

The Midden

UH Coastal Center Prairie by Chuck Snyder

Galveston Bay Area Chapter - Texas Master Naturalists

October 2023

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President's Corner by Pam House

Recently our chapter member Linda Zeller posted her photo of a turkey vulture to Facebook. It garnered admiration for the photography and insults for the subject (including mine asserting it was a face only a mother could love). In response, Linda pointed out that the turkey vulture is a beautiful demonstration of form and function. [That naked head allows it to mess around in dead and rotting things without getting soiled and it also assists with thermal control.] However, the reactions to its portrait photo raised an issue that has often perplexed me - that of species prejudice.

I once jokingly accused John and Lynn Wright of being predator snobs and it does seem as though we humans have propensity for picking favorites among our wild companions. Sometimes it's based on perceived beauty or rarity. Sea turtles and dolphins get a myriad of adoring fans, but not so many of us are fascinated with the tardigrade. Often the species most evolved to adapt and survive are the least admired, such as cockroaches and sharks. Those invasive plants that are booed when mentioned at prairie conferences, such as the Chinese tallow, are very good at what they do, hence their ubiquity. In his recent talk to the Master Gardener / Master Naturalist joint meeting, Barry Ward of Trees for Houston revealed that they are not always this area's enemy.

One of the things I've most enjoyed about the GBAC Facebook posts by Elizabeth and Elisha Hehir recently has been the ones on some of the often-seen birds of our area. Gulls, herons, and brown pelicans were all featured. Their special attributes deserve to be highlighted.

Does this mean I think we should feel a moral compunction to treat all creatures with equal enthusiastic support? No, but I do think that we should realize that every kind of life contributes to the magic of the whole. Be aware that species prejudice can be a trap. Let's continue to celebrate biodiversity and cultivate our interest in the tiny, the ugly, the common, and even the noisome.

We will continue to celebrate our own diversity as this year comes to an end. Our next chapter meeting will be on October 5. Manager Katie St. Clair will be sharing information about the Sea Life Facility at Texas A & M Galveston. Our hybrid format seems to be working well with excellent attendance both via zoom and in person and we will continue this format for October.

Several of our members will be representing our chapter at the state annual meeting in McAllen October 12 - 15. The annular eclipse viewing will be included as part of the programmed activities. We hope to come home with some wins for chapter members in photo and other contests. Look for announcements after the meeting.

NASA 2023 Solar
Eclipse Information

[https://solarsystem.
nasa.gov/eclipses/2
023/oct-14-
annular/overview/](https://solarsystem.nasa.gov/eclipses/2023/oct-14-annular/overview/)

Next Chapter Meeting

October 5

Iconic Fresh and Saltwater
Fish Species

By

Katie St Clair

Director of TAMUG Sea
Life Center

In person and via Zoom

Women in Nature: Jane Colden, America's First Female Botanist by Meade LeBlanc

"[Jane Colden] is perhaps the only lady that has so perfectly studied your system. She deserves to be celebrated," wrote English botanist Peter Collinson to Swedish botanist Carolus Linnaeus.

Botanist Jane Colden is considered the first female American botanist, or as Asa Gray said in 1843, the "first botanist of her sex in her country". Colden was born on March 27, 1724, in New York City. Both her parents, Scottish immigrants, came from respected and well-educated families. Her mother, Alice (Christie) Colden, was the daughter of



of a clergyman. Her father, Cadwallader Colden, graduated from the University of Edinburgh in Scotland, where he studied medicine. He held a variety of government positions, including surveyor general, acting governor, and member of the council of the Province of New York. He also had a great interest in science, which may have explained why, when Jane was four years old, he moved the family to a 3,000-acre plot of land in the Hudson Valley which was populated less by people and more by "wolves, bears, and other wild animals." Much of colonial New York was forested back then, and the (probably) pristine landscape, known as Coldenham, would become Colden's playground and science lab.

Cadwallader began teaching his daughter about science after observing her natural inclination toward botany and interest in the family garden. "I thought that botany is an amusement which may be made agreeable for the ladies who are often at a loss to fill up their time," her father once wrote. One of the major contributions Cadwallader made to his daughter's training was having her read *Explication of the Principles of Botany*, a translation of the work of Linnaeus. As a result, she learned the English translations of many Latin botanical terms and quickly mastered the Linnaean system of plant classification.

Colden set about describing plants in the Linnaean manner. As a complement to her descriptive texts, she used various forms of botanical illustration. According to

her father, "She was shewn a method of taking the impression of the leaves on paper with printers ink by a simple kind of rolling press which is of use in distinguishing the species by their leaves." Cadwallader's friend Benjamin Franklin had used the same technique in the 1730s to document plants indigenous to Philadelphia. She eventually described over 300 species, accompanied by drawings and nature prints.

Cadwallader was so impressed with his daughter's abilities that he introduced her to the great botanists of America and Europe, since a common practice among botanists at the time was to trade plant samples overseas. During the 1750s, Colden corresponded with major botanists, including John Ellis and Peter Collinson in London and Charles Alston and Robert Whytt in Edinburgh. She even corresponded with J. F. Gronovius and the great botanist Linnaeus, who had been her primary inspiration. She met Alexander Garden, Scottish naturalist and botanist in Charleston, South Carolina, when he visited Coldenham.

Colden became a botanist at a time when there was considerable scientific activity throughout the world; she was highly respected by important botanists. In their own correspondences, they constantly praised her work. For instance, Garden, who considered her work "extremely accurate," wrote to Ellis in March 1755: "not only the doctor himself [Cadwallader] is a great botanist, but his lovely daughter is greatly master of the Linnaean method and cultivates it with assiduity [diligence]." In April 1758, Ellis suggested to Linnaeus that he label a new plant "Coldenella" as a tribute to her. Even though Linnaeus had already named the plant, he still offered praise for Colden's work.

Colden herself was the first scientist to describe the Virginia St. John's wort, (*Hypericum virginicum*) which she wanted to name "gardenia" after Garden. However, John Ellis had proposed Garden's name for the plant then called Cape Jasmine, (*Gardenia jasminoides*), which Linnaeus accepted. Despite all of Colden's accomplishments, she has never been formally honored by having a taxon named after her. The genus *Coldenia* is named after her father.

Colden continued to produce descriptions of New York flora until 1759, the year she married the Scottish physician William Farquhar (a friend of Alexander Garden) and apparently abandoned botanical pursuits. By that time, she had established a reputation that far surpassed any expectations for colonial American women. Sadly, she died in childbirth in 1766, the same year as her only child.

