NORTH TEXAS MASTER NATURALIST

THE DRAGONFLYER

Fellowship of the Spring

When world events conspire to impose dark doomscrolling emptiness, spring is consistently alluring. Full of sunny days, bright blooms, and colorful garb, this uplifting season kindles and sparks our flora and fauna to rise to the occasion. Before you go out there, join us in here to explore a Blackland Prairie remnant and limestone escarpments, trout lilies, geckos, anoles, and a revealing peek at a herpetology collection.

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TROUT LILY: A STORY BY: MARY MAY

The other day while picking up groceries I ran into Ms. Martin, also known as Meg, my daughter's 2nd grade teacher. She started to laugh as she walked up to me and said, “Hey, do you have a moment, I want to share a story with you about Leah. You will love this!”

“Of course,” I replied, assured by Meg’s jovial attitude that my sassy, spunky girl had brought only joy into whatever the school situation was she was going to share with me.

“So last week Sarah Thompson, the other 2nd grade teacher, and I were walking the kids to the playground for break. Leah was with her friend Jeanie, you know Jeanie right? She has bright red hair that sticks up everywhere.”

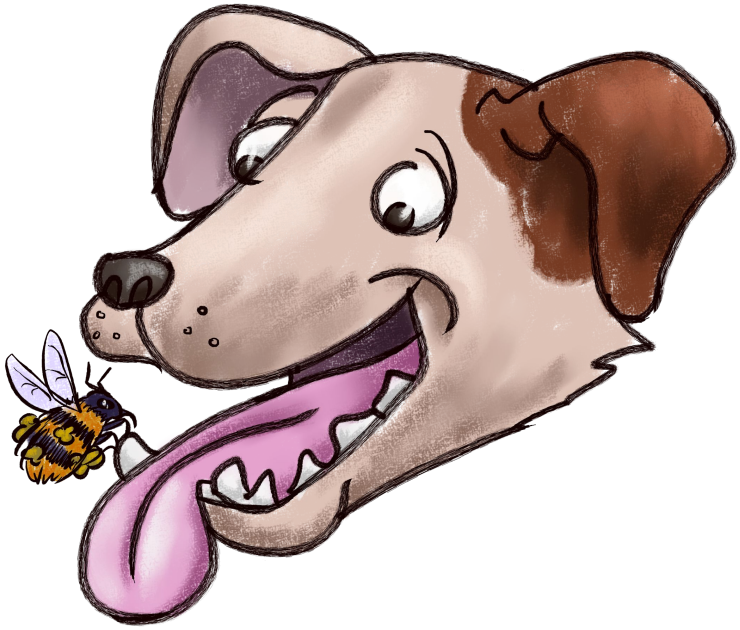
“Jeanie is over all the time!” I replied. “She and Leah have a blast together and get along so well, most of the time that is.”

“Right,” Meg replied, “so imagine those two girls following us closely, hanging on every word we said. We could hear the girls chattering away about what we were talking about. I’ll try to share with you the conversations as it unfolded. You’ll love this story, especially since I know you are a part of the North Texas Master Naturalist group! So it began with me asking Sarah Thompson if she had seen a photo I had taken….”

Teachers:

“Did you happen to see the picture I sent you yesterday? From my walk at White Rock Lake?” I asked Sarah.

“You mean the picture with the bee covered in all that pollen? Sitting on the dogtooth? It was beautiful! Majestic really. The way the bee was enfolded within the dogtooth, like it was safe and secure,” Sarah responded.



TROUT LILY: A STORY (CONTINUED)

Girls:

"Jeanie, did you hear that? Did you know bees could sit on a dog's tooth? I had no idea bees liked dogs at all? Weird!" Leah told her friend.

Teachers:

"I'm confused," I replied, "It was a picture of a trout lily, not this dogtooth! I think there was a picture of a bee I sent you as well, but I am talking about the picture I took of the trout lily growing up from the trunk of an old live oak tree."

Girls:

"WHAT?" Jeanie said loudly to Leah, "Did you know that trout can grow up out of a tree? Like, trout can live in a tree! I'm so confused!"

Teachers:

"Wait," Sarah replied, "perhaps you didn't know that a trout lily is also called a dogtooth violet and is sometimes called adder's tongue. Other examples found in this amazing Lilaceae family are cucumber-root and twisted stalk. All are spring ephemerals, meaning they appear early in the spring in order to gather as much sunlight as possible before the trees sprout out their leaves. I am learning about them in my Master Naturalist class. They are harbingers of spring!"

TROUT LILY: A STORY (CONTINUED)

Girls:

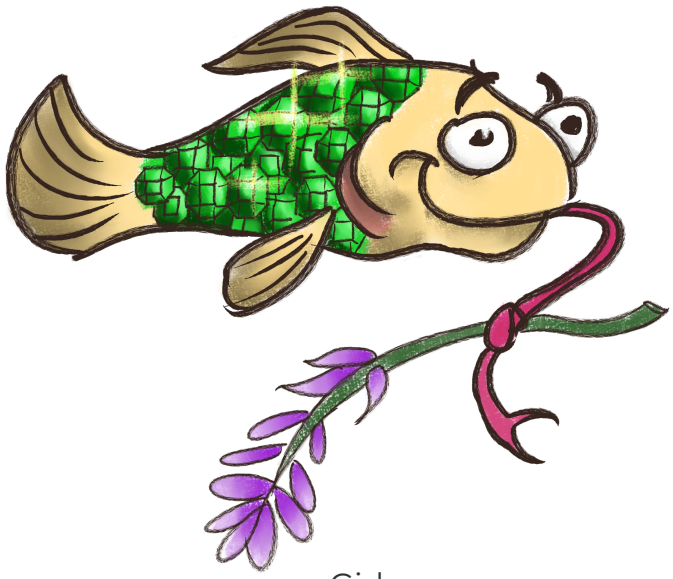
"Emeralds," both girls whispered to each other.

"That means these must be green fish," Leah hypothesized.

"Not only green, but shiny beautiful jewel green," Jeanie gushed. "Beautiful!"

Teachers:

"Ahh," I replied, " I understand now about the different names for this beautiful specimen. What I love about trout lilies is the way the lavender flower hangs from their stalk, bending downwards so they face the ground. It is those stamens sticking out so boldly that gave the trout the other name–Adder's tongue–like a reptile's tongue I suppose. Emily Dickinson wrote a poem about this, called 'We Like March' I think, which I guess makes sense now that I think about it since these trout lilies are ephemerals!"



Girls:

"Wow, did you hear that Leah? This fish carries a purple flower around with it AND it has a lizard tongue. I don't think I like this fish much anymore," Jeanie shared with Leah.

"I am so confused." Leah sighed.

Teachers:

"And in my Master Naturalist class," Sarah replied, "I learned the most amazing thing about the Trout Lily. They represent rare places here in Texas where the land has not been destroyed by man - areas of land that have not been plowed or lumbered or developed...yet. Also, the trout lily has this amazing symbiotic relationship with ants called myrmecochory. This means the ants take the seeds of the trout lily to their nests, as the seeds have a fatty layer the ants like to eat, and this disperses the seeds so the trout lily can grow and spread. Amazing, truly amazing!"

