

The Midden

Clouds by Verva Densmore

Galveston Bay Area Chapter - Texas Master Naturalists

April 2023

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President's Corner by Pam House

When we first moved to the Galveston Bay Area in 1993, Steve and I lived aboard our 35 ft. sailboat in a marina on Clear Lake. With the other live-a-boards on our dock we practiced the (familiar to you) ethos of "food, fun, and friendship" with gusto.

One of the couples was Tom and Cindy - Tom, a retired professor, and they both knew a lot about coral. But most of us on the dock talked boat stuff about 90% of the time. I knew more about his diesel engine than I learned about his academic history. When Tom and Cindy cruised away the next year, we kept up for a while through mutual friends and heard they were in Belize conducting some investigations into coral reef ecology. As folks will, we lost touch over the years.

It wasn't until last month - really, not until then - that I found out that the Tom Bright that I knew was "the father of the Flower Gardens" - Dr. Tom Bright. The NOAA Seaside Chat on February 15 revealed his amazing contributions to that marine sanctuary. I should have asked for his autograph when I had the chance.

It occurred to me that my myopia probably continues with my master naturalist friends. We are surrounded by people in our chapter whose contributions to the preservation and management of our natural areas are recognized and remarkable - those who helped in the transformation that is Exploration Green, the maintenance and celebration of Armand Bayou, the birth and growth of Bayside Regional Park and the Dick Benoit Prairie, the protection of Resoft Park, the ongoing count of migrating raptors through Hawk Watch, the contributions to the protection of the critically endangered Kemps Ridley sea turtle, aiding the Memorial Park land bridge, and the many outreach activities for the next generation through Beach Heroes, Camp Wild, and Dolphin Challenge.

Our "outside of master naturalist" selves inform and contribute to all of those accomplishments. So, as we volunteer together and strive to preserve and protect this natural world, let's remember that WE are part of that natural world. Let's continue to know one another more fully and completely. As Jaime Gonzalez indicated last month, enhancement of nature without including the human part of nature is an empty accomplishment.

Recognizing the importance of maintaining that human connection, we have concluded that continuing with hybrid evening meetings most fully meets your expressed desires. The April 6 meeting will follow that template. We'll open for in-person attendance about 5:30, food at 6:00, business meeting and zoom at 6:30, and AT presentation at 7:00. Those who attend in person will have food and a more complete experience - but zoom attendees will get to share in the fun and friendship and the celebration of our chapter. I hope to see you there.

Next Chapter Meeting

April 6

Master Naturalist in Space

By

Dr. Kjell N. Lindgren

NASA Astronaut and
Texas Master Naturalist

Via Hybrid

Women in Nature: Annie Montague Alexander by Meade LeBlanc

Annie Montague Alexander (1867 - 1950) was an explorer, a crack shot, photographer, world traveler, paleontologist, field biologist, natural historian, conservationist, and philanthropist. Her grandparents, originally from New England, were missionaries to Maui. Annie Alexander was born in Honolulu during the Kingdom of Hawaii, into a family that had made its fortune in sugar.

Her parents moved to Oakland, California, when she was a teenager. During her youth, she was able to travel widely, studying painting in Paris, embarking on a 1,500 mile bicycle trip through Europe with her father, and exploring the South Pacific with an uncle, with stops in Hong Kong, China, and Singapore, Java, Samoa, and New Zealand. Clearly, she had the resources to take the unconventional path of an independent woman.

Annie found her calling during a camping trip to Crater Lake in 1900. She became passionate about paleontology and began auditing lectures on the subject at the University of California, Berkeley. There she met Professor John C. Merriam, considered the first vertebrate paleontologist on the West Coast of the United States. Annie offered to underwrite the entire cost of his upcoming expeditions. In the next several years she participated in several of Merriam's expeditions to Oregon and Northern California where her role included funding, collecting and excavating, as well as cooking for the team. Hundreds of pounds of fossils were collected, and several new finds were named in her honor.

In 1904, Annie left on a trip to Africa with her father and some of his buddies. The men were planning to hunt big game, while Annie planned to collect fossils and take pictures. One of the men became ill and died in Kenya. A few weeks later, while Annie and her father were exploring a canyon, her father was hit by a boulder that was tossed down from workers above. The boulder crushed his foot, and he died the following day after receiving an emergency amputation.

The tragic event had a profound effect on shaping her career as a naturalist. She decided to dedicate her life to preserving flora and fauna of California and the West Coast. It was a way to find purpose and distract her from thinking of her father.

The following year, Annie again financed an expedition with John C. Merriman, this time to western Nevada, where they found some of the finest specimens of ichthyosaur found at that time. She kept a scrapbook of the trip, which included this account:

We worked hard up to the last. My dear friend Miss Wemple stood by me through thick and thin. Together we sat in the dust and sun, marking and wrapping bones. No sooner were these loaded in the wagon for Davison to haul to Mill City than new piles took their places. Night after night we stood before a hot fire to stir rice, or beans, or corn, or soup, contriving the best dinners we could out of our dwindling supply of provisions. We sometimes wondered if the men thought the fire wood dropped out of the sky or whether a fairy godmother brought it to our door, for they never asked any questions...



Photo courtesy of Wikimedia Commons

Trips to Alaska soon followed, by which time she had amassed a large collection of both flora and fauna. Annie proposed to finance a new natural history museum at the University of California, Berkeley, to preserve specimens and provide material for researchers on campus to further their studies. The Museum of Vertebrate Zoology was established in 1908, and when funding fell short, she made up the difference.

While waiting for the museum to open, Annie embarked on more trips to Alaska with her new companion, Louise Kellogg. Throughout their lifetimes, she and Kellogg collected nearly 7,000 specimens of birds, mammals, and amphibians for the museum. They also collected over 17,000 plants for the University Herbarium and contributed thousands of fossils. Annie remained, until the end of her life, the largest donor and benefactress of the museum, helping to fund and fill the museum with everything she found.

Annie shared her life with Kellogg for forty-two years. They ran a working farm together; originally they raised cattle, but switched to asparagus which, as a seasonal

crop, allowed them more time to travel during the year. During the summer, they went on fossil trips and during the winter, they stayed in Hawaii. Always on the lookout for collections, one winter they found over 100 species of shells for the University of California Berkeley's Paleontology Department.

In 1949, before a planned winter trip to Hawaii, Alexander had a stroke and remained in a coma until she died on September 10, 1950, just before her 83rd

birthday. Her ashes were returned to Hawaii and were buried in Maui near her childhood home.

Her name lives on in scientific nomenclature, with more than a dozen plants and animal species named after her, as is Alaska's Lake Alexander. Annie's philanthropy and contributions to science at the University of California Berkeley are still honored; in 2016 the first female peregrine falcon to nest in the campus bell tower was named Annie.

From One Insect to Another: Insect Communication by Rebekah Gano

What did one ant say to another? Nothing; they can't talk. What did one bee say to another? None of your bees-ness! Corny jokes aside, most humans hardly consider how insects communicate with one another. When we do, we might think of well-known behaviors like crickets chirping mating calls, lightning bugs flashing unique patterns, and ants laying trails of pheromones so that others can follow in their footsteps. Although the average person knows very little about insect communication, scientists have been studying it for decades and continue to discover new ways insects sense the world and the vast array of communication styles they use.

Just how do scientists figure out what insects are saying? We humans can't usually smell insect pheromones, hear many of their tiny vibrations, or even see all their colors and patterns. Given that we might not recognize when insects are communicating, we satisfy ourselves with looking for actions or conditions of one insect that appear to change the behavior of another. Since there is such vast diversity among insects, we look for various methods of communicating, including the use of pheromones and scents, vibrations, sounds, visual patterns (colors or lights), and touch.

It seems that insects are born knowing how to communicate with others of their kind. For instance, many insects, including beetles, use pheromones to get the attention of others, letting them know about great food or advertising for a mate; the beetles recognize the scents and fly to the sources as soon as they are mature. Butterflies, moths, and dragonflies appear to automatically recognize potential mates through visual cues, such as color, pattern and flight path. Other insects, such as caterpillars and other larvae, have very limited vision and rely primarily on tactile communication; they tap one another with their antennae or front appendages, leading each other from place to place.

As I was reading about insects and considering how much our human bent toward sight affects how we interpret insect behavior, a fact that I had overlooked my entire life jumped out at me: bee dances are done in the dark! Honeybees perform elaborate dances to tell others

in the hive where to find honey, and bee enthusiasts have carefully watched many dances and determined what the steps mean. That is, humans have analyzed bee movements with their eyes, but bees care not for how the dance looks. To them it's all about the vibrations, which can be felt throughout the hive.