Her reputation was preserved in her bound botanical manuscript, which lists 341 plants, most of them accompanied by Linnaean descriptions and simple outlines of leaves in ink accented by a neutral-toned wash. The volume contains only one of her nature prints—one of the few surviving examples of the 300 she made.

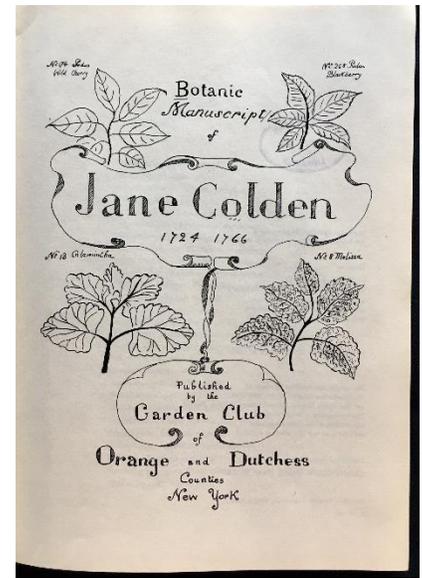
The manuscript has an interesting story of its own. In 1782 it was in the possession of Friedrich Adam Julius von Wangenheim, a Hessian soldier and botanist who studied North American trees and shrubs while commanding a cavalry squadron in New York and Pennsylvania from 1778 to 1783. The manuscript later passed to British botanist and plant collector Joseph Banks, who gave it and the rest of his book collection, to the British Museum (Natural History) in London, England when he died in 1820, where it remains.

The Garden Club of Orange & Dutchess County has worked to revive and sustain interest in the Hudson Valley pioneering botanist. In 1963, it published a portion of her manuscript in book form and, later created a

wildlife sanctuary at Knox's Headquarters State Historic Site featuring native wildflowers identified in her manuscript.

The garden is open to visitors during Knox's Headquarters' usual operating hours, from May to September. "It's less impressive than it sounds," according to the park superintendent. "It's not a formal French garden or anything.

It's more of a nature walk, with plants that are best admired up close," he says. "But that feels right for Jane." (Images courtesy of British Museum)



Texas' Two Solar Eclipses by Carolyn Miles

In the next seven months, Texans will experience two solar eclipses and the best part is unlike lunar eclipses and meteor showers, which often occur in the dead of night, these eclipses will happen during the middle of the day.

If you are fortunate enough to view one of the eclipses, remember to wear special eclipse glasses. It is never safe to look directly at the sun and dark sunglasses are not sufficient protection. Neither are camera lenses or binoculars.

On October 14, 2023, an annular eclipse will cross Texas northwest to southeast from Odessa to Corpus Christi. An annular solar eclipse happens when the Moon covers the Sun's center, leaving the Sun's visible outer edges to form a "ring of fire" or annulus around the Moon. For those in the path of the annularity, the ring of fire will last 3-4 minutes depending on the viewer's location.



On April 8, 2024, a total solar eclipse will cross Texas from southwest to northeast from Eagle Pass to Waco to Texarkana. A total solar eclipse happens when the Moon completely

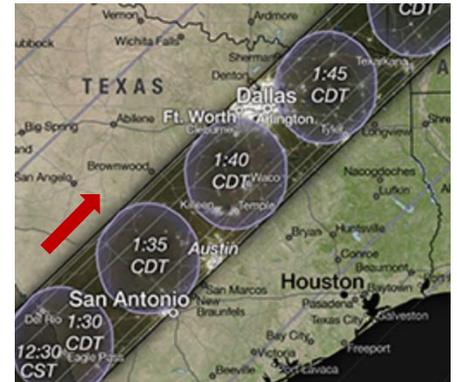
covers the face of the Sun allowing the sun's corona to be visible. For those in the path of totality, the corona will be visible for 2-3 minutes depending on the viewer's location.

Each eclipse will begin about an hour and a half before maximum coverage and complete about an hour and a half after maximum coverage.

Helpful websites:

- <https://solarsystem.nasa.gov/eclipses/home/>
- <https://tpwd.texas.gov/state-parks/park-information/links/eclipse-viewing>
- <https://www.timeanddate.com/eclipse/>

(All images are courtesy of NASA's Scientific Visualization Studio.)



Finding our Sit-Spots by Sheron Evans

Time in nature can elevate our emotional well-being and mental awareness. It is also a way to recharge, open our imagination, and think more clearly. We all need a place to be quiet, contemplative, reflective. A place where we can let our stressors and worries release to the atmosphere and just think, or not think. The Wilderness Awareness School in Washington calls these places our "sit-spots". Your own special sit-spot is your favorite place where you reconnect with nature. I assumed that since all master naturalists have a love for nature, we probably have a favorite spot in nature also. I wanted to find out where our sit-spots are and if we had a sit-spot when we were children, perhaps the outset of our love of nature.

My father was in the Army, so we moved quite a bit when I was growing up. When I started thinking about my sit-spots, I thought of several, and realized that I had one in every place I lived. Two things stood out to me as my memories flooded in. First, just thinking about those spots gave me a sense of the smells, sounds, and feel of the locations. I can feel the dry, hot air around Medicine Creek in Oklahoma and see the rocky red dirt in my mind. I can feel the cool, soft green grass on the hill behind my grandmother's house in Kentucky that leads to the creek flowing over the rocks. Even overseas, my favorite spot to sit and think was on the dock on the bay, watching the tide roll in. (Does that remind you of a song?) And my second realization - they all were around water. Water is still a calming influence on me. Even now, for relaxation, stress relief, or just to observe, I like to sit at the end of a jetty, surrounded almost totally by the Gulf, and listen to the waves lapping at the rocks.



Photo by Sheron Evans

I figured if the description of "sit-spot" brought up such vivid memories for me, there probably were others in our circle of naturalists that had memories of their sit-spots also. I didn't need to dig much before the reminiscing began.

Janet Mason remembers her family's fish camp on Bolivar, watching the intercoastal canal, fishing with Dad, peacefully relaxing, and the smell of saltwater. When she was still teaching, she thought of driving through the gate of any state park in their camper and the feeling of a release of a ton of stress off her shoulders. Janet and Robert Mason both love the Rocky Mountains. They drive their 5th wheel north to the National Parks to get away from the heat of our summers. She can smell the pines and feel the cool crisp air when she talks about the mountains. Robert loves to photograph the wildlife and be where he can see the Milky Way at night.