TROUT LILY: A STORY (CONTINUED)

Girls:

"I can't take this anymore," Leah said, rushing up to Ms. Martin and lightly grabbing her by the hand. "Are you telling me that these ants carry fish eggs around and eat them for supper? And you think this is a good thing for this beautiful green fish with the lizard tongue?"

"I don't think I like this fish very much," Jeanie added, "Nothing makes sense about this situation you and Ms. Thompson have been talking about."

"After this," Meg said, "Sarah and I had a good laugh, and we shared with the girls the truth: the trout lily is a rather beautiful spring flower we are blessed to see here in Texas, poking its dappled leaves out of the soil before most plants have begun to even consider what they shall wear. In fact, we told the girls, this plant is called a trout lily because its dappled leaves resemble the speckled brown purple skin of the beautiful fish it is named after."

"Ahhh," Leah said, "life makes sense again! I'm going to ask my Mom if we can go explore White Rock Lake and see if we can find any this weekend! Jeanie, you want to come along?"

"Yes," Jeanie replied with glee, and the two raced off to the swing set to play.

"So guess what we did this past weekend?" I told Leah's teacher, Meg. "We spent a few hours walking around White Rock Lake. Now I understand Leah's focused search to find the dappled leaves of a trout!"

I hope you enjoyed this story! I recommend you do the same and get out and explore, as the trout lilies will be gone soon. I will leave you with some sites where these majestic plants might just still be appearing: Post Oak Preserve (Seagoville), Spring Creek Forest Preserve (Garland), Dogwood Canyon Audubon Center (Cedar Hill), Cedar Ridge Preserve (Dallas)

OUR EAST DALLAS GEM: PROJECT REPORT FROM WHITE ROCK PRAIRIE BY: BRENDA CATLETT

At the east side of White Rock Lake Park, you will find traces of the homesteads which occupied this property over a hundred years ago. There are patches of asparagus, gardens of white irises and fields of grape hyacinths, *Muscari neglectum*, which blanket the land in blue in early spring. These are the reminders of the long-gone occupants who lived in this area before White Rock Lake was created and left these cultivated plants behind.

The east side of the lake is known to Dallas Parks as Unit 7, a precious blackland prairie remnant that is a habitat for a vast variety of plants, insects and animals. This side of the lake is home to Nick and Nora, our famous bald eagles as well as kestrels, warblers, wood ducks and many other birds. This grassland, dotted with trees and creeks, has been maintained by the Parks Department since the park was developed in the 1930's.

OUR EAST DALLAS GEM: PROJECT REPORT FROM WHITE ROCK PRAIRIE (CONTINUED)

Prairie Challenges

Time and poor management have allowed invasive plants to set up shop in the prairies around White Rock Lake. Unwanted johnsongrass seeds hitch a ride on the tires of the mowing machines to become established along the edges of trails and roadsides throughout the park. The straw-colored king ranch bluestem, *Bothriochloa ischaemum var. songaricahas*, has also marched through the prairie unabated, taking over larger swaths of once colorful and varied grassland. Other interlopers, queen anne's lace, *Daucus carota*, and the dreaded hedge parsley *Torilis arvensis*, with its obnoxious sock-destroying seeds, crowd out native plants in late spring and summer. We do what we can to control these invasive plants and work to bring back the grasses and forbs that naturally populate this prairie remnant.

The effort to restore these lands to a healthy biodiverse ecosystem, favorable for bugs, birds, mammals, reptiles and people, seems a daunting and nearly hopeless task. That's why we focus our efforts on just three acres between the Bath House Cultural Center and a popular park bench where people often sit to watch the sun set. This area is bordered by the walking trail and East Lake Highlands Drive, a lane lined with homes that have one of the best sunset views in Dallas.

Over the seven years we have kept an eye on these three acres, we have made progress, almost completely eradicating the queen anne's lace and thereby reducing its spread to adjacent areas. We've been successful in reducing hedge parsley, which seems to grow primarily on the perimeters, probably also transferred by the tires of the mowers.

OUR EAST DALLAS GEM: PROJECT REPORT FROM WHITE ROCK PRAIRIE (CONTINUED)

Johnson grass is another story. The most immediate solution is the herbicide Plateau® which the Parks Department has explored despite some public opposition and limited funding. Pulling and digging up johnson grass just makes it angry since it has deep roots and rhizomes which spread several feet. I suspect the only non-toxic solution would be repeated close mowing over a couple of years, to kill the green shoots, thus starving the rhizomes. This would compromise the prairie and is not feasible from a cost and labor standpoint. We have learned to tolerate the johnson grass for now and hope it has a poor growing season. Some years are better than others. We work around the johnson grass to promote the growth of native species where the areas are clear.

The Goats

The prairie hosted 250 volunteers this February who happily and methodically chewed the thatch, broke up the ground with their hooves and left fertilizer gifts behind. It will be interesting to see the impact the efforts of this goat herd will have on new growth. The goats attracted many new visitors to the prairie every day during their two-week stay. Their greatest benefit may be that they have raised public awareness and appreciation that the White Rock Prairie is a beautiful complex ecosystem, home to many species and worth preserving.

OUR EAST DALLAS GEM: PROJECT REPORT FROM WHITE ROCK PRAIRIE (CONTINUED)

Different Year to Year

One of the great advantages to living close to White Rock Prairie is seeing the changes from season to season and year to year. Last year was a banner year for gorgeous golden Indian grass. Each year is different, as some species thrive and others take a step back. We welcome the early spring bloomers like the non-native grape hyacinths, *Muscari neglectum*, the elusive trout lilies, *Erythronium albidum*, and the cheerful crow poison, *Nothoscordum bivalve* which pop up in early March.

When spring arrives, we are always optimistic about the future of White Rock Prairie. Appreciation for this ecosystem grows and volunteers show up when there is work to be done. If you are interested in helping with the conservation and restoration effort at White Rock Prairie, contact Brenda Catlett at btcatlett@gmail.com

iNat Species Feature

Star Jelly

Nostoc commune Photo by***: @xenabird* on iNat**

While birding with a group off the Trinity Forest Trail near Joppa Preserve, Karen Carpenter spotted what appeared to be a mass of decaying plant matter. The gelatinous mass was at once intriguing and off-putting, like a failed elementary school science experiment.

Daring to pick it up, the bravest birder obtained an iNat ID of the bacteria known as Star Jelly. Seemingly preferring alkaline soil, brackish water, and wet rocks, this one-cell bacteria can survive extreme conditions in polar and arid regions around the world by fixing nitrogen from the atmosphere, going dormant under adverse conditions, and multiplying and colonizing via binary fission. It is considered edible and an anti-inflammatory nutrient in Southeast Asia.

Have any weird, noteworthy and exciting observations, or see something incredible posted in the iNat community? Share it with *The Dragonflyer* at dragonflyer@ntmn.org!