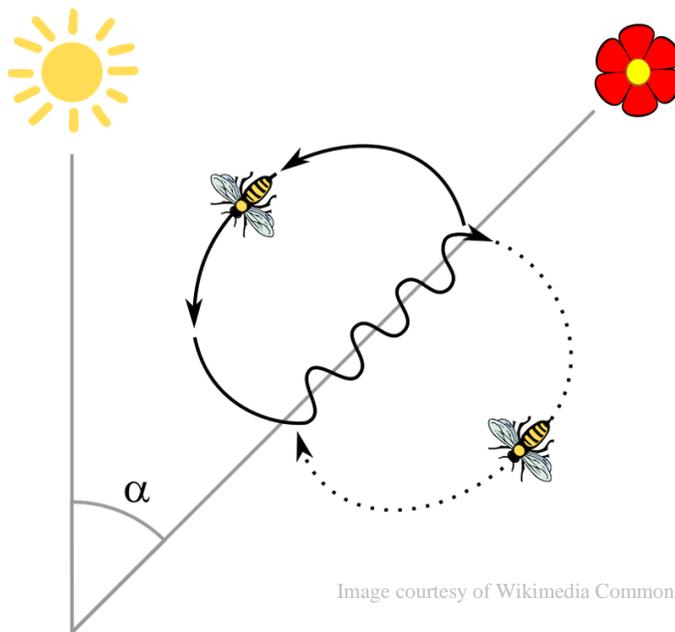


Image courtesy of Wikimedia Commons

Our human limitations have been enhanced by advances in technology, such as devices that allow us to listen to sounds outside of our normal hearing range. Audio devices have picked up sounds of ants crying for help. Certain ant species possess a special barb that they pluck with a foot. The barb vibrates, producing sounds. According to an ant study from 2013, even well-developed pupae will use the barb-plucking distress call, and other ants will come to their aid. The study also described how the sound of the call seemed to indicate the status of each ant in the colony. (So, take that, jokesters; some ants can talk!)

Treehoppers communicate more often than most people would imagine, too. Certain types of treehopper mothers

are known to keep their young safe by herding them. If a youngster wanders too far, the mother will tap it and the young hopper will return to the group. Furthermore, Ed Yong, in *An Immense World*, describes how two rainforest scientists, who typically studied frog calls, tuned their audio equipment to pick up lower and quieter sounds. They were amazed to discover that treehoppers

sent vibrations to each other through leaves where herds of the insects fed. According to Yong in his book, a mother treehopper and her young made sounds “like cows mooing” as they scattered from danger and then reunited with each other. Indeed, as Yong asserts, there are hidden realms all around us. It’s amazing to think what more the insects might be saying.

Sense of Place: Observations from My Yard by Diane Humes

I believe the best way to begin reconnecting humanity's heart, mind, and soul to nature is for us to share our individual stories. — J. Drew Lanham

During this interminable winter, after huddling through weeks of cold, in late January the Drummond red maple flowered - yes, maple trees have flowers - and the hundreds of bees buzzing around its branches caught my attention. It was the first sign of spring. Then, sunshine at last! We stepped out the front door to bask in the warmth and brightness; we were not alone.

Our yard was alive with birds and insects!

Two days past Groundhog Day, all the birds came out to play. In a few hours we saw or heard: White Pelican, Yellow-bellied Sapsucker, Orange-crowned, Yellow-rumped and Nashville Warblers, Ruby-crowned Kinglet, Downy Woodpecker, Red-bellied Woodpecker, Cardinals, Crows, Blue-gray Gnatcatcher, Carolina Chickadee, Carolina Wren, Tufted Titmouse, Blue Jays, Turkey Vultures, Black Vultures, Crested Caracara, Red-shouldered Hawk, plus bees, flies, hornets and a question mark butterfly.

The overhead birds or those calling in the neighbors’ trees were the icing on the cake. Our attentions were fixed on the trunk of our bur oak tree. Through binoculars we could easily notice the rows of sapsucker holes in the trunk - holes attracting not only the Yellow-bellied Sapsucker, but an Orange-crowned Warbler and a variety of flies, hornets, bees and butterflies. All were paying regular visits to sip sap. The sapsucker climbed his way up and down and around the trunk vigorously working the holes; the warbler clung to the furrowed bark by his little toes; the insects also crawled up and down the tree trunk and visited the holes.

Spring is not officially here yet; these are wintering birds and insects, slurping down much-needed calories on a sunny day when the sap is flowing. In fact, these are OUR winter birds and insects. Sapsuckers and Orange-crowned Warblers winter in the southern U.S. including the Gulf Coast. That is why we almost always observe them during the Christmas Bird Count. Soon, they will migrate north to breed, mostly in Canada.

Looking on the range maps for these two species, they are nearly identical in both their winter and breeding ranges. Interesting coincidence or have they evolved together? Upon doing a bit more research, I discovered that sapsuckers are a keystone species, able to tap wells of sucrose for a variety of creatures depending on the calories - hummingbirds, warblers, flies, hornets, wasps, chipmunks - as well as carving nest sites for themselves, also used by other species.