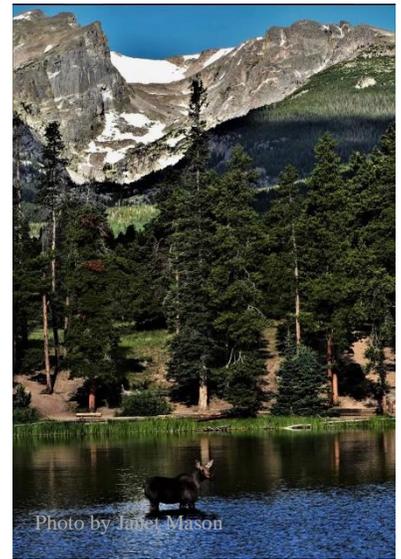


Photo by Janet Mason

Kristie Huffman grew up in a beautiful part of California near the Pacific coast. There were two trees in her backyard - one messy pine tree and one that was designated the climbing tree. She would sit in that tree, surrounded by its small white flowers that she linked together to make a necklace or a crown. The tree was full of noisy birds when the berries were ripe. When it rained, she would hide out in the backyard shed with her transistor radio, Siamese cat, and coloring books. She had a view of Saddleback Mountain, where they often hiked. She can remember the sea breeze in the late afternoon and the sound of the rain on the metal shed.



Photo by Kristie Huffman

When she moved to Texas, Kristie missed her time outdoors. With her daughter in tow, she has founded a local chapter of Hike It Baby in our area, a grassroots movement to get families outdoors and create a love of nature in kids. She created Nature Walk-About at Galveston Island State Park and invited her Hike It Baby families to attend. That is where she met master naturalists and eventually joined our group. She has acquired the knowledge and appreciation for our Texas natural resources and now can observe much more when she is hiking or just playing in the backyard with her dog.

When Patty Pennington was a child, there was a big dogwood tree in their yard that could be climbed. Patty would get up in it with her sister and just sit and observe. She enjoyed the perspective from on high. Recently she moved to Kentucky. She now has a big redbud tree with a bench that she brought from Texas. Her adult sit-spot is



Photo by Patty Pennington

more about just being present and observing in a place that she loves. The tree is in what was a former owner's garden. She has found the old garden on Google Earth and is planning to restore the garden with native plants and reestablish the pond that was there. And of course, keep the bench - a new sit-spot from restored and saved treasures.

Pam House revealed that her balcony is where she likes to sit and think, watching the sunrise over the water. When growing up in Amarillo, Palo Duro Canyon was one of her favorite places to visit, and when camping, she loved to sit by the campfire watching the flicker of the flames. Driving through the park, her family marked their location in the canyon by water crossings (there were 5). In her memories, she can still hear the Sad Monkey Express train that went around the prairie dog town. One special spot was under the cottonwood trees along the creek (Prairie Dog Town Fork Red River), sitting and looking across the water at the cliffs. There was a big cave, and she remembers imagining Coronado and his men exploring the area and magical mystical creatures of her imagination living around that cave. She can recall seeing wild turkeys and horned lizards; she felt the hot, dry air and heard the slight breeze stirring the leaves. Wading in the creek turned her white tennis shoes red from the sand.



Photo by Pam House

During these interviews I have heard stories of young boys traipsing through the woods, using their imagination for all kinds of things, sleeping under the trees, feeling their freedom; girls playing outside until the streetlights come on, camping in national parks and hiking in the mountains.

But it is when I see their gaze wander off into their memories, and they start speaking of how they felt, or the smells and sounds associated with their place that I know we have found their sit-spot. I know because it is the same with mine.

It doesn't matter where your spot is, what matters is that you have one - a place to feel, sense, relax, unwind, experience, be alone within yourself and with nature. For future generations, we need to share our love for our sit-spots and encourage and enable them to find their own.

The Midden

Published bimonthly by the Galveston Bay Area Chapter - Texas Master Naturalists. The purpose of *The Midden* is to inform, communicate and educate chapter members and the community. If you have an article that contributes this purpose or want to join the team, please contact Diane Humes, treimanhumes@gmail.com.

Texas AgriLife Extension Service
4102 B Main (FM 519) Carbide Park
La Marque, TX 77568

The Midden is posted on the GBAC-TMN chapter website: <https://txmn.org/gbmn/> two weeks prior to chapter meetings. Archived issues also on chapter website. If you prefer to receive *The Midden* in hard copy and are not currently receiving it, please contact: Julie Massey, julie.massey@ag.tamu.edu.

Midden Team

Diane Humes, Editor	Madeleine K. Barnes
Verva Densmore	Sharon Evans
Rebekah Gano	Meade LeBlanc
Carolyn Miles	Chuck Snyder

Invasive Lizards in our Area – Part 2 by Madeleine K. Barnes

This is a continuation of the previous article (Midden, August 2023) about some of the invasive lizards that you may find in our area. Perhaps you have seen these around your home or when outside volunteering.

First on today's list is the Mediterranean gecko, (*Hemidactylus turcicus*). Members of this species are relatively small, 4-5 inches long with knobby or bumpy (tubercles) skin, generally light color - gray to nearly white - and sometimes with darker mottling and spotting or striping on the tail. As with most geckos, these have vertical pupils and large dark eyes lacking eyelids. The footpads on their toes have almost 500,000 fine stiff hairs called "setae" which, like Velcro, adhere to a wide variety of surfaces, allowing them to climb smooth and vertical walls.



Photo courtesy of iNaturalist

Mediterranean geckos reach sexual maturity between four months to a year. Mating takes place from March to July and the females breed rapidly, producing multiple clutches of two eggs during the summer. They have few natural predators except birds, who do not get much chance; these geckos are active at night. Native to the Mediterranean (southern Europe) and successful throughout the world, Mediterranean geckos have been aided by human development and are urbanized, living in cracks and crevices of homes and buildings although also found on mountain cliffs, caves, and trash piles due to their adaptability. They feed primarily on invertebrates (crickets, grasshoppers, cockroaches, spiders, beetles, moths, butterflies, ants, isopods, and snails).

First reported in Florida in 1915, Mediterranean geckos were possibly transported by ship and then through the pet trade. They have large breeding populations in Florida and have become established all along the Southern Gulf states. In addition, these geckos have a strong resistance to insecticides and pesticides. There is no management action or strategy for these invasive lizards and their detrimental effects upon native species remain unknown. It appears that the geckos may need

buildings for survival as they are not widely found in the western parts of Texas and the panhandle.



Photo courtesy of Wikipedia

The last lizard in the lineup is the Rough-tailed gecko, (*Cyrtopodion scabrum*). This is a smaller gecko 3-4.5 inches in length, sandy brown with darker brown spots forming a striped pattern, a white belly, and brown crossbands on the tail. This gecko's body is covered in distinctive larger keeled scales. Also, this gecko does not have padded toes; instead, the toes are long, thin, and have claws.

