump out dozens of septic systems within the Cave recharge area and upgraded six inadequate systems.

Inside the Cave, Tom and Cathy have gone to great lengths to conserve the geologic features, water quality and the native organisms. The Cave is a maternity colony for 150,000 Federally Endangered Grey Bats. The Aley's worked with MDC, the U.S. Fish & Wildlife Service (USFWS), and the American Cave Conservation Association in 2004 to build a bat-friendly cave gate on the natural entrance to protect this sensitive habitat from trespass and vandalism. In partnership with the USFWS, the Aley's installed a water quality monitoring station in the Cave in 2002 to measure a variety of parameters in the Cave's

stream. This instrumentation has allowed staff to track improvements to water quality in that stream as conservation practices on the surface were implemented. Much of the conservation successes at Tumbling Creek Cave are centered around the Federally Endangered Tumbling Creek Cavesnail. The Aley's have been the driving force behind these efforts through their involvement in an inter-agency recovery team, work with universities and researchers, and a huge investment of their time and the time of their staff. In a cooperative effort with MDC to protect the endangered cavesnail, Tumbling Creek Cave Foundation staff have been trapping and removing invasive crayfish in the Cave on a weekly basis since 2013. They have installed crayfish barriers in the stream and expanded metal on the cave gate to prevent the invasion of more crayfish. The Aley's constructed an artificial cavesnail propagation system within the cave. In the event of an environmental disaster on the 8+ miles of roads and highways in the recharge area, cavesnails can quickly be moved to the closed system to avoid a major mortality event. They have also worked with the Springfield Plateau Grotto of the National Speleological Society to restore areas of the Cave that had been vandalized with graffiti or speleothems that had been covered in mud deposits.

Most recently, the Aleys and their staff have worked closely with MDC researchers on the conservation of the State Endangered Caney Mountain Cave Crayfish, the rarest crayfish in the United States. They have conducted research to delineate the species' habitat and distribution.

Despite their many contributions to karst research and protection, and the countless conservation practices they have implemented on lands within the Tumbling Creek Cave recharge area, the Aley's would probably say their most important work has been their public education efforts over the course of their careers. Beginning in the 1960's, Ozark Underground Laboratory, and later the Tumbling Creek Cave Foundation, have provided field trips for students and professionals on the surface and into the Cave. To date, the Aley's have provided over 2,000 educational field trips through the Cave. These day trips and short courses showcase the direct links between surface features (sinkholes, losing streams, karst windows) and cave hydrology. Cave tour stops highlight water quality, cave species, geology and cave formations. The Aley's constructed a field house, bunk house and shower house on the property to accommodate the many groups that visit the cave annually for educational field trips, or extended field studies. They have hosted numerous graduate students that conduct research in and around the Cave. Through their efforts, Tom and Cathy have created a tremendously impressive and educational cave experience to promote cave and karst conservation, research and stewardship.

Considering the incredible contributions Tom and Cathy Aley have made in the fields of groundwater research, endangered species conservation, karst education and land stewardship, we believe these two deserve the recognition of the American Fisheries Society for their contributions to the conservation of Missouri's subterranean aquatic species and their habitats.