A RECOUNTING OF TALES AND SCALES BY: CALEB HINOJOS

In November of 2025, a group of Texas Master Naturalists and herpetology enthusiasts were able to visit a local research museum and get a guided tour from the curator Greg Pandelis. As we slowly trickled in, we were immediately met by a large python skeleton. Other oddities of interest included a leatherback sea turtle skull, multiple alligator snapping turtle shells on the wall, and a monitor lizard skeleton. After the majority of us arrived Greg began to talk to us about the history of the collection. The Amphibian and Reptile Diversity Research Center is a museum that began in 1956 thanks to the efforts of a man by the name of Dr. William F. Pyburn. He originally pursued this because he wanted his students to have hands on specimens to study for class. During the 1970s he would take a series of trips to the neotropics where the collection would grow from 8,000 specimens to 30,000 in roughly one decade. This near quadrupling of specimens meant that more space was needed, and eventually a home was found in the basement of the life sciences building on the University of Texas at Arlington campus. In 1982 Dr. Pyburn retired and a young well-respected herpetologist by the name of Jonathon Campbell took over. Over the next two decades the collection would triple in size due to Dr. Campbell's endless efforts in the field. A little after the turn of the millennia, the once ample space that was enjoyed in the basement began to overflow with specimens and a new space was needed.

A RECOUNTING OF TALES AND SCALES (CONTINUED)

In 2004 the Amphibian and Reptile Diversity Research Center opened. Collections continued as usual, but in the 2010s two major donations were made by the Fort Worth Museum of Science and History as well as The University of Louisiana at Monroe which increased the ARDRCs total collection to over 175,000 specimens. Currently the collection now has over 200,000 specimens which puts it in the top ten largest herpetology collections in the world, and is the world's premier collection of reptiles and amphibians from Guatemala. After this, the group chatted for a bit, looked around, and then headed into the specimen processing room.

In the processing room, Greg proceeded to discuss how specimens are stored, tagged, and utilized. As we entered the room my eyes became fixed upon the table and the large number of specimens that were awaiting processing. Almost immediately I spotted species from multiple continents. Blood pythons from the Malay Archipelago, ball pythons from Western Africa, as well as coral snakes from South America. Among the many specimens scattered across the tables, a series of rattlesnakes caught my attention since they all had their venom glands removed. Although strange, I could tell that these were precise cuts, and these were probably being utilized in some scientific research. We were then told about how a professor on campus was utilizing the mRNA transcripts in the venom gland to determine gene expression and therefore what components were most abundant in the venom. When combined with location data, this could really tell us a lot about the evolutionary pressures in the animals' home range, as well as how venom within a species can change across a landscape. While perusing I also noticed a jar which had three diamondback watersnakes of various sizes in it. This was a reminder that species don't necessarily have to be exotic or rare in order to be stored at a repository. The animals in our own backyards are worthy of scientific inquiry as well.

A RECOUNTING OF TALES AND SCALES (CONTINUED)

After some time, we moved into the library. Greg began to talk about the collection of literature, and I decided to peruse it for myself. Across the top of one of the filing cabinets I noticed the large hide of a boa constrictor as well as a turtle shell that could fit a small human inside. There was also a large alligator skeleton posed above one of the working stations. The literature was composed of a variety of interesting things which included papers which were accepted to journals but not available digitally, tomes on various reptile and amphibian life histories, as well as a variety of books which had fun titles like “The Sex Life of Animals.” There was also a display near the middle of the room which featured two species of horned lizards from Mexico demonstrating the variance in sizes of the genus.

One of the most compelling and important items in the library, in my opinion, were the recordings of Dr. Pyburn. They were made in the 1970s in Eastern Colombia. Because this was before chytrid had become a worldwide pestilence, these recordings are probably some of the only artifacts which truly give a snapshot into frog diversity for the region. As someone who enjoys going out into the field and utilizing modern technology to record my adventures, what really drew my attention was the machine. I have never used a reel to reel, but imagining a man venturing out into the wilderness with all the equipment needed to record a large series of tapes really helped me understand the dedication that this machine took. It really cemented in my mind that we live in a golden age of technology for scientific research, and as naturalists, we should feel extremely fortunate to be able to take out our phones and get audio recordings or utilize our cameras and get photos which both benefit scientific data via iNat or other means.

A RECOUNTING OF TALES AND SCALES (CONTINUED)

Eventually we made it to the collections rooms and were not unimpressed by the sheer volume. Greg began by showing us some caecilian specimens. For those who haven't heard of these strange amphibians, they are not native to North America and highly concentrated in the neo-tropics, but also exist in Africa and Southeast Asia. They are primarily fossorial which adds a great bit of difficulty when it comes to finding them. In fact, many of the specimens in the collection are from the work of Dr. Eric Smith. When sections of rainforest were being bulldozed for agriculture purposes, he would walk behind the bulldozers and grab specimens as they became exposed. Although this is an unfortunate way to collect, it is the reality of the world.

Another amphibian which we were shown, and which seemed to steal the show, was one of the giant Asian salamanders. This specimen was from China. One thing that really caught my attention was the fact that this salamander was a little over three feet, but when fully grown can get up to almost six feet.

A few other impressive specimens were also shown to us that day. One was the goliath frog from Cameroon. This is the largest recorded frog on earth and is the size of a dinner plate. The collection also has the largest lizard on earth, the Komodo dragon.

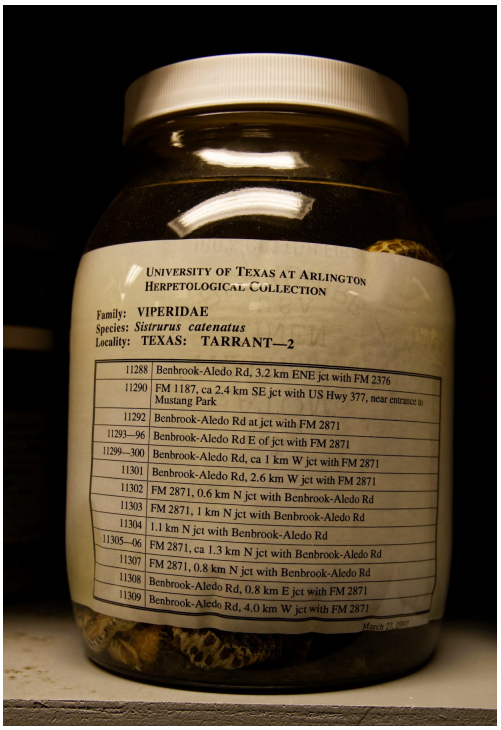
A RECOUNTING OF TALES AND SCALES (CONTINUED)

As I moved among the shelving units many of the species caught my attention. A handful of the python species were ones that I used to keep, primarily in the genera *Python* and *Morelia*. There was also a venomous species that seemed to call to me. The king cobra. My first time seeing one was in the private collection of Tim Cole, the revered Texas herpetologist who started the Austin Reptile Society. Upon visiting his house, I walked up to the enclosure and it raised its head to meet me face to face. I was confronted with the reality that I had never had an encounter with another captive snake like that. The way that it seemed to peer into my eyes was almost intelligent. The fact that it was also so large, over eleven feet, really took me by surprise. Quite sad to see one of these beauties contained to a jar of preservative, but I appreciate that it is available for us to study.

When it comes to impressive specimens for study, it is hard not to discuss the type specimen cabinet. According to the International Code of Zoological Nomenclature a type specimen is the exact specimen which has been used to describe the entire species in scientific literature. At the ARDRC, the cabinets were quite stocked with type specimens. The red ribbons denoted the holotype and neotype specimens while the blue indicated paratypes. In terms of treasures, this cabinet helped to push scientific knowledge forward. Priceless at best, weight equivalent of gold at worst.