Three of the four species of sapsuckers - Red-breasted, Red-naped and Yellow-bellied (*Sphyrapicus ruber*, *S. nuchalis*, and *S. varius*, respectively) are known to interbreed and are so closely related as to be considered a cline or gradient species. In fact, it is above my pay grade to definitively say whether the scruffy bird on my tree was a female Red-naped Sapsucker with a single red feather on the nape, or a male Yellow-bellied Sapsucker with a single stray red feather on the nape. Especially, as I know that Red-naped Sapsuckers were recorded across the street in the park a few years ago.



Photo by Allan Treiman

Who knew that all this could be happening in my front yard?

My suburban yard, formerly coastal tallgrass prairie, inhabits a fortuitously high spot between two bayous emptying into Clear Lake - in other words, surrounded by water on three sides - frequently wet, but not flooded during my tenure. It has been my place for 32 years, a span of time both long and short - long for me, but the blink of an eye for the environment. I only know what

came before me from histories and photos; I have watched changes all around as roads were widened and lengthened, homes and businesses added and green spaces deleted or changed. It seems a miracle that any wildlife exists at all.

In my neighborhood, everyone's yard was planted (I assume) by the developer beginning about 50 years ago, following a pretty standard formula of non-native shrubs and lawn, with a selection of native trees - mostly willow or water oaks. Our yard was no exception and we let most of it stay; I made additions of bulbs, other native tree species and pollinator plants. In the front yard we

now have a Drummond red maple, Southern magnolia, bur oak and redbud, in addition to the sweet gums - one severely damaged by Hurricane Ike. Vegetation in neighboring yards appears unchanged in 32 years, except perhaps to have become sparser.

My front yard observations have inspired me to keep watching, recording and learning about this place I have called home and I think that many of us, as master naturalists, have similar stories. Please share your stories so that we may enlarge the sense of our place, one yard at a time.

Updates on the Attwater's Prairie Chickens by Sandy Parker

The 2022 season for the Houston Zoo's breeding flock of Attwater's Prairie Chickens (APCs) was very promising for this critically endangered captive breeding flock housed at the NASA Johnson Space Center. A total of 54 chicks and 2 adults were released at the US Fish and Wildlife Service's (USFWS) Attwater's National Wildlife Refuge in Eagle Lake, Texas from the NASA facility.

The 2022 season started out with 12 breeding pairs. Of these, 11 birds produced eggs; however, only nine produced eggs that resulted in chicks. Of the 170 eggs laid during the season, 131 were fertile. Of those fertile eggs, 103 hatched and 73 of those chicks survived to 8 weeks of age. This translates to a fertility rate of 77%, hatchability of 79% and survivability of 71%. The zoo keepers compared these statistics to the 2021 season and found that fertility increased by 21%, hatchability was about the same and survivability increased by almost 15% - all indicating husbandry practices continue in a positive direction.

As in the past, domestic Bantam Chickens were used as foster hens that could raise the APC chicks, if necessary. Seven chicks had to be moved to hand rearing due to pecking by these domestic hens.

However, 59 chicks were hatched and raised in the pens by their moms. Of these chicks, 64.4% survived to release. The exciting news is that the survivability rate almost doubled from the 33% seen in 2021!

Twenty-seven chicks were "hand reared" by the zoo staff after the eggs were artificially incubated. Initially, only ten chicks were designated for rearing by hand, but 17 more were added to the hand reared mix, after poor care by the hen or the chicks being hen pecked by the domestic chickens.

A big change for 2022 related to the chick's diet. Inanition - exhaustion caused by lack of nourishment - was a leading cause of mortality for young chicks in

2021. So, zoo staff increased the insect volume from 2,000 crickets and mealworms to 28,000 crickets and 10,000 mealworms per week! This change increased the survival of the chicks within their first 10 days.

Vegetables were also planted in the pens to draw more insects. Seeding trays, grown by staff in the the Zoo's Horticulture Department, were carefully trimmed to one-inch sprouts (to avoid impaction issues) and provided for the chicks to forage on in the gravel sections of the pens.

For more information on the status of this iconic species read the 5-year review (2021) by the US Fish and Wildlife Service:

https://ecos.fws.gov/docs/tess/species_nonpublish/995.pdf



Photo courtesy of U.S. Fish and Wildlife Service

The Galveston Bay Area Chapter (GBAC) continues to assist the Zoo with planting and maintaining the pens. In the past, our efforts have focused on eradicating the invasive Deep-rooted Sedge (DRS). I am pleased to report that we have virtually eliminated the DRS. The seeds are removed from the few remaining plants and then they are completely removed. The Zoo continues to treat the Torpedo Grass with Roundup.