Rough-tailed geckos are native to the Middle East, from Sudan to northwestern India. This invasive species in Texas, found only in Galveston, lives in the building areas around the commercial shipping docks. Produce ships were the means of transport for the Rough-tailed geckos and they have not expanded in population beyond that area, so far. These geckos are nocturnal insectivores and appear to have displaced the Mediterranean geckos where their ranges overlap.

Rough-tailed geckos survive and thrive in the tropical, arid, and semi-arid climates available in much of the Lone Star state. In addition, Texas is home to a third of all insect species found in the USA so, resources are plentiful, and these non-native lizards can out-compete the native species.

This list is not meant to be all inclusive, but hopefully provides basic information about these very successful invasive lizards in our area. Some reasons for their success in Texas and specifically our area are the weather, habitat, and availability of food sources.

Yellow flowers bow,
Dancing in the autumn wind.
It's goldenrod time.

By Rebekah Gano

Nesting Boxes at ABNC by Allan Collins

My name is Allan Collins, a Venture Scout, and I have been working on the Distinguished Conservation Service Award. Requirements for this award include leading two conservation service projects and doing pre-surveys and a post-survey. When looking for a project, I called multiple conservation organizations and one of them was Armand Bayou Nature Center (ABNC). After talking with their staff and explaining my personal goals for a project, Derek Sanford and Chris Smith offered me the opportunity to construct 26 nesting boxes for their colonial waterbird nesting site which has had multiple years of successful bird return and population increase.



I agreed and the project began, but before I could construct nesting boxes I had to first come up with the funding. To my luck, because COVID-19 had limited the number of people working, including nonprofits, multiple stores like Home Depot had excess money set aside for donating, and, since I came at the right time and the right place, most of the cost of the project was covered by Home Depot. It also didn't hurt that at the time of the fundraising section of this project, I was a Sea Scout, so I had a nice blue uniform that looked very professional.

Once I procured the materials, I organized my group, and we constructed 26 nesting boxes. While the original goal was 25 nesting boxes, we were able to make one additional box while following all the parameters of the original design and material purchases, which was very cool.

Once the nesting boxes were made, I then got a call that hurt a bit; the colonial waterbirds came earlier than expected and I would have to postpone installing the nesting boxes until before the next nesting season. At first, I was disappointed to wait, but it opened an opportunity for me to conduct my own pre-survey and not just rely on the data provided by ABNC, which was still reliable data, but this way I felt more engaged in the study element of the project. So, after many phone calls,

I was able to organize a day that worked best for everyone's busy schedules.

Since I am inexperienced in spotting different types of birds, Derek provided me multiple digital materials to become acquainted with the potential birds that could appear on the island. I also invited my uncle, Andrew Hamlett, to come with me to conduct the colonial waterbird bird survey at the ABNC offsite property. Derek Sanford and Chris Smith would also be coming to help with the bird survey, but when I mentioned my project to my uncle he wanted to come along. Uncle Andrew is an experienced birder and for him this is worth a good section of his day off. On the day of the bird count, we hiked around the island to a point where there was some clearing in the bushes where we could watch the birds as close as possible from the sidelines. It was the first time I ever encountered such a massive group of birds in nature, and I was impressed. While I was excited to install the nesting boxes, I was not expecting the number of birds all together. Once I saw them, I knew I had to finish this project no matter the time and sacrifice I had to put in to complete it.

When the right time came to install the nesting boxes, I knew I had to act fast and get a move-on planning the installation event. I gathered my scouts, inviting everyone who helped me construct the boxes, and some others I thought would be interested. We found a day that worked for us and headed out to install the nesting boxes. It was a blast! We begin by talking about safety - going to the island and being on the island. We put on our safety equipment and boarded the canoes, heading toward the island to begin working. Derek Sanford led the installation, and all the scouts handed him the boxes, tools, and screws. This was not my first time seeing the island, but it was my first time going up on the island and exploring the unique area.



Up to this point all I had ever seen of the island was through video and the one time I saw it at a distance doing the bird survey. It is incredibly pretty from a distance with all the birds interacting with each other, but even when there are no birds present and you are on the island, it's very relaxing and cool just to know that where you step is a big part of the bird's life and next generation of life. There was something special just knowing that when I saw a pair of broken eggshells in a wooden box, I was given the opportunity to look down into the result of a creature's most vulnerable state and a glimpse of a rare sight I never even knew existed. That thought alone sat with me and made the installation day something to remember.

The day ended and so did our installation. In the car heading back home, I got lost in thought. It dawned upon me that I had just been at a super-rare bird habitat - 5 to 15 minutes away from a popular road intersection that I pass every day. This is the same road I take to go to college, to go to work, and even in Boy Scouts for fundraising. This road is so ingrained in my life, it just made me smile to think how we take our day-to-day commute, passing places that we don't even second-guess once. I would have never had the opportunity to encounter such a beautiful part of nature, if I had not

gone after the award, because I know, without any doubt, that I would have not asked an ABNC staff member if they had a special place where tons of birds meet during their nesting season.

Now my favorite part: nesting season arrived, and I had all my equipment ready to record my post-survey. The weather, combined with the large number of active birds, made a beautiful sight; I was blown away and everyone who came with me was also amazed. It seemed that we could not stop smiling the entire time looking through binoculars at such a rare sight in nature. It made day-to-day sacrifices all worth it. The glimpse into multiple bird's lives was an opportunity I wish for any good steward to come across. While the photos we took are great, being there was different; I was no longer in Houston, but fully immersed in the birds' beauty and elegance, even if sometimes they were biting each other and throwing up in each other's mouths. Now these experiences are memories for me, but I encourage anyone to find the magic of conservation or preservation and ride it.

I dedicate this account to two people who encouraged me to finish this project: Mr. Ben Edwards and Mrs. Dawn George who passed away before its completion.

Your Local National Weather Service by Verva Densmore

On July 22 chapter members enjoyed the first "in-person" advanced training since the COVID shutdown in early 2020. The tour of the National Weather Service Office for Houston/Galveston (NWS) proved to be an informative and enjoyable first outing, and its popularity will hopefully trigger a second tour in 2024.

This NWS/Houston facility is responsible for gathering weather information for 23 counties in the greater Houston/Galveston area. The office is staffed 24 hours a day, 7 days a week, 365 days a year. There are always at least 2 people on duty but when there is a weather event that number can increase dramatically.

These hard-working people are responsible for forecasting for 8 airports, our surrounding marine zone, and, of course, those 23 counties. They monitor windshear, fire, marine conditions, chemical releases, heat, tropical conditions and aviation. One tool they use is a NOAA supercomputer located in Boulder, Colorado, that makes 2.8 quadrillion calculations per second, data that is fed to an analysis model for evaluation and forecasting.

Those TXMN members who monitor and report for CoCoRaHS will be happy to know they do review and use the data you submit.

In addition to data from the supercomputer, other major forecasting tools are radar, weather balloons, and, in the case of hurricanes, flight data from aircraft that fly into the center of the storm. One of our presenters, Amaryllis Cotto, is on board those flights directing the operation and gathering information. She asked that we keep her in our thoughts and prayers when there's an active storm because she's likely up there while we watch from home.



Photo by Mike Wehrman

A note about weather balloons: many of us heard about weather balloons causing alarm because some folks feared that they were surveillance balloons. We were

assured that now each balloon will have the words "HARMLESS WEATHER BALLOON" in big letters on the side.

The other major work done by the staff at this facility is communication. They get the information to the media and issue warnings when needed. The heat advisories, for example, that we've heard so frequently in July likely originated here. They maintain a Facebook page ([facebook.com/NWSHouston](https://www.facebook.com/NWSHouston)), a twitter account ([Twitter@NWSHouston](https://twitter.com/NWSHouston)) and webpage

(www.weather.gov/houston). They work with local media, emergency services, the Houston Red Cross, and others, providing updates on beach safety, storm surge, flooding rain, tornadoes, and high winds. They issue watches, advisories and warnings to help protect lives and properties.

This is just a small part of the information provided for our safety by this exceptional group of scientists. So, the next time you drive by the NWS facility on Hwy 646, mentally pause to say, "thank you".

Millipedes by the Masses by Rebekah Gano

Multitudes of millipedes often make the news when end-of-summer and fall rains begin. The crawling creatures resemble the tent caterpillars that congregate on trees in the spring, but the millipedes lack the caterpillars' fuzz and have considerably more legs. Once the rain's moisture brings millipedes out of the damp habitats where they have hidden away from intense sun and dry air, thousands of them may be found roaming lawns and sidewalks.



Warm, humid environments serve as ideal millipede habitats, and most of the year, they go about unnoticed by humans. Millipedes are typically nocturnal, living in underground burrows that they have made by using their heads as bulldozers.

The shy creatures are decomposers, feeding mostly on decaying plant matter. Some species also eat tender

leaves, fungus, vegetables and fruits, insect eggs, and small invertebrates like worms and snails. Except for a few species like the Texas gold millipede (which can be viewed in Armand Bayou Nature Center's animal lobby), millipedes need continuous moisture to survive because their exoskeleton lacks a waxy cuticle.

Millipedes are arthropods and are similar to insects and isopods, but they have their own class, Diplopoda. They belong to the subphylum Myriapoda as do centipedes. Millipedes have long, rounded bodies that are divided into many segments. Each segment usually has four legs (two pairs, compared with one pair per segment for centipedes). Between segments, the exoskeleton is thinner. This allows the millipede to bend. To protect its soft underbody, a millipede will roll into a spiral, with its head in the center. If a millipede curls into a spiral, it is likely feeling stressed.

Centipedes and millipedes can be challenging to distinguish; however, their antennae and leg structure serve as identifying features. Millipedes have short antennae, while centipedes have longer ones. Aside from leg count per segment, centipedes and millipedes differ in body layout. Centipedes are flatter, with their legs splayed sideways and two legs trailing tail-like. Being predatory, centipedes also have poison claws tucked under their heads. Thankfully, they don't march in droves like millipedes!

Millipede means "thousand feet", and although they are often called "thousand leggers", the record leg count on a millipede is about 750 legs. The shortest known adults have only 22 legs, while most have 34-400. Leg count depends on the species as well as the millipede's age. Young millipedes have fewer legs and trunk segments than adults. They may look more like pillbugs than adult millipedes. Unlike adults with four legs per trunk segment, newly hatched larvae have just two legs per trunk segment. After molting many times, usually over the course of one to two years, millipedes are full-grown and ready to mate.



Photo courtesy of Texas A&M AgriLife

Millipedes are not typically harmful to humans; they do not bite, sting, or scratch. When frightened they can secrete substances that smell awful and irritate skin. A few millipedes squirt chemicals, but most toxins ooze from tiny holes in their trunk segments. This makes them unpalatable to many creatures, but birds, frogs, ants, and spiders still consume them readily. Some humans are sensitive to the chemicals, and their skin may turn red or blister, but others find that their skin is just stained.

Those who directly touch millipedes should wash their hands.

Human homes appear less hospitable to millipedes when weep holes are clear and decaying matter is not close to buildings. If millipedes are inside structures, they can be swept up with a broom and dustpan or even a vacuum. Millipede infestations usually happen suddenly and stop just as quickly. Most often, millipedes enter homes looking for shade and would prefer to be outdoors.

So why do so many millipedes march at once anyway? Scientists still debate reasons for swarms of millipedes and theorize that they emerge together for safety as juveniles and for chances to find a mate as adults. It may simply be that rain signifies available food and an environment that is damp enough for millipedes to survive. They are an important piece of the ecosystem, providing a welcome food source for migrating birds and eating dead grass and leaves, encouraging new plants to grow. Whether this summer has been too dry for many millipedes to survive is yet to be seen as I write this article, but this autumn at least a few many-legged creatures will probably be crawling around a greenspace nearby. Keep an eye out for these helpful creatures.

Connections: Mississippi Kites From Our House to South America by Diane Humes

Mississippi Kites (*Ictinia mississippiensis*) have frequented our neighborhood since Hurricane Ike (2008). Accustomed to them soaring overhead all summer, I have assumed they liked our storm-broken trees and plentiful cicadas. This summer it got personal; they have been hunting in our back yard! We first noticed clear, loud, two-note whistles and it took a little sleuthing to figure out who was making those calls, but it is the usually-silent parents and offspring communicating with each other. We have at least one pair raising a juvenile in the neighboring pine trees.



Photo by John Wright

Mississippi Kites are diurnal raptors, birds who hunt during the daylight, and mostly catch flying insects - cicadas, dragonflies, beetles - and occasional small reptiles from the treetops - in their talons and devour them during flight. Graceful fliers, they soar on thermals and rarely expend energy flapping their wings.

They are medium-sized birds, 12-15 inches from beak to tail, with wingspan averaging 3 feet, and weigh between one-half and one pound. Adults are gray with dark tails and outer wings, and lighter heads and inner wings. Males and females are similar, but males are paler on the head and neck. They have deep red eyes and yellow to red legs. Young birds have banded tails and dark and rufous-streaked bodies. Social birds, they may gather in roosts in late summer, and do not maintain territories.

Mississippi Kites may live 7-8 years in the wild. Adult pairs are monogamous and lay one clutch of two white eggs each year, usually in a twig nest placed about 20 feet above ground in any one of a variety of deciduous tree species. Parents share incubation and feeding duties of the chicks, but usually feed themselves. Incubation takes 30-32 days, as does fledging. Parents continue feeding the young for a few weeks after fledging.

Within our lifetimes, Mississippi Kite populations and ranges in North America have expanded, although recovered would be more accurate; they are widespread throughout the southeastern U.S., even up to New England and west to Arizona. They settled in shelter belts planted around farms on the Great Plains after the Dust Bowl era and are now moving into suburban and urban neighborhoods where there may be fewer predators.

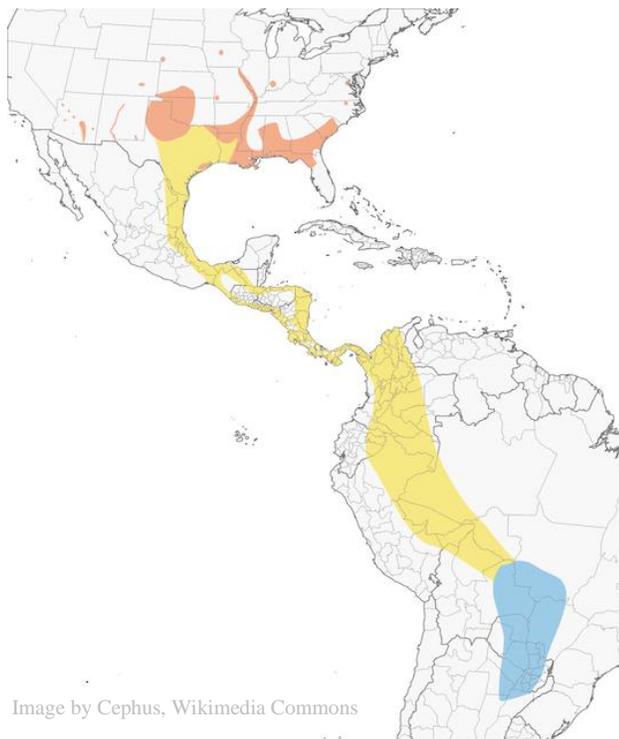


Image by Cephus, Wikimedia Commons

We think of them as “our” kites, but they are highly migratory; the entire population of perhaps 1,000,000 birds vacates southern Brazil and northern Argentina - a region called the Gran Chaco - to breed in North America from April-September, then returns for the austral winter. While many details are unknown, on February 20, 2002, observers watched a massive flight of >10,000 Mississippi Kites flying north from Fuerte Esperanza in northern Argentina. The south winds preceded by stormy weather, suggested that those birds had waited for weather to improve before beginning their journey.

At Sylvan Beach Hawk Watch we wait for their arrival in mid-April. Our best flight occurred on April 20, 2009, a fine day with NW winds, when 21,486 Mississippi Kites winged north from 8am until 3pm. Dick Benoit, Ken and Dorothy Russell and Mary Beth Arnold, that day’s “dream team”, were surely exhausted and exhilarated; they reported 46,681 raptors for the day!! This year the kites finally showed up on April 30, 2023 - the last day to count - 4346 of them.

Hawk watchers in Mexico and Central America record northbound and southbound birds; in spring 2023,

110,456 Mississippi Kites flew north across Kekoldi, Costa Rica, mostly in April. In fall of 2022, hawk watchers counted 304,240 Mississippi Kites in Veracruz, Mexico and 524,451 at Kekoldi going south. By mid-September all the kites journey back to South America where there are few hawk watchers to record their passage. Our yard was quiet, and kites were absent August 23, 2023.

Find hawk watch site data at: hawkcount.org.

Mississippi Kites were described in 1811 by Scottish ornithologist Alexander Wilson. He called them falcons from the Mississippi Territory; they are now placed in the genus *Ictinia* with one other species, the Plumbeous Kite, (*Ictinia plumbea*). Plumbeous means “leadens”; Plumbeous Kites are darker in color than Mississippi Kites, with long, curved wings, noticeably longer than their tails, when perched. (Note: hawk watchers seldom see perched birds.) Otherwise, these two species are nearly identical in appearance, feeding habits, range distributions - even their vocalizations. Also, immature birds of both species greatly resemble each other.

Plumbeous kites are common residents throughout Brazil and central South America and some on Trinidad, with a total population of perhaps 5,000,000. On our Amazonia Expeditions in Brazil with Dr. Cindy Howard, we observed these birds soaring overhead almost daily. They are distinguished from Mississippi Kites by their banded tails and rufous color on the wings. Plumbeous Kites are known to hunt with marmoset groups that flush cicadas from the trees. Mississippi Kites would not be likely on the Amazon River in July or January when we usually have our trips.



Photo by Mike Anderson, McCauley Library

Most Plumbeous Kites do not leave the tropical zone, except for some living on the extreme northern and southern edges of their range. Northernmost birds migrate into Central America between March and August to breed, then return in the fall; they are counted at hawk watches, along with Mississippi Kites, but in much

smaller numbers. Kekoldi watchers counted a total 3758 Plumbeous Kites northbound this spring. They bred in Tamaulipas, Mexico - not that far from here! None has been seen in Texas yet; perhaps we should be prepared. If the kites fly together, they might end up overhead someday.



Plumbeous Kites, as a population, seem incredibly malleable regarding their breeding times; those at the equator breed between January and May, those living on Trinidad breed between February and June, while the southernmost residents, migrate further south to the Gran Chaco and breed between September and February - the area in which the Mississippi Kites spend the winter!

Near the equator day length is constant year-round and temperatures are quite stable. Plant and animal life is more constrained by wet and dry seasons - high water and low water - which can have great regional variability. Insects, which breeding birds depend on to feed their young, are most prevalent at the beginning of the rainy season, probably coinciding with new leaf growth.

Clearly, we need to learn more about these two species - so similar and yet so different. Consider also that more than 350 non-raptor bird species make the journey from the tropics north to breed during our northern spring and return at summer's end. We are a lot more connected than we had imagined.

Sounds like more fun on the Amazon, scanning for stray Mississippi Kites and searching out Plumbeous Kites hunting with marmosets, while making sure at Hawk Watch that none sneaks into Texas uncouncted.