After showing us the cabinets of gold, Greg allowed us to roam freely. I arrived at a jar which contained a local species known as *Sistrurus catenatus* aka the eastern massasauga. What an interesting piece of history this was. First off, if you look up the range map for the eastern massasauga you might be quite surprised.

A RECOUNTING OF TALES AND SCALES (CONTINUED)



It ranges from Missouri to Pennsylvania on the southern end and goes slightly above Toronto as the farthest northern sightings. What caused this? Well, at the time that these specimens were collected, 1997, the genus *Sistrurus* had only one species and some subspecies. After a 2011 study looked at mitochondrial and nuclear loci there was enough evidence presented that there were actually three species in this clade. Therefore, the western massasauga arose from subspecies to full species status as *Sistrurus tergeminus*. I think this story really elucidates a little bit about the reality regarding museum collections. Though new technologies arise for new fields of study and insights into evolutionary relationships, updating artifact reservoirs which were created for other periods of time and technology is a disservice to the study of natural history as a whole.

Another thing that I noticed was how many specimens were found in Tarrant County. As an adult, for as long as I have been out herping I have yet to find one of these in the wild. This could be due to luck or site selection, but whatever the case may be, having these records can allow for interested folks like naturalists to go road cruise and explore these areas to see how populations are holding up in the face of urban expansion. Combined with iNaturalist observations, these things can really help to paint a picture of current populations. Thank you, Greg Pandelis, for giving all of us herp nerds a tour of one of the most interesting repositories of herpetology history.

HERPETOLOGICAL HITCHHIKERS

BY: LAURA HAYNES

If you step outside on a warm evening, you are likely to hear the familiar springtime crooning of frog choruses, the questioning call of barred owls, or the summertime thrum of cicadas. In recent decades, two new voices have joined the symphony of the North Texas night: the Mediterranean house gecko and the Rio Grande chirping frog. These successful stowaways possess some unique adaptations that have helped them to survive and spread far from their native ranges.

The Mediterranean house gecko (*Hemidactylus turcicus*) is a small, nocturnal lizard that eats a variety of insects, spiders, and other small arthropods. Adult geckos typically reach 4 to 5 inches in length, including their tail. Their main body color ranges from pale shades of cream and grey brown to translucent pink interspersed with blotches and bands of darker brown. They also sport distinctive black and white banding on their tails. Along their back, large, round, keeled scales of bright yellow or white are sprinkled amongst their tiny, smoother body scales, giving them a bumpy texture.

Just as their diet is widely varied, Mediterranean geckos utilize a much broader range of microhabitats than native lizard species. These adaptable creatures can be found in leaf litter and under landscaping rocks alongside fossorial little brown skinks, or they might be seen climbing more than 6 feet above the ground on the sides of buildings where arboreal green anoles stalked prey earlier in the day.

HERPETOLOGICAL HITCHHIKERS (CONTINUED)

Native to Southern Europe, Northern Africa, and Western Asia, Mediterranean house geckos are now common throughout the United States and have been present in Texas for over half a century. The earliest reliable record of their presence dates back to Brownsville in the 1950s, where they likely arrived through port traffic. Since then, their range in the state has expanded with each passing decade. In 1974, their presence was limited to the lower portion of the state, south of Del Rio, San Antonio, and Houston. As of 2023, they are documented in 193 of Texas' 254 counties.

Their global success is due in part to many incredible gekkonid adaptations that we would otherwise be otherwise unlikely to see in North Texas outside of a zoo. Most geckos possess highly developed toe pads covered in modified scales and tiny hairlike structures, enabling them to utilize electromagnetic forces to climb straight up a variety of surfaces including glass. Those remarkable toe pads even allow them to hang upside down, hunting small arthropods on ceilings. Members of the gecko family are also one of the only reptiles with true vocal cords, allowing them to click when searching for mates or to yip an alarm call.

Several factors seem to mitigate the impact of Mediterranean geckos as invasive species. Although these non-native lizards are quite hardy, even exhibiting resistance to pesticides, they have a relatively low reproduction rate, laying clutches of just two eggs a couple times each year. While the native lizards of North Texas are diurnal, these nonnative geckos hunt only at night, reducing possible resource competition. Mediterranean geckos now occur in over of the 30 western counties where our one native gecko species, the Texas banded gecko, lives. As both hunt insects at night, they could be in competition for resources. Even if Mediterranean geckos are not outcompeting native lizards in Texas, they can carry mites and other parasites, and it is worth continued study to monitor the possibility that they might spread infection to other reptile species.

HERPETOLOGICAL HITCHHIKERS (CONTINUED)

While Mediterranean geckos thrive in urban and suburban environments, they have not been observed successfully utilizing our forests, grasslands, or wetlands. They are considered to be a fully synanthropic species and their range expansion in Texas seems entirely dependent on people transporting geckos or their durable eggs from one human structure to another. Several recent studies indicates that the success of Mediterranean Geckos as an introduced species in much of the state is not due to outcompeting native animals but rather that they haven't had to compete much at all. When human construction and activity displace native habitat, it creates a new, empty niche that these geckos are able to successfully fill.

Our other non-native herp, the Rio Grande chirping frog (*Eleutherodactylus campi*), is a tiny, nocturnal, terrestrial frog native to Northeastern Mexico and far South Texas. Adults typically grow to less than one inch in length. Their moist skin has a mottled pattern of browns, olive greens, and blacks on the dorsal side while their pale belly skin is nearly transparent.

HERPETOLOGICAL HITCHHIKERS (CONTINUED)

Unusual among frogs, the Rio Grande chirping frog entirely skips the free-swimming tadpole phase and undergoes direct development. After eggs are laid in damp soil or leaf litter, the embryo develops within the gelatinous egg and hatches out as diminutive replica of the adult frogs. This reproductive strategy frees chirping frogs from a dependence on ponds, puddles, or ephemeral pools for breeding, making the frequently watered soil of potted plants an ideal nursery. As landscaping plants have been shipped from the Rio Grande Valley across the country in the horticulture trade, these tiny frogs have experienced a rapid range expansion. They are now found as far north as the DFW Metroplex, east into Louisiana, and in scattered locales throughout the American Southeast.

Here in North Texas, they are often found in flower beds, ditches, thickets, and other moist areas. They hide under landscaping rocks or other cover objects by day, coming out at night to call and to hunt. Rio Grande chirping frogs are presumed to be insectivores, but very little research has been done on their behavior and ecology, including their diet. In the Mexican portion of their range, both male and female chirping frogs have been documented making vocalizations. As calling behavior is limited to males in most frog species, this is yet another question awaiting research with regard to the chirping frog.

Although Rio Grande chirping frogs are largely found near man-made structures and landscaping, preliminary research indicates that they are not completely restricted to the human modified habitats. From the Texas Gulf Coast westward to Bexar County, these nonnative frogs have been occasionally observed in natural habitats with minimal human disturbance. Truly arid conditions and long durations of extremely cold temperatures seem to be the decisive factors limiting their success when humans accidentally introduce them to a new location. As climate change brings warmer temperatures and more unpredictable precipitation patterns, the chirping frog is projected to survive in areas north of the DFW Metroplex but may lose parts of its native range to the south.