Recently, we divided many of the existing Gamagrass and Switchgrass clumps and used them to replant in many of the pens as cover for the birds. We also seeded

the chick rearing facility pens with native forbs and planted several native grasses in each pen.

We plan to continue to offer tours of the APC pens this year to our GBAC members, so stayed tuned!

Beauty in Motion: An “Ode” to Dragonflies Abhishek N. Prasad

Dragonflies...we've all noticed these often conspicuously sized and colored insects flying around on warm spring and summer days. As Texas Master Naturalists, we recognize them as the official program logo, a symbol modeled after the Cyano darner (*Nasiaeschna pentacantha*) emblazoned upon our websites, apparel, and even license plates. In fact, it is featured on the crew patch for the recent Space X Crew-4 mission, commanded by NASA astronaut, Gulf Coast Chapter Master Naturalist and our April chapter meeting speaker Kjell Lindgren.

But how much do you *really* know about them? If you're anything like me (until recently at least), the answer is pretty much nothing. Like many people, I could identify a dragonfly as, well, a dragonfly, but beyond that, I had absolutely no understanding of their species diversity and their varied, often enigmatic, life histories. That began to change one day a few years ago...

I purchased my first DSLR-style camera and was very much figuring out how to operate the thing. Long story short, after several months of playing around with it, I had yet to produce a photo that impressed my loving, but often brutally honest wife, but that changed when a male Eastern pondhawk (*Erythemis simplicicollis*) landed in front of my lens.

Simply put, that photo was the first one I captured with my new camera that elicited anything more than sympathetic pseudo-interest from her. In fact, she was quite taken by it! As much as I would have liked to have claimed credit at the time, the credit all belonged to the insect. Dragonflies are the supermodels of the insect world. In fact, they are commonly referred to as “the birders’ insect”, owing to the relatively large size of many species, their often vibrant colors and complex patterning. Many species readily adopt extremely photogenic poses, providing an opportunity for an ego boost to even the most novice of photographers. In any case, that first photo quickly developed into an obsession to learn more about these fascinating insects.

Despite their name, dragonflies are not closely related to flies (nor dragons, for that matter). Along with the superficially similar looking, but generally smaller and more delicate damselflies, they belong to the insect order Odonata. Worldwide, this order includes ~7000 described species (referred to as odonates, or more

simply by enthusiasts as “odes”), roughly split evenly between dragonflies and damselflies.

One of the easiest ways to tell dragonflies and damselflies apart is the way they hold their wings when at rest: all dragonflies have their wings held out laterally, unfolded. In contrast, damselflies fold their wings together behind their abdomens when at rest. Dragonflies also typically have larger eyes relative to their heads, which are spaced closer together, versus damselflies which have smaller eyes, usually farther apart.



Photo by Abhishek N. Prasad

While seemingly impressive, this level of species diversity is actually quite modest relative to other insect orders. For example, there are ~180,000 described species in the order Lepidoptera (butterflies and moths), 125,000 in Diptera (flies), and an astounding 400,000 species in Coleoptera (beetles). Here in Texas, we are quite fortunate, as out of the approximately 500 species of odonates present in the United States, almost half of them are found in our state (more than any other state in the U.S.). Within the Greater Houston area, there are 117 species of odes with observations on iNaturalist, so even in our little corner of the state, there is an abundance of different species. For the rest of this article, I will focus on dragonflies, but most of what is said here applies to damselflies as well.

In contrast to *holometabolous* insects (such as bees, wasps, butterflies, and moths), which have a four-stage life cycle (egg, larva, pupa, adult), dragonflies are *hemimetabolous*; that is, the wingless larvae (known as “nymphs” or “naiads”) undergo a series of molting stages

that culminate in the emergence of winged adults, without a pupal stage in between. All dragonfly larvae are aquatic or at least semi-aquatic, and adults of most species spend their lives close to water, though there are exceptions.

Like many insects, they spend most of their lives as larvae (anywhere from several months to several years) and have relatively short lifespans as adults (weeks to months); the primary goal is reproduction.

Both larval and adult dragonflies are voracious predators within their habitats; larger species can capture and eat small fish! Adults of all species are insectivores; they capture prey in flight before settling down for a meal. In turn, dragonflies are prey for birds, fish, frogs, turtles, spiders, and even other dragonflies. Smaller species may fall prey to other insects, such as robber flies.

Most species of dragonflies are exceptionally strong fliers, zipping through the air at remarkable speeds while hunting prey, pursuing a mate, or defending territory. Their powerful wing muscles enable them to quickly maneuver in all directions, including backwards, which can make them quite tricky to observe closely (much less photograph!) in flight. Their remarkable flying ability has made them the bioinspiration for technological development, such as drone design.