Changes in GBAC-TMN Volunteer Service Hours by Jo Monday

Time spent serving as a board or committee member for a non-profit organization devoted to education, conservation, and management of natural resources or the environment may now be counted with prior approval from the GBAC-TMN board of directors annually. Time spent fundraising and lobbying are not allowable activities and cannot be counted as volunteer service hours.

Criteria for earning volunteer service hours utilizing iNaturalist have changed. The following criteria will guide allowable hours:

- Meet the criteria for a verifiable observation with a sound file and/or photographic evidence.
- Focus on wild organisms in Texas with emphasis on the Species of Greatest Conservation Need (SGCN) and/or species of management interest and concern.
- Contain true location information with positional accuracy within 500 meters.
- Observations must be shared with Texas Nature Trackers (TNT) projects or other projects approved by GBAC-TMN.
- Time spent using iNaturalist on one's property cannot be counted as volunteer service hours.
- Data collection may come in the form of chapter-approved projects including Organized bioblitzes, organized surveys (non-bioblitz) on public land shared with TNT-hosted projects or public collection projects, organized surveys on private land where results are shared with TNT-hosted projects, and data collection under the umbrella of other projects.
- iNaturalist species identification efforts for flora and fauna within Texas that include: SGCN and other management priority species, Bioblitz results including City Nature Challenge, Texas Pollinator Bioblitz or other TMN bioblitzes approved by GBAC-TMN, curation of observations within TNT iNaturalist projects as coordinated with TNT staff, and curation of

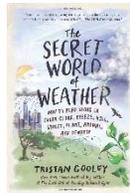
observations made through chapter-conducted camera trap projects.

The following conditions must be met for time entering eBird data to count as service:

- Provide the following description for reporting eBird hours in VMS: "Texas Master Naturalists can record hours submitting data into eBird for chapter-approved projects that meet the definition of formal surveys. When reporting eBird hours, volunteers should be specific in identifying the project/type of eBirding done, duration party size, distance covered, and (when possible) numbers of birds/species detected."
- Time spent collecting bird data in a Chapter-approved formal survey should be logged under a project for that survey and not towards an eBird service project. Generally speaking, Chapters should not approve casual, or incidental birding activities as a formal bird survey. Official surveys are activities that have formal protocols that dictate time, season, duration, location, and methods of monitoring birds. Official surveys may be national protocols or local projects, but they should always seek to answer a research question. Generally speaking, formal surveys at the local level are designed and conducted in coordination with the land manager.
- If survey protocols do not require/enable participants to log data into eBird during the survey, one participant from the survey group may collect "eBird service hours" for time spent entering data into eBird after the event. Generally speaking, this should be no more than 15 minutes.
- If participants are conducting non-survey (personal/incidental) birding trips and choose to enter data into eBird while they bird, one person per group may code a maximum of 15 minutes of eBird time per trip. Incidental birding can occur anytime outside of a focused or specific survey/project, i.e. for personal enjoyment or leisure.
- Time spent volunteering on national surveys (including, but not limited to those below) should be logged under Chapter-approved projects for these specific projects. Time for eBird data entry may not be counted for these national surveys.
 - Audubon Christmas Bird Count
 - Great Backyard Bird Count
 - USGS Breeding Bird Survey
 - Project FeederWatch
 - Project NestWatch
 - Great Texas Birding Classic Events
 - Audubon's Climate Watch
 - Audubon's Hummingbirds at Home

Heritage Book Study by Cheryl Barajas

Here we are - almost to the end of summer. And how many of us are watching, reading and listening to meteorologists about our weather? How serendipitous that our September/October book for discussion is *The Secret World of Weather* by Tristan Gooley. You will read about how to tell the difference between cloud formations and understand what they mean - how to predict the weather (without an app). This is especially important for hikers and climbers where cell service may be spotty.



An interesting section in this book describes how birds and insects help predict the weather - especially useful information for anyone who spends a lot of time outdoors.

Here are some fun and interesting facts: Gliding birds mean stable air and thus, fair weather. Crickets chirp faster as temperatures rise. Pinecones close their scales in high humidity. Perching birds face into the wind. A turbulent sky with mismatched clouds predicts bad

weather. And lastly, honeybees don't leave their hives when temperatures drop below 55 degrees.

Please join us on Monday October 2 at 1pm via Zoom for more lively discussions surrounding this topic. If you are not currently a member of the Heritage Book Study and would like to be included, please contact me at cherylbarajas9@gmail.com.

Also, we are in the process of choosing our books for 2024. Right now it looks like mountains, insects and prairies are the topics in the lead! Stay tuned for our choices for next year.

Meanwhile, if you have time, enjoy *The Secret World of Weather*. I'm certainly looking at clouds a little differently!

Forbs, prairie grasses,
Hands restoring precious lands
Our legacy made!

By Susette Mahaffey

Big Picture: Benu to Biodiversity Update by Diane Humes

NASA launched OSIRIS REx from Cape Canaveral on September 8, 2016, to explore the asteroid Benu. The spacecraft name suggesting Egyptian mythology is an acronym for **O**rigins **S**pectral **I**nterpretation **R**esource **I**dentification **S**ecurity **R**egolith **E**xplorer and its target, formerly known as (101955) 1999 RQ36, is now called Benu, denoting an Egyptian heron.

OSIRIS REx arrived at Benu Jan. 2, 2019. In addition to data and photographs, it performed a touch-and-go sample collection to retrieve pieces of the asteroid. Mission almost complete; the spacecraft is approaching Earth to drop its cargo on September 24 at the designated spot in the Utah desert for pick up and return to Johnson Space Center. Stay tuned for news of its success!



Why visit asteroids and why this one? More than 500,000 asteroids orbit the sun between Mars and Jupiter with a combined mass less than that of the moon. Differing greatly in size, mass, orbit, and composition, most asteroids are ancient, dating to the beginning of the solar system. Some resemble known meteorites, which, except for the Apollo moon rocks, are the only extraterrestrial samples we have. Asteroids preserve a record of inner solar system impacts, which may help us understand the chronology of orbital dynamics and impacts. Their orbits are influenced by the motions of the giant outer planets.

Benu's orbit, close to Earth's, also crosses Earth's orbit, giving it a higher-than-average probability of being on a collision course someday! Since we'd all rather be

prepared, the idea is to learn as much as possible now. Exobiologists search for life's origins in space; some believe primitive life forms or organic molecules arrived on Earth from space. Benu appears to be rich in carbon - a precursor to life - raising its interest quotient even higher. (see: asteroidmission.org)

If the solar system can be compared to an ocean, Benu is an exceedingly small island in an archipelago - the asteroid belt. The planets of our solar system correspond to much larger islands. Earth ecologists study islands to figure out how the great diversity of life on Earth might have evolved.

Biologists Edward O. Wilson (*The Diversity of Life*) and Robert MacArthur developed the theory of island biogeography in 1963 when they noted that the numbers of plant and animal species on islands around the world followed a consistent pattern - the larger the area, the more species. The numbers followed a mathematical formula; the number of species approximately doubles with each ten-fold increase in area, a relationship called the *area effect*. The theory takes into account the *distance effect* - islands more distant from another island or continent will contain fewer species because colonization decreases with distance. As for which species are found on islands; islands isolated over evolutionary time have endemic species - unique species found nowhere else.

In 1966, Daniel Simberloff, then a graduate student, joined Wilson in conducting a now-classic experiment to test equilibrium of the distance effect, choosing 4 small mangrove islands in the Florida Keys, of comparable sizes, but at varied distances from large islands, for their test. After making as complete a survey as possible of all insect and other arthropod residents of each island - Wilson describes crawling through mud to every treetop and back to mud - they fumigated the islands, killing all the arthropods, leaving vegetation intact.

Constant monitoring for the next two years showed that recolonization began within days; numbers of spider, roach, mite, cricket, moth and ant species were back to original levels in less than a year. As predicted by the theory, the nearer islands contained more species than the farther islands. The numbers remained constant for a second year, although the exact species composition fluctuated constantly, Wilson said, "like travelers in an air terminal".

The mathematics of island biogeography have been applied in reverse to conservation questions, such as, what happens to population numbers of all species when a particular habitat size decreases? A very early and well-studied experiment in habitat shrinkage occurred on

Barro Colorado Island, formerly a hilltop amidst a vast stretch of rainforest. With the construction of the Panama Canal, it became a 6 square mile island in the middle of Gatun Lake. Designated a nature preserve and tropical ecology study area, the differences between its flora and fauna and those of intact rainforest are well-documented.

The large carnivores - puma and jaguar - left right away. By 1970, 45 bird species had disappeared, including understory and meadow species; the harpy eagle no longer nests there, either. Conversely, medium-sized predators - coatis, peccaries, possums, armadillos, pacas, agoutis - flourished, while ground-nesting species were in steep decline; has the lack of top predators to control smaller predators led to decimation of prey species? What will equilibrium look like on this small fragment of rainforest?

According to ecologist and evolutionary biologist, Ilkka Hanski, (*Messages from Islands*) forests are the largest and most complex ecosystems on earth, containing at least half of all land species - especially tropical rain forests. Before the Neolithic, forests covered half of Earth's land area; in our time the figure is closer to 25%. One rule of thumb - often called the 20% rule - states when a land-covering habitat such as forest drops below 20% to 30% of the landscape area, species will be in

danger of extinction - especially frightening, since we have no firm numbers on how many species presently exist!

Each species, depending on its dispersal ability, specialization, and population density, has its own extinction level, but habitat fragments - islands - can become too distant for successful recruitment, or too small to sustain many species.

In addition to smaller area, Earth's forests are massively fragmented, simplified, and lacking in large animals. One estimate, using satellite imagery, shows that 20% of our remaining forests are located within 100 meters of forest edge, while more than 70% lie within one kilometer of the edge. Effectively, this makes forests much more like islands.

Might as well live on the asteroid Benu.

Breaking surf on sand
V of pelicans above
A turtle nest found

By Pam House

Nominations for Treasures of the Bay by George Kyame

Each year our chapter recognizes those Chapter members and other individuals and organizations that have gone **above and beyond regular commitment and stewardship** with regards to all of our focused activities. Please consider the following descriptive categories for your suggestions or nominations. Feel free to share these thoughts with Julie Massey, our Chapter Sponsor, or any board member.

- Dick Benoit Leadership Award: Awarded for extraordinary service, mentoring, leadership and dedication to our organization.
- Beth Cooper Memorial Service Award: Awarded to a new Chapter member (2 years or less) in recognition of their volunteer service and dedication to the chapter.
- Sara Snell Education Award: Awarded in recognition of initiatives in education about the Galveston Bay ecosystem.
- Chapter Service Award: Awarded to an active Master Naturalist of the Galveston Bay Area Chapter for outstanding work and commitment to the success of our organization.

- Making a Difference Award: Awarded in recognition of an individual or individuals whose initiatives in preservation, restoration, education and/or enhancement of our natural world have improved and/or enriched the quality of the environment in the Galveston Bay area.
- Non-Profit Award: Awarded to a non-profit for leadership and unselfish investment in protecting and improving the Galveston Bay area environment.
- Corporate Award: Awarded to a corporation for leadership and unselfish investment in protecting and improving the Galveston Bay area environment.



October and November Activities

ADVANCED TRAINING OPPORTUNITIES

Chapter Meeting - October 5; Iconic Fresh and Saltwater Fish Species

Presenter: Katie St Clair

6pm Social, 6:30pm Meeting, 7pm Speaker

At Extension Office* and via Zoom; 1 hour AT

No scheduled AT at the time of printing.

Ongoing

Heritage Book Study Group

First Monday of every month via Zoom

2 hours AT

Contact: Cheryl Barajas cherylbarajas9@gmail.com

See Pg. 13 for meeting dates and books.

STEWARDSHIP OPPORTUNITIES

For a complete list of stewardship activities, see our chapter website, <https://txmn.org/gbmn/what-we-do/>.

EDUCATION - OUTREACH OPPORTUNITIES

For a complete list of education - outreach activities see our chapter website, <https://txmn.org/gbmn/what-we-do/>.

Partner and Associate Programs - Many organizations sponsor guided walks and education programs or need volunteers to staff their nature center. Go to <http://txmn.org/gbmn/partners/> for the list, then click on the link to the organization's website.

CHAPTER INFORMATION AND RESOURCES

Calendar - <https://txmn.org/gbmn/events/month/> Includes meetings, AT and volunteer activities

Board - <https://txmn.org/gbmn/board-of-directors/>
Contact information for the Board of Directors. **Board Meetings** - usually first Tuesday of each month (via Zoom), verify on the calendar

Committees - <https://txmn.org/gbmn/board-of-directors/>
Contact information for the Committee Chairs

Volunteer Service - <https://txmn.org/gbmn/volunteer-service/> Volunteer Opportunities

Advanced Training - <https://txmn.org/gbmn/advanced-training/>

Midden Archives - <https://txmn.org/gbmn/> Go to The Midden on the top menu.

Facebook - <https://www.facebook.com/gbactmn>

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The Midden Deadline
for the next issue

October 30



*Extension Office = Texas A&M AgriLife Extension Service – Galveston County Office (Carbide Park)