HERPETOLOGICAL HITCHHIKERS (CONTINUED)

As the Rio Grande chirping frog has hitchhiked north, its expanded territory now overlaps with that of the cliff chirping frog, another species of rain frog, which has historically ranged from Central Texas through the Big Bend region into northern Mexico. For the five decades that this range overlap has existed, herpetologists have expressed concerns about the possibility of competition, hybridization, or novel pathogen introduction. Thus far no negative impacts have been documented. However, other introduced species in the *Eleutherodactylus* genus have proved to be problematic invasives, so it is a situation that deserves continued monitoring.

For so many questions regarding this tiny frog, insufficient research and surveys prevent us from having much of the information needed to give confident answers or make informed impact assessments. As it currently stands, we can take some comfort in the thought that Rio Grande chirping frogs appear to be flourishing, with little to no ill effects on their new neighbors, at a time when so many other amphibian species are in decline.

As master naturalists who have collectively spent thousands of hours pulling privet to restore habitat, we are rightly wary of the possible ecological devastation that invasive species can wreak. While further research on the impact of these nonnative herps is still needed, there is little evidence so far that Mediterranean house geckos or Rio Grande chirping frogs are displacing or negatively affecting native species. So, as the weather warms up this spring, I hope you take a moment to notice and marvel at these remarkably adaptable little creatures that have found a way to thrive alongside us here in North Texas.

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iNat Species Feature

Green Anole

Anolis carolinensis Photo by***: @payton25743* on iNat**

Trout lilies aren't the only colorful emergence in late winter and early spring. Warmer weather also brings out the green anole. These slender lizards, closely related to the iguana, can change colors between shades of green and brown depending on their mood or stress level.

Males turn a bright green to protect their territory and their dewlap a bright red to attract mates. These crossfit acrobats, among lizards perhaps the most adapted to human encroachment, provide endless backyard entertainment for cats and dogs with their agile pushups, dewlap displays, lunges, sprints, and other calisthenics. Unlike geckos, they are diurnal, aggressively territorial, and do not bundle their car and auto insurance.

Have any weird, noteworthy and exciting observations, or see something incredible posted in the iNat community? Share it with *The Dragonflyer* at dragonflyer@ntmn.org!

ESCARPMENTS

BY CHARLIE MARSHALL

"I saw that a little height on the prairie was enough to look like much more."
--Frank Lloyd Wright

The Blackland Prairie is often perceived as a featureless expanse relieved only by the concrete, glass, and steel of human construction. Over geological time, however, mountains and oceans rose and receded there, vestiges of which still punctuate our prairie landscape.

Beginning about 65 million years ago, the uplift of tectonic plates caused sedimentary remnants of Paleozoic Era mountains (today's Ouachitas Mountains, which we once shared with Oklahoma and Arkansas) to force layers of calcified Cretaceous Period marine life through the Earth's crust along a fault line running from the Rio Grande Valley to Dallas. The resulting exposed limestone layers, geological oddities often angled like slices of an onion, have been known by many names. Ridge. Bluff. Outcropping. Rocky perch. But these prosaic references don't begin to capture this dramatic feat of geology like "escarpment."

Literally a raised margin at the edge of a plateau or separating two plains of different heights, the word escarpment linguistically expresses both its formation and shape. The stress on the middle of three syllables—es-CARP-ment—captures the explosive uplift, a percussive note separating adjacent flat syllables. It's a metrical treasure to the ear and an unexpectedly elevated bit of natural delight to the eye.

ESCARPMENTS (CONTINUED)

Buffaloes, Indigenous peoples, pioneers, railroad and highway builders, and architects alike have found these prairie escarpments to be strategic vistas and passageways; dramatic, even sacred. In his travels across Texas on the eve of the Civil War, landscape architect Fredrick Law Olmstead likened the vast prairie he encountered to "the swells of an ocean after a great storm" and found the "distant views" from the brows of the swells to be exhilarating. He noted particularly the "vast line of cretaceous formation" which corresponded to "the similar formation lying parallel with the Atlantic sea-board." (The following year, Olmstead would win the design competition for New York's Central Park, which would contain a large meadow and granite escarpments.)

The Hill Country of Texas possesses the prominent and celebrated hills, escarpments, and rock formations. The more meager escarpments of the Blackland Prairie have not been treated as kindly. Here, upper layers of escarpments consist of a soft porous limestone known as Austin Chalk or an interbedded mixture of soil, sediment, and limestone known as marl, which erodes and has been routinely scraped, removed, and excavated for the inexorable growth of ambitious cities. Since Austin Chalk formations signaled access to harder foundations underneath, transportation corridors in particular—Interstate 35 and the Missouri, Kansas and Texas Railroad most notably—followed the escarpments. The bluff along the Trinity River which housed Dallas' founder was, after the river's rerouting behind levees, replaced by overpasses and a grand civic entrance plaza.

The demands of speculative development, with symmetries of crisply right-angled construction and repetitive street grids, also left little tolerance for ragged, inconveniently located limestone escarpments.

ESCARPMENTS (CONTINUED)

Those not removed have often been relegated to alleyways and unmarketable remainders and pockets, obscured or concealed by billboards and overgrown foliage, or assigned to floodplain and neglected parkland. On today's urban prairie, the only distant views are those from sleek high-rises and triple overpasses.

Because elevated rocky ridges on the prairie necessarily alter water flow, channeling runoff to lower grades, creek beds (White Rock Creek and tributaries especially) often accompany escarpments, etching through limestone layers. Cedar Hill preserves are obvious and accessible examples of escarpments in a less urban setting. You can find escarpments elsewhere, hiding in plain sight, if you seek them out. But that's the point. Like nature generally, escarpments cannot be read like a building in a drive-by glance. They must be explored and examined. Neither linear nor precise, escarpments are a jumbled tableau of nature, an "unofficial countryside," as British nature writer Richard Mabey terms the bits of nature that stubbornly flourish in urban nooks and crannies.

Escarpments will change the way you think about the prairie. Conjuring up a distant past, they introduce a philosophical or spiritual dimension. They allude to a depth, reminding that it's not all about the surface and that life unfolds in unanticipated episodes.

For the unexpected hidden sites, the dramatic and sacred escarpments, two very different locations stand out.

ESCARPMENTS (CONTINUED)

Dallas Theater Center on Turtle Creek

Overlooking a creek named for the turtles languidly sunning on its banks, a dramatic structure unexpectedly emerges from a rocky wooded slope. This sculptural object is hardly just another showy bit of geometry plopped down in Dallas by a celebrity architect. Even after sixty-seven years and the addition of clumsy alterations and parking lots, it projects both an architectural and geological significance: a revolutionary midcentury theater design that also celebrates the prairie escarpment.

The architectural achievements—the openness of continuous space based on a diamond-shaped 60/120 degree grid (no right angles here); a circular tower, cantilevered over a revolving stage extending into the audience, eliminating the proscenium arch; and a spiraling entry sequence, each of which is expressed on the building exterior—are striking, but it's the site and the building's response to the site that are the most interesting.

Known for his horizontal "prairie architecture" that embraced the Midwestern prairie, Frank Lloyd Wright also embraced challenging sites from Los Angeles hillsides to Pennsylvania waterfalls. This small 1.2-acre site was more challenging than most. Too small to accommodate all that a newly-formed theater company wished on a limited budget, it was also located in a flaky limestone swale in the middle of a ruggedly steep 6-acre escarpment tract. The undulating tract plunged 50 feet diagonally from its highest point on the limestone escarpment to the creek below, with a Katy railroad embankment running along the height of the escarpment border. Scrubby Texas red oaks (*Quercus shumardii* and *Quercus buckleyi*), trees of the escarpment, occupy the limestone upslope and cedar elms the lower elevations.

ESCARPMENTS (CONTINUED)

The architect would have been familiar with the escarpment tract from several trips to Dallas on the same railroad line and the tract's similarity to his native Wisconsin. There, on ancestral farmland overlooking the Wisconsin River, he built his own home along the brow of a ridge. Using locally quarried stone, the placement of the home expressed his design philosophy of making a structure of the site, rather than just on the site, as though it had always been there. The Dallas theater was similarly inserted at the brow of an escarpment. Vertical rather than horizontal, the design stacked its uses due to the small footprint and embedded the building into the rock, the poured-in-place concrete exterior painted white to match the limestone. Still reflecting the horizontality of the escarpment, the horizontal extended planes of a narrow window band and balcony terraces mirrored the limestone layers, fitting the building into the site. The upper balcony terraces matched the height of the escarpment behind the theater and the height of the circular tower barely exceeds the highest elevation of the tract so as not to overwhelm the site.

It still appears as an integral part of the site, primordial, as though forced through the Earth's crust.

Subsequent and proposed additions reflect the continual Dallas ambivalence toward historic buildings and naturalistic environments. In addition to interior alterations to the historic structure, the entry terrace was removed and enclosed, the escarpment extending to and forming a grotto at the entrance was removed, a second entrance was added, and the sloping site was scraped and flattened for parking and an architecturally incompatible (and now dilapidated) administration building. (Parking was originally intended beyond the railroad embankment, accessible via a tunnel under the railroad, so that the theater and entrance were approached from the top of the escarpment, but access was never obtained.)

ESCARPMENTS (CONTINUED)

A critic in the 1980s observed that the additions made the theater "look like a forlorn ammonite in a sea of asphalt," a knowing reference to the fossilized spiral-shelled marine mollusks embedded in the limestone layers. Now owned by the City of Dallas, the escarpment tract and theater were the subject of a 2010 master plan which, though never formally adopted, proposed restoration of the original historic features of the theater and its escarpment setting and connection of the tract to the Katy Trail, the urban walkway replacing the abandoned railroad track. A 2022 privatized master plan by the theater tenant proposed adding additional structures—two theaters, a parking garage and restaurant, a multi-story administration and rehearsal building, a corporate event space, and an arcade linking this new "arts district"—which would have infringed on the theater, compromised the sightlines, and further removed and obscured the escarpment setting. Wright's son, architect Lloyd Wright, decried the proposed plan as making the theater look like "a hood ornament in a used car lot." This latest plan for the site was wisely tabled (for now) due to the extraordinary cost and poor precedent of developing public parkland.

Elements of the escarpment remain and deserve protection. If you squint, you can appreciate how the escarpment's exposed limestone layers inspired the theater architecture, how the building honors the setting by tucking into the site, and how theatrical an escarpment can be.

Piedmont Ridge

On a lovely May morning last year, Linda Polen led me up a chalky limestone trail leading to the Scyene Overlook, one of the highest points in Dallas, located in the Piedmont Ridge line of limestone escarpments in South Dallas. We were completing a journey we had attempted three months earlier.

Then, after several workdays to liberate a stand of eastern red cedars (*Juniperus virginiana*) in what she called "the Lodge Pole Woods" and intrigued by her recounting of Indigenous history at this mysterious place, I had wanted to ascend the high point, but a cold mist and invasive plant growth obscuring a primitive overgrown trail had, to her embarrassment, caused us to get lost.

ESCARPMENTS (CONTINUED)

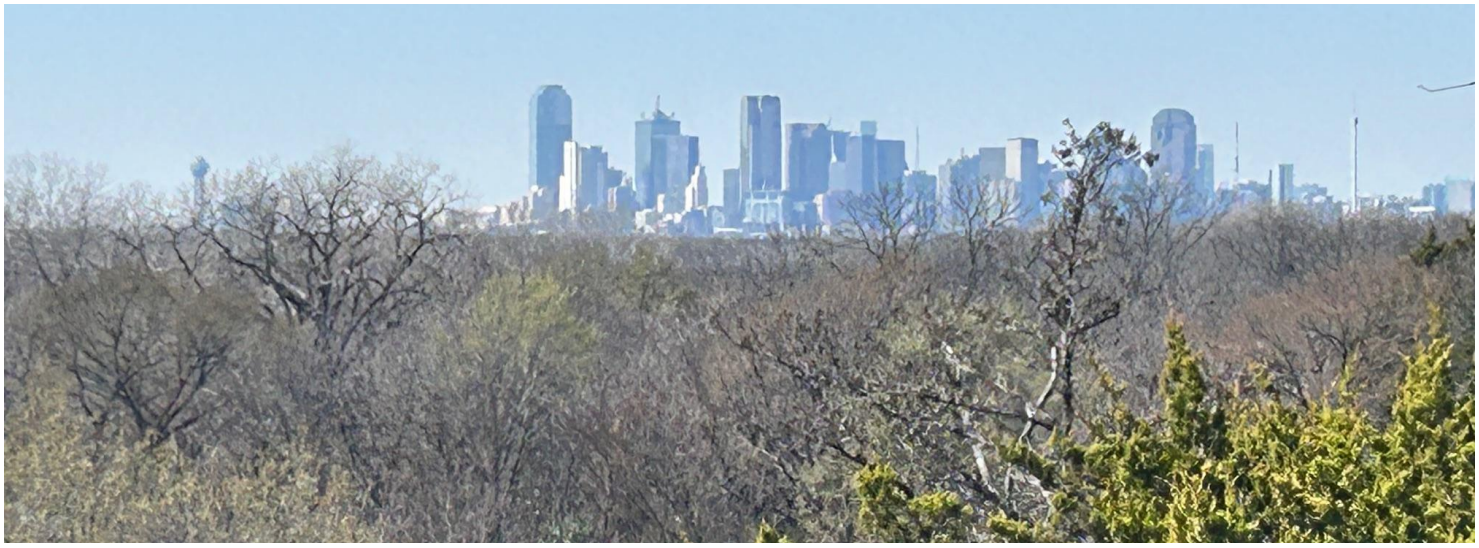
As we neared the summit this day, she walked ahead and asked me to wait. Removing a beaded pouch from her pocket, she sprinkled tobacco leaves as she reverently introduced me to the spirits who protected and guarded the site. To Polen, an anthropologist and expert on the Penatuhkah band of the Comanche people, this was a sacred place filled with spirits. What followed was a remarkably soulful day filled with diverse ecosystems, spectacular vistas, and unexpected insights.

The Penatuhkahs were the first Comanches to leave the Great Plains for Texas where, after arriving in the early 1700s, their mastery of the horse permitted them to command a vast prairie empire stretching from the Trans-Pecos across Central Texas prairies. A native Texan, I had known of course about the Comanche presence in Texas, a presence typically portrayed as that of a ferocious nomadic tribe defined by a warrior and buffalo culture and cruel raids on settlers. I had not known about their mastery of prairie navigation, reverence for the escarpment, presence in the Great Trinity Forest, or spirituality, but the signs were all around us.

