

# The Midden

Fireflies courtesy of firefly.org

Galveston Bay Area Chapter - Texas Master Naturalists

April 2024

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## President's Corner by Gene Fisseler

The flames that fueled civil rights activists and mobilized the counterculture in the 1960s also energized the environmental movement. My generation was awakened by Rachel Carson's book *Silent Spring* in 1962. In the same year that the U.S. landed its first man on the moon, 1969, the Santa Barbara oil spill and a fire raging on the surface of Ohio's Cuyahoga River helped galvanize our environmental consciousness.

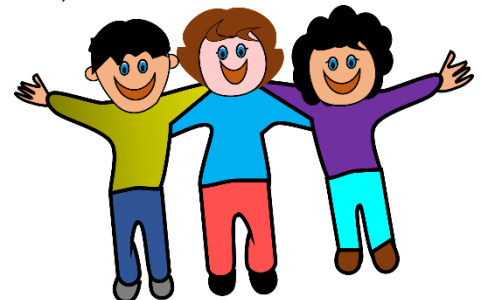
It was a watershed decade for environmentalism, which saw membership in the Wilderness Society and the Sierra Club explode from 100,000 in 1960 to almost a million within ten years. It was the so-called hippies that led the pro-environmental movement and participated in the first Earth Day. Though derisively referred to as tree huggers, they opened other folks' minds to the concepts of taking care of the Earth, recycling, preserving wild places, conserving natural resources, and protecting wildlife - ideals we still aspire to now. The 1970s saw the creation of the U.S. EPA and passage of the Clean Air Act, the Clean Water Act, and the National Environmental Policy Act, all of which are cornerstones of successful natural resources regulation in our country a half a century later.

I like that this is my heritage. I like that I grew up listening to John Denver sing about life in the wide-open spaces and to the band Spirit warn me that "it's Nature's Way of telling me something's wrong." And it's not lost on me that the first environmental generation has now entered its twilight.

This is why I, and maybe you, spend a fair amount of TMN volunteer time working with youngsters in elementary, middle, and high school through Galveston Bay Foundation (GBF) and Armand Bayou Nature Center (ABNC), introducing them to important conservation and environmental concepts. Helping future generations understand our relationship with nature ensures that my heritage can also be my legacy. When children connect with nature, it provokes them into thinking, taking action, and formulating their own ideas. And that is a very powerful thing.

I hope that all y'all seek out opportunities to engage with today's kids - tomorrow's adults - sharing with them what you've learned over the years and as a TMN. Through GBF, ABNC, Friends of Galveston Island State Park, Environmental Institute of Houston, Camp Wild, and Beach Heroes, among others, you can ignite flames in the next generation.

If this idea appeals to you, give me a call. I know people! Seriously! People you can plug into in order to keep this fire burning, to keep this train rolling, or just to keep on truckin'...whichever cliché works for you.



## Next Chapter Meeting

April 4

Movement Behaviors of  
Sharks at the Flower  
Garden Banks

By

Brett Swezey  
Texas A&M University at  
Galveston

At Extension Office\*  
and via Zoom

## Women in Nature: Elizabeth Gertrude Britton by Meade LeBlanc

Early visitors to the New York Botanical Garden, established in the late 1880s, were so impressed with the plants that they often decided to take some of them home. The amount of vandalism was almost beyond belief, as flowers, entire plants, and branches of flowering trees would disappear through the gates toward the elevated railways each Sunday. Sometimes, a woman would hurry towards the perpetrator, and “the precipitate encounter was usually one that the over-zealous lover of someone else’s flowers would not soon forget.” The woman enforcer was Elizabeth Gertrude Britton, who was instrumental in founding the garden with her husband, Nathaniel Lord Britton. The couple were inspired by a visit to England’s Royal Botanic Gardens at Kew a few years earlier. While Mr. Britton became the first director of the New York Botanical Garden, Elizabeth was a volunteer there.



Photo courtesy of Wikipedia

Elizabeth had long been interested in plants. Born in New York in 1858, she became a teacher after graduating from Normal College at the age of seventeen. Several years later she joined the Torrey Botanical Society, considered the oldest botanical society in America. The society, formed by Columbia College (later Columbia University) Professor John Torrey, