

NEWSLETTER

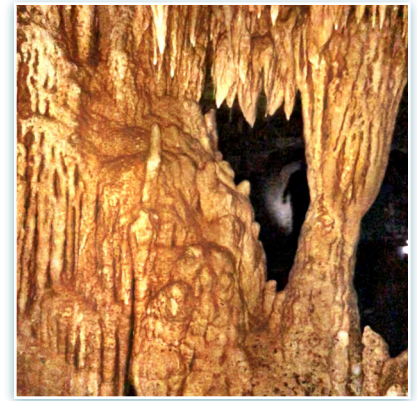
Fall Field Trip to Tumbling Creek Cave



Gray bats fly in the entrance to Tumbling Creek Cave

by Mary Jo Ostenberg
photo credit Bill Blackledge and Karen Hayes

Have any of you ever considered purchasing a cave? That's exactly what Tom Aly decided to do. While working on his doctorate in California in the field of hydrology Tom was introduced to karst habitat and river formed cave systems. It piqued his interest and he dreamed of establishing a private underground laboratory. Two years later Tom found and purchased Tumbling Creek Cave in southern Missouri and established Tumbling Creek Cave Foundation and the Ozark Underground Laboratory.



The TCC Foundation has conducted numerous studies and worked to demonstrate the effects of groundwater contaminants from faulty septic systems, landfills, illegal dump sites and outdated sewer lines on karst areas, especially in sensitive environments like Tumbling Creek cave. Dye traces have revealed the recharge area for TCC is over 9 square miles and it has a discharge area of over 2,900 feet of river way.

Tumbling Creek proves to have the highest recorded fauna biodiversity of any cave west of the Mississippi River. It is the only known habitat for the Tumbling Creek Cavesnail (*Antrobia culveri*). An initial reconnaissance survey in 1974 found a population of about 15,000 but in the following years those numbers dropped precipitously. Concern over the dramatic decline in the population led to periodic snail counts by our own Dr. Ashley of Missouri Western State University beginning in 1996 and continuing to the present. Thanks to his dedication the cavesnail was listed as endangered on August 14, 2002 and recovery and conservation efforts were put in place to save this species.

In October of 2017 and again in early September 2018 several members of our Master Naturalist chapter traveled to Tumbling Creek Cave for a day of karst exploration led by Tom Aly. On the early morning hike we covered the surface and visited sink holes, losing streams, springs, and the Bear Cave entrance to the cave system. In the afternoon we hiked 2,100 feet of the Tumbling Creek Cave trail as Tom shared his vast knowledge of this very special environment and stories of his exploration and restorations.

It's difficult to find the words to adequately describe the cave environment that is so foreign, so unlike anything we know. There is no horizon. There are no trees. Birds are not singing and there is no breeze. The only light inside the cave came from our small headlamps. If we turned them off we were left in total, almost unfathomable darkness. The only sounds were ours. I could hear my heart beating, heavy breathing from my companions, nothing more. The overwhelming smell was of bat guano and dampness. Native Americans would not enter these caves. They believed man was not welcome. They did camp at the entrance to enjoy the cool air that escaped from the caves in the hot summers but would not venture any further.

But there is beauty in this environment. Small, cramped spaces will suddenly open to vast cathedral like rooms, the ceilings dripping with stalagmites. Stunning formations, beautiful speleothems carved by water and time line the walls. And in those walls we found the tiny, endangered cavesnails and dozens of almost microscopic white millipedes,



Grotto Salamander

(*Causeyella dendropus*). It was humbling to think that we were viewing creatures that most will never have the opportunity to see in their lifetimes. The cave is also home to the endangered gray and Indiana bats. We saw a few gray bats clinging to the walls, sleeping, waiting for dusk to leave the cave and forage for small insects. The Indiana is almost extinct and we did not see one on either trip. One of the more unusual species we found was a Grotto salamander (*Eurycea spelaea*). This creature has evolved to have no eyes. It lives its life in total darkness and eyes would simply be a waste of energy. When we reached the end of the cave

trail, turned and walked back to the entrance we walked in silence. It seemed only fitting.

But the day wasn't over yet.

On our first trip to Tumbling Creek Cave we came in late October. Unfortunately we were arrived too late in the season to see the bats leave the cave at dusk. They had already migrated south for the coming winter. On our second trip we made the trip before the migration began. So now we're headed back to the cave. This time we hike to the natural opening of the cave. When Tom purchased Tumbling Creek Cave he wanted to make it accessible to researchers. Entering the cave by way of the natural entrance required crawling about one and a half miles before finally reaching higher ceilings allowing standing. So taking every precaution possible to prevent ecological damage, Aly built a people entrance to the cave. This entrance is protected by a large vacuum sealed steel door that opens to a small vestibule. Steps lead down to a second vacuum sealed door that opens to the cave trail. But if we want to see the bats leave we need to be at the natural entrance. Fortunately we'll see this event from just inside the natural entrance. There is enough headroom to sit comfortably so we choose our spots and quietly wait.

As the sun sets and it gets darker we start hearing very faint noises from deep in the cave. It sounds like dry leaves rattling in a slight breeze. We sit very still and listen. It gets darker as we wait. When it is finally so dark you cannot see your hand in front of your face the sounds grow nearer and we can hear a new sound. It is the sound of wings breaking the air as the bats fly around and over us. Tom turns on a flashlight for 30 seconds and we see them. Hundreds of bats flying out of the cave vents that open over us heading out into the night skies to forage. So we don't disturb them he turns his light off. We sit in the dark once more and wait. I feel wings breaking wind around face and my hair moves just a bit as a tiny wing come close enough to barely brush some strands aside. Once again Tom turns on his flashlight. The bats stop in midair, caught in the brightness. We see hundreds and hundreds. He turns off the light and the movement starts again. We



Walking on the Tumbling Creek Cave Trail

sit in the dark in absolute awe listening and feeling approximately 50,000 gray bats fly out the cave. Then as the exodus starts to peak we slowly move out of the cave and watch the bats hunt against the background of the starlit sky. Wow! What an incredible way to end a very good day.

for more info and photos of the cave:

[Tumbling Creek Cave Foundation](#)

for 2014 updates on the peril of the cave snails see section 2.3.2.3 of the following:

<https://www.fws.gov/midwest/endangered/snails/tcca/pdf/TCCS5YrReview2014.pdf>

Bird Banding at Missouri Western State University

by Debbie Butterfield
photo credit Brent Galliard

I am very grateful to Brent Galliard for making me aware of an opportunity to join the Midland Empire Audubon Society in banding birds at Missouri Western State University on September 22, 2018. This was my first experience but definitely will not be my last. It was not only a wonderful experience to observe the bird banding process but a chance to meet



Debbie Butterfield and Jack Hilsabeck (in red) look on as MWSU students band birds

a remarkable group of people. Like every event offered to me as a part of MMN, I was in the midst of knowledgeable people who never tire of sharing their wisdom. Dr. John Rushin, Tom Nagel and Jack Hilsabeck to name a few. And of course, Brent. I can't thank everyone enough for their time and willingness to instruct.

This particular morning was cool but very pleasant. There wasn't a large number of birds captured by the mist-netting on this day but enough to demonstrate the operation. Safely extracting the birds from the mist-net and the safe handling of the birds were priorities. Before banding, the species name, weight, wing length, sex, age, body fat were recorded on the data sheet. I watched in amazement as the birds were handled and the data collected. The procedure was handled with great finesse and skill. Most of the birds showed little concern with the whole process, with the exception of one female robin. She was determined to let the Missouri Western student holding her know that she didn't like this at all. Many pecks were endured but the student managed to get the needed data. On this day I watched the capture, banding, and release of house wrens, robins, a grey catbird, and a yellow-rumped warbler.

After hearing the banding would continue each day until the middle of October, I was determined to attend another banding, perhaps even assist in some small way. Eager to share the experience I brought my grandson. Being a wildlife management student he was very interested. This was a very chilly morning, but true to their word they were there with everything set up ready to go. Again, not many birds; one never knows. Just the day



before they recorded 42 birds, many of them warblers. Regardless of the number or the species, it was truly a privilege to participate. I am now longing for the spring migration and a chance to repeat such an enjoyable learning experience.

Master Naturalists Create Artistic Bench

by Sue Knight from an interview with MaryJo Ostenberg
photo credit: Mary Joe Ostenberg and Karen Hayes

Have you seen the new concrete bench at the Loess Bluffs National Wildlife Refuge? It is an art form called Faux Bois (false wood) that mimics tree limbs and wood grain popularized in France in the late 1800s.

I asked MaryJo what inspired her to begin this journey into cement sculpting and she told me she was inspired by the Roman structures she learned about in a history class in college. She later visited Rome and has always wondered about the secrets of Roman concrete, allowing fabulous structures to last from 25 BC until the present. A later inspiration, she told me, was discovering that Martha Stuart is an avid collector of Faux Bois.

It wasn't long before MaryJo and Karen Hayes were on their way to San Antonio to attend 8 days of hands-on instruction in the art of making Faux Bois from one of the few remaining masters of the art form. Creating the right mix of ingredients for different layers of the material was an important part of the learning process in addition to the methods for artistic interpretation of bark and wood grain. "Karen who previously thought she was not creative, became very good at creating realistic bark patterns in the finish coat." MaryJo said.



Karen works on the metal armature



Gerry Crawford and Mary Jo working on the back of the bench

By the spring of 2018, MaryJo and Karen had hatched an idea to create a bench to sit among David Laderoute's native flower gardens. This was no small task as it involved building an armature by cutting, bending, welding and tying rebar on a large scale! MaryJo said they built the armature in her garage, later moving it to a flatbed trailer and continuing to work on it until it was ready to transport to the Refuge.

After the armature was settled in its location at Loess Bluffs Refuge, many bags of portland cement, fly ash, sand and other aggregate were hauled to the Refuge as the bench progressed. Over the summer, warm temperatures required creating a plastic tent over the project to slow the curing process. Working with concrete requires quickness and immediate clean up and by now Gerry Crawford was helping with the project. He was able to extend his experience of carving duck decoys in wood into a different art form.

The final finish coat is made of portland cement and fly ash minus coarse sand and aggregate which can be carved or built up for detail. MaryJo speaks of a secret ingredient that is key to getting the right amount of dryness and slow the curing in the finish coat.

The bench, MaryJo says, is not quite finished. Cold weather halted final staining of the bench. It will be completed when the temperatures consistently reach 50 °F.

Why not volunteer at the Refuge, and while you are there, admire the amazing Faux Bois bench created by three of our Master Naturalists?