If you've walked by a pond during the warmer months, you may have seen a strange "wheel" rapidly fly past you and wondered what it is. Well, odds are good it was a pair of mating dragonflies.

Male dragonflies have two sets of sexual organs: the first (primary) is located at the tip of the abdomen, as with most insects. These are the terminal appendages, or "cerci", and vary dramatically in their morphology between species. When the male is ready to mate, he will transfer sperm from the terminal appendages to the secondary genitalia, located below the second and third segments of the abdomen, close to the thorax. When he has found a receptive female, the male will use his terminal appendages to clasp her head behind her eyes, locking her in place. Often, they will fly around in tandem like this, with the male in front and the female behind.

When it comes time to mate, which may occur many times per pairing, the female will bring her abdomen up to the male's secondary genitalia, forming a "mating wheel" (sometimes, appropriately enough, resembling a heart-shape). While some species prefer to do this at rest, others are happy to indulge mid-flight.

There are two types of egg-laying strategies employed by dragonflies, depending on the species: endophytic ("within a plant"), and exophytic ("outside a plant"). Endophytic females will dip their abdomen into the water

searching for a plant stem, cut a slit in the stem with their terminal appendages, and lay an one or more eggs inside the slit. Exophytic layers will hover above the water, then drop down rapidly and dip their abdomen into the water, releasing an egg (sometimes the egg is simply dropped mid-air). In both instances, the female may be solo, or she may still be paired up with the male. After about a week, the eggs will hatch, the larvae will emerge and start the lifecycle anew.



Photo by Abhishek N. Prasad

There is so much more about dragonflies than can be written in this space. Moreover, damselflies themselves are worthy of their own article. Most of the information I have found in the excellent books by Dennis Paulson and John Abbott, listed below, which I highly recommend. If you are interested in documenting your own dragonfly and damselfly observations in a public repository, both iNaturalist and Odonata Central are excellent citizen science initiatives which I use and contribute to frequently. If they weren't on your radar before, I hope I've been able to convince you of the beauty and uniqueness of these incredible insects, and perhaps inspire you to learn more about them.

Books:

- *Dragonflies and Damselflies of the East* by Dennis Paulson (Princeton Field Guides, 80)
- *Dragonflies and Damselflies of the West* by Dennis Paulson (Princeton Field Guides, 47)
- *Dragonflies of Texas: A field guide* by John C. Abbott (Texas Natural History Guides)
- *Damselflies of Texas: A field guide* by John C. Abbott (Texas Natural History Guides)

Websites:

- <http://www.inaturalist.org>
- <http://www.odonatacentral.org>

Galveston Bay Injured Bird Response Team to the Rescue by Lisa Hardcastle

Last year fellow GBAC Texas Master Naturalists aided over 720 injured or fledgling birds and the occasional small animal! They are part of the Galveston Bay Injured Bird Response Team (GBIBRT) founded by GBAC members Sandy Parker and Stennie Meadours in 2016. (See: [The Midden, August 2017.](#))

GBIBRT coordinates a hotline system for local animal control agencies and citizens who find injured birds and maintains a transportation team to deliver them to the Wildlife Center of Texas in Houston for treatment and rehabilitation with the goal of release back into the wild.

GBIBRT is gearing up for its busiest time of year - spring - and needs you! Would you like to help GBIBRT give injured and fledgling birds a second chance at life? Volunteer opportunities are available for teams on Galveston or the Mainland, with many roles to fill. You can commit to as little as a few minutes a day, a few hours a month or more! The birds need you and GBIBRT needs you!

To volunteer or if you need more information, contact Lisa Hardcastle at lisa.hardcastle@gmail.com.

Finding Fossil Prints by Diane Humes

Fresh fossils are the tracks or prints made in fresh concrete, usually on sidewalks, roads or driveways. Not technically fossils, these imprints capture stories of events that could have taken place in our own yards. If you look, you will find them everywhere.



Elk tracks by Michael Patrick McCarty

I know my cat walked across the wet cement on my porch and driveway after we had foundation repair. Did he purposefully walk on ALL the wet concrete, on perimeter patrol? Was he chasing a lizard? Whatever the motive, he clearly was there, and the story will remain as long as the concrete. How many other stories are written in concrete?

At Armand Bayou Nature Center you can visit the imprints of bobcat, skunk, raccoon, great horned owl, white-tailed deer and coyote pressed into the concrete at the Trailhead Circle. These were formed from plastic

molds - not perfectly lifelike, I'm sure; hopefully, they will pique the interest of many visitors about these nature center residents. Also, look for imprints of native leaves on sidewalks at UHCL, as well as Armand Bayou Nature Center.

Real fossil imprints have recorded humans and animals, walking not in concrete but sediments and offer many clues to life in the past. At White Sands National Park in New Mexico researchers discovered human footprints - adults and children - crossing an ancient lakebed from the Pleistocene. This exciting discovery may push back the earliest dates for humans living in North America.

Often fossil prints are uncovered during dramatic events. In 1908, floodwaters roared down the Paluxy River in Glen Rose, TX, revealing 113-million-year-old tracks of *Acrocanthosaurus* and *Sauroposeidon*; this area is now Dinosaur Valley State Park.

More recently, at Canyon Lake near New Braunfels, TX, a record rain event on Fourth of July weekend in 2002, water cascaded over the dam's spillway and gouged out the Canyon Lake Gorge - 20' deep, 200' wide and one mile long. In the process, fractures and fissures in the limestone rock and 110-million-year-old dinosaur footprints came to light. You can now hike down the gorge and go back into deep time as you visit Cretaceous fossils and dinosaur tracks.

Texas is a really good state for fossils; the Rolling Plains Chapter partners with the Whiteside Museum in Seymour, TX which is the best place in the world for finding Permian fossils from 287 million years ago, like *Dimetrodon* - 50 million years older than any dinosaurs!

All these places belong on my bucket list; perhaps they are on yours!

Editorial Notes by Diane Humes

I recently applied for permission to re-print a *New York Times Magazine* article from January 31, 2023, *Why I Hunt for Sidewalk Fossils*, by Jessica Leigh Hester and quickly entered the world of big business. I found that since we publish *The Midden*, send it out to the membership and archive it on our website for the website's lifetime, the fees to re-print her article (at a discounted rate, no less!) added up to \$1000.00. The article's word count at 1118 words, made the price just about \$1.00 per word - again, at the discounted rate. I did not whip out my checkbook - just started thinking.

The Midden might be worth its weight in gold!

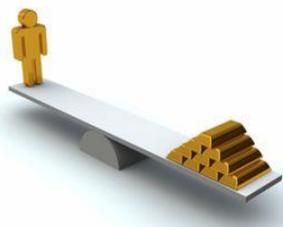
Printed in multiples of four pages, *The Midden* is most often a 12-page production of possibly 5000 words. The April 2023 issue marks issue number 112. So, since Alan Wilde began publishing in 2002, we have potentially generated up to (112 X 5000) or 560,000 words. If, as the New York Times suggests, licensing all these words equals \$1.00/word, you can see that *The Midden* is, indeed, potentially worth its weight in gold!

In fact, more than gold, which is currently valued at \$1820 per ounce, since my double stack of Midden archives weighs 12.25 pounds. It is theoretically worth \$356,720, if it was solid gold!

That's not all, of course. What about our time?

Assume each Midden Team member spends 10 hours a month working on articles - time valued in 2022 at \$29.95/hour. That means \$3,594 per person working on the Midden Team each year. Since we have published for 22 years and, on average, perhaps 5 people have consistently contributed at any one time, the total hours spent could be valued at \$395,340.

Quibble with my math or not; we must agree, as master naturalists we are worth more than gold!



The real test, however, is not what our time or effort is worth, but how long it lasts and how many people we reach. In that regard, two names come immediately to mind to inspire us: Gilbert White and Aldo Leopold,

writers of natural history with widespread and long-lasting impact.

Gilbert White (1720 - 1793) was a country parson and naturalist in southwest England who kept meticulous journals about his daily observations of plants, animals and natural phenomena around his home. He studied every detail of his surroundings and published *A Natural History and Antiquities of Selborne* in 1789, which remains in print today. White's insights gained from a lifetime of study in Selborne have influenced naturalists and ecologists in the English-speaking world ever since. White would be 303 years old this year.

Another, whose name you should already know, was Aldo Leopold (1887 - 1948), father of wildlife ecology and American conservationist who championed "the land ethic" to describe the ways that people are part of nature - or should learn to be. His book, *A Sand County Almanac*, published in 1949 has sold over 12 million copies and been translated into at least 12 languages. It ought to be required reading for every master naturalist!

So, after you finish reading this, go find either or both these books and prepare to be inspired!

We cannot know about the longevity or reach of our work; our mission is to learn how to be good stewards of our piece of Texas and teach others to do the same.

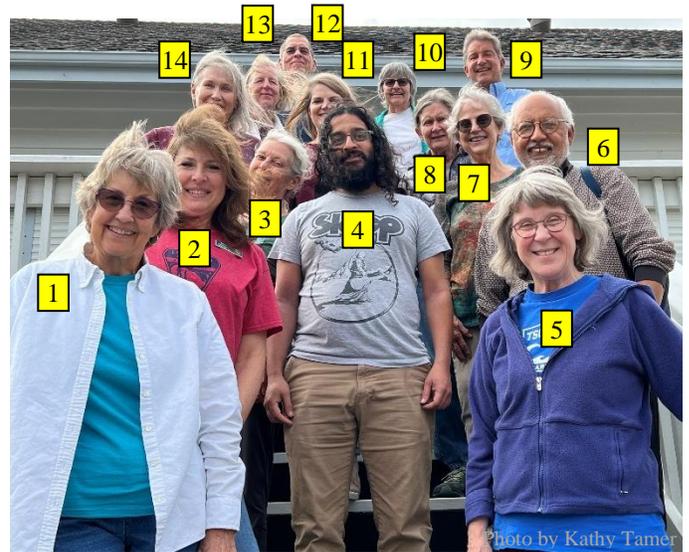
Keep up the good work, everyone, and remember, "You are worth more than gold."



Meet the Board by Carolyn Miles

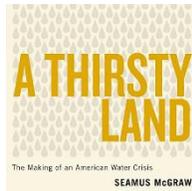
Can you match the board members to the photo? Not all board members could make the photo shoot.

- ___ President Pam House
- ___ Vice President Gene Fisseler
- ___ Treasurer Meade LeBlanc
- ___ Secretary Cynthia Hughes
- ___ Advanced Training Director Mike Pettit
- ___ Membership Co-director Patty Trimmingham
- ___ Spring Class Director Diane Humes
- ___ Communications Director Mary Dobberstine
- ___ Sponsor Julie Massey
- ___ Justice, Equity, Diversity, and Inclusion Director Mohammed Nasrullah
- ___ Spring 2022 Class Rep. Vivian Allen
- ___ Spring 2022 Class Rep. Lisa Hardcastle
- ___ Fall 2022 Class Rep. Abhi Prasad
- ___ Fall 2022 Class Rep. Laura Clark

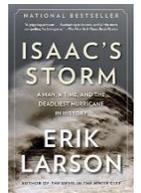


Heritage Book Study - Review of *A Thirsty Land, The Fight for Water in Texas* by Cheryl Barajas

Seamus McGraw is the author of several books including: *The End of Country: Dispatches from the Frack Zone* and *Betting the Farm on a Drought: Stories from the Front Line of Climate Change*. His current book, *A Thirsty Land*, delves into the history of Texas and its water rights and regulations.



On May 1, we will start discussing the first half of *Isaac's Storm: A Man, A Time, and the Deadliest Hurricane in History* by Erik Larson. If you have never read this book, it is a fascinating history of the 1900 Galveston hurricane.



Have you ever thought about where your water comes from? Will there always be enough for all of our needs?

From this book you will learn that Texas sits at the same latitude as the Sahara and has much of that desert region's aridity. So much so, says McGraw, that in any given year, "it is more likely that a significant drought will occur somewhere than it is that the average amount of rain will fall."

This book is a must read for anyone who wants to learn more about water rights and regulations and the laws governing such.

At our April 3 Book Study, we will conclude our discussion of this book with pages 135 - 262.

Please make plans to join the Book Study this year; we have lively discussions about what we have learned with our fellow members after reading our chosen books!

We welcome your participation each month for 2 hours of AT on the first Monday of the month at 1pm. Please note that we welcome anyone to participate whether you are a TMN certified, re-certified or just want to remain a chapter member. We look forward to seeing you and let us know if you have read any good books about nature lately!

Seeds planted, they sprout
Flowers bloom, insects visit
Seeds form, life renews

By Beth Frohme

Waving bluebonnets
Flowers catch winds of Texas.
Are you native?

By Rose Merle Symmank

April and May Activities

ADVANCED TRAINING OPPORTUNITIES

Chapter Meeting - April 6; Master Naturalist in Space
Presenter: Dr. Kjell N. Lindgren
5:30pm Social, 6:30pm Meeting, 7pm Speaker
At Extension Office* and via Zoom; 1 hour AT

iNaturalist

Wednesday, April 12, at 6pm via Zoom
Presenter: Scott Buckel

Bald Eagles

Wednesday, May 17, at 2pm via Zoom
Presenter: Mary Schwartz

Ongoing

Heritage Book Study Group

First Monday of every month via Zoom
10am-noon; 2 hours AT
Contact: Cheryl Barajas cherylbarajas9@gmail.com
See Pg. 9 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

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.

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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.

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The Midden Deadline

for the next issue

April 24