Polen explained that, in addition to river corridors where available, the Penatuhkahs navigated the vast prairie via both a network of escarpments which they used for surveillance, landmarks, and smoke and fire signaling across long distances and the use of marker trees. The spiritual center of their world was two Central Texas escarpment peaks (near today's Santa Anna, named after a Penatuhkah leader, in Coleman County) where a meteorite, which they believed was sent by the sun, had crashed. Rather than a uniform martial approach, they had transactional relationships with certain European intruders (Spanish missions, for example, were permitted on the margins as a source when they chose for horses and goods, whether taken at will or in trade) and more sedentary agricultural tribes who occupied the Trinity River tributaries known collectively as the Wichita or Kirikir'i-s, groups of Caddoan-speaking peoples principally including the Wichita, Waco, Tawakoni, Kichai, Iscani, and Taovaya. With less suitable wood sources on the arid prairie, they sought out trees in the eastern Trinity forests. And of course they followed the buffalo.

ESCARPMENTS (CONTINUED)

Located on the eastern edge of their homeland, the escarpment geology of Piedmont Ridge created a welcome, accessible, and secure environment integral to their world. A buffalo trace which would become Scyene Road ran along the northern top of the escarpment. Its high point permitted a site for smoke and fire signaling, strategic views of other high points to the west, and early detection of buffalo movement, unwelcome threats, and the arrival of trading partners. Two other high points, today's Lacywood Overlook and Piedmont Ridge Overlook, provided additional vistas as the escarpment stretched to the south. Fed by runoff from the escarpment and spring water, a stream now named Oak Creek originated on the escarpment's lower elevations and flowed to White Rock Creek and thence the Trinity, providing both a clear water source and a transportation corridor. The fertile soil, fueled by its nutrient-rich limestone base, permitted plant growth not found in their arid prairie homeland. The riparian bottoms were ideal for groves of pecans and walnuts which were planted and nurtured here as Indigenous people did elsewhere along streams. Eastern red cedars on the moist slopes below the escarpment, unusually slender, tall, and straight, too were genetically selected and planted close together to ensure the dimensions of the transportable poles used for their lodges. Archeological evidence of wood working exists there. Edible and medicinal plants favored by Comanche peoples are still present in prairie remnants on the escarpment slopes.



A broad flat area between and extending west of the peaks, recreational fields today, served as forage for their horses and a campground and trading area with the local tribes. The spiritual center of the area, a shallow limestone-bottomed amphitheater which slopes gently to the west, was located behind Devon Anderson Park on the southernmost end of the limestone ridge above a deep ravine parallel to Jim Miller Road. Oral traditions and instructions were shared at this Storytelling Place, as it was known, which was chosen because its limestone floor glowed on moonlight nights, enhancing the storytelling and spiritual experience.

ESCARPMENTS (CONTINUED)

In *Comanche Marker Trees of Texas*, Linda Pelon and Steve Houser describe the use of trees by Comanche peoples to navigate the prairie and denote important locations. These "marker trees," often bent and tied with yucca cords as saplings to run parallel to the ground and then bent back at a right angle to grow upward, marked or indicated direction to important sites such as a low-water crossing, trails, frontier forts, or sacred places. Of the six marker trees recognized by the Comanche Nation, it's no coincidence that two are adjacent to or contained in the Piedmont Ridge escarpment line. One, a pecan tree in Gateway Park across Jim Miller Road from the escarpment peaks, marked the location of the campground and trading area but was damaged by a utility company pruning and died after storm damage in 1998. The other, known as the Storytelling Tree, a tenacious Texas red oak with a surviving 56-inch diameter stump base from which multiple newer trunks have emerged, remains and continues to mark the location of the Storytelling Place. The escarpment ridge is considered by the Comanche Nation as a part of their traditional ancestral homeland and the marker trees and Storytelling Place have been proclaimed a sacred legacy and inheritance for future generations.

ESCARPMENTS (CONTINUED)

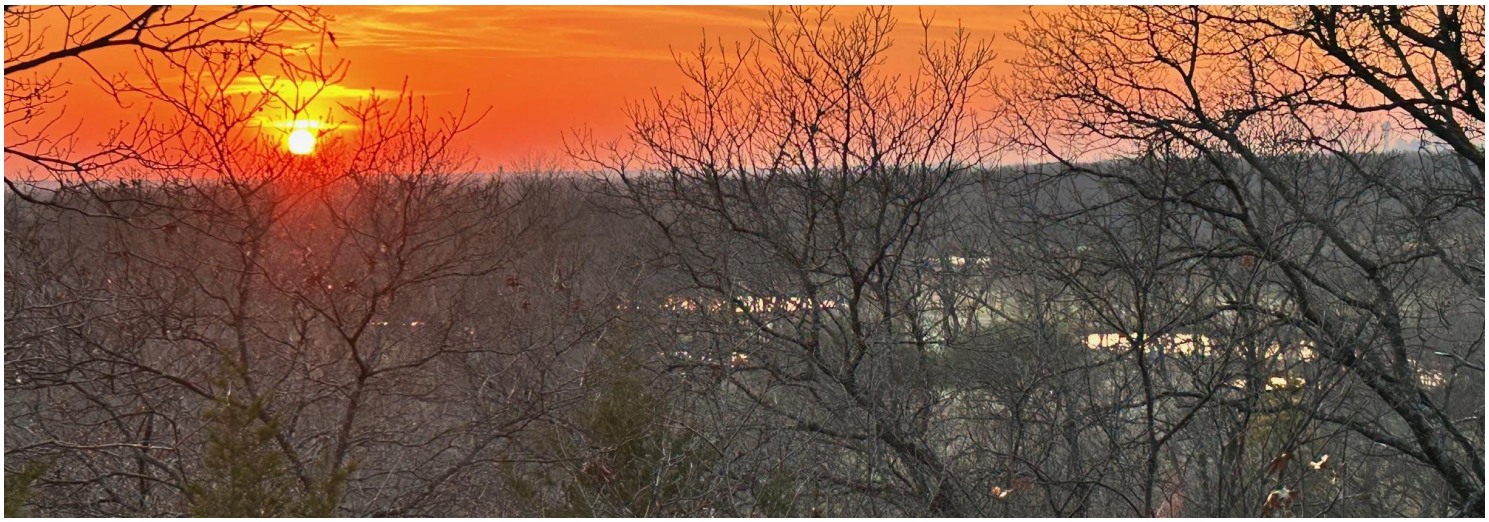
The Piedmont Ridge escarpment too has not escaped the treatment of escarpments elsewhere on the urban prairie. Originally much broader, the escarpment was bisected, dynamited, and excavated for the construction of Jim Miller Road from the high point on Scyene Road to Bruton Road. The unaltered portion of the escarpment ridge still remains visible on both sides of the road. Utility construction, previous and pending, adversely impacts trails and native plants in the prairie remnant meadows. The DART line encroaches on the lower levels of the western slope of the escarpment and would have severely damaged the Storytelling Tree site but for intervention by Linda Polen and neighborhood activists which resulted in realignment of the rail line further from the site and construction of a retaining wall.

ESCARPMENTS (CONTINUED)

Today, resilient Piedmont Ridge is having a moment. Master Naturalists and local neighbors formed Friends of Piedmont Ridge to reclaim the site from invasive plants and reestablish the primitive trail system. Trout lilies, especially abundant this year, starred during a February tour of the escarpment. In conjunction with the extension of The Loop trail system from the Lawnview DART station to the Lake June station, Greenspace is installing a soft trail system extending to the Great Trinity Forest that connects to and improves the Piedmont Ridge trails. Led by Linda Polen, the escarpment ridge has been nominated for inclusion as a National Historic Landmark District with Traditional Cultural Properties.

Since my sponsored blessing on the escarpment near the Lodge Pole Woods, I've returned often both alone and for workdays. These woods, escarpment heights, and prairie meadows signal a relationship that's more than just that of a visitor or volunteer in the presence of nature. It's something with a more spiritual resonance. It's the feeling you get upon receipt of an acceptance, a whispered confidence, an intimate revelation of a past, and a vulnerable call for reciprocity and protection.

A little height on the prairie does feel like much more. Forget the Rockies. Never mind Pacific Coast cliffs. Too far away and breathtaking anyway. On the Blackland Prairie, our escarpments have a story to tell.



MEMBER SPOTLIGHT

Lois Diggs

While Lois Diggs has had many jobs, including substance abuse counselor, oil clerk, church Secretary, and retail worker, she has been a life-long volunteer. She joined the Master Gardeners in 2012 but found herself gravitating more towards the natural world. After learning about native plants, pocket prairies, completing the Advanced Entomology Training, and volunteering at local school gardens to teach kids about pollinators, she was encouraged by her Master Gardener friends to join our Chapter in 2020. Lois relishes the Chapter's group projects and events like the Backyard Bird Count, Native Plant and Prairie Day, and Bioblitzes. She enjoys cooking, knitting, reading and introducing her friends and family (including four grandkids) to the beauty and joy the natural world gives us each day.

INAT: @loisdiggs | **JOINED:** July 2017 | **OBS:** 486 | **SPECIES:** 285 | **IDS:** 0

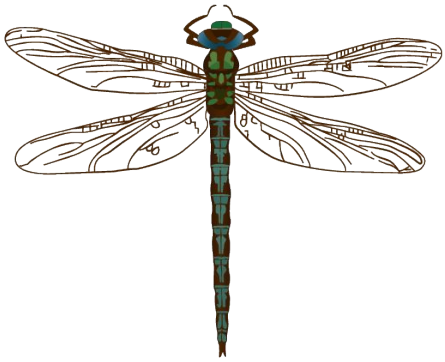
Anne Edwards

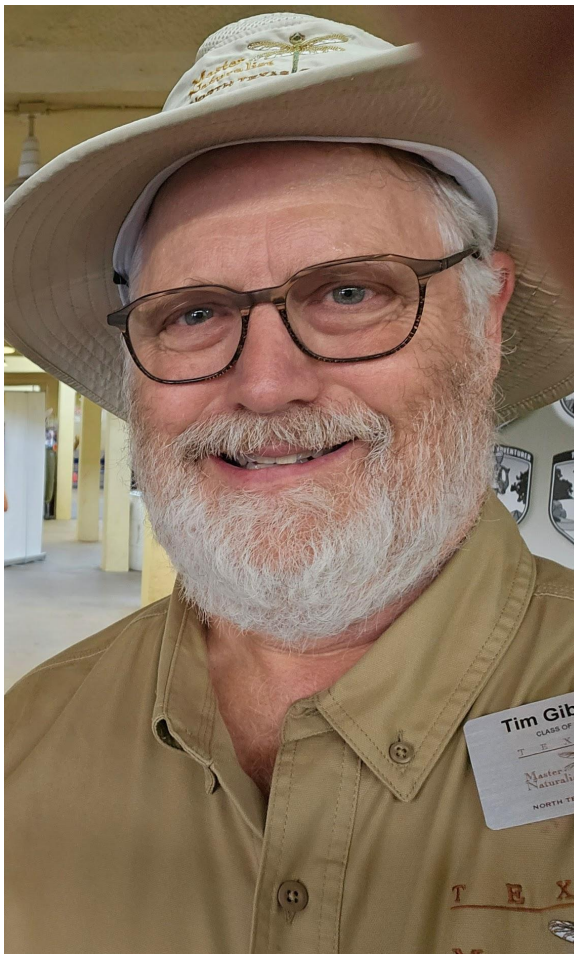
Anne Edwards joined our chapter in 2022 after facilitating a Project Unity Together We Dine event. Our chapter had representatives speak at the event and they left a lasting positive impression. As a former preschool and kindergarten school teacher, as well as experience teaching students who are hard of hearing or deaf, Anne is very keen on participating in our programs from protecting and educating about our environment to education of students to areas of social justice. She is a proud member of the DEI committee and was honored to serve as class adviser and training director for the class of 2024 and 2025. In addition to hiking, travelling, cooking and reading, Anne loves to learn new things with amazing people at the Texas Discovery Gardens. She is always happy to work with others who share a common goal.

MEMBER SPOTLIGHT (CONTINUED)

Pamela DeAngelo

Chapter member since 2013, Pamela DeAngelo first learned about us through a booth at the Texas State Fair. Former worker for the Social Security Administration, Pamela has always loved activities in nature and began birding in 1998 and has served on the board of the Dallas County Audubon Chapter. Shortly after joining the master Naturalists, she became involved in the Herbarium Project and is currently the Project Manager. Pamela loves learning about plants, and has so much fun with identification and mounting of specimens. She loves how eager everyone in our group is to help out and get involved and is proud to be one of us.





Tim Gibson

Hailing from the class of 2022, Tim Gibson joined our ranks after working for 20 years in Corporate IT and software sales. He has served on the board of many non-profits and first heard about our work through the Sierra Club and church members, as well as a naturalist brother how had quite the encyclopedic mind when it came to taxonomy! Tim loves to work with kids and is most passionate about the Buckeye Trail, TR Hoover summer camp, Cedar Ridge Preserve Young Naturalist Program and For the Love of the Lake. In addition to hiking, biking, canoeing and backpacking, he is also a student of history and plays the Irish flute, tin whistle, fife and various native flutes. He wants everyone to feel confident to take on a leadership role in the chapter and knows it will be a wonderful experience. Tim has served 2 years as our chapter's Communications Director and will serve this year as one of our co- Communications Directors.

INAT: @ttgtx | **JOINED:** May 2017 | **OBS:** 251 | **SPECIES:** 185 | **IDS:** 18

Final Thoughts

Demure. Reticent. Vulnerable. Perfect.

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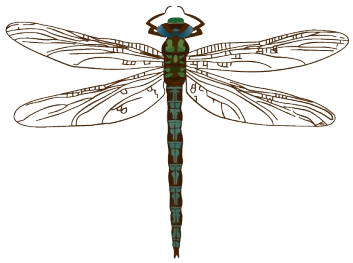
We encourage and welcome your submissions and questions.

Please contact dragonflyer@ntmn.org



The Dragonflyer is a quarterly publication providing educational and informational content for NTMN members, engaging with the organizations and groups with whom we volunteer, and fostering connections and conversations. In furthering our mission, think of it as the home for serious and substantive (even if frequently light-hearted) project reports and ecological exploration, analysis, insights, and deep-dives. Please reserve more routine chapter business, administrative news, and recognitions for other media (website, email, and chapter meeting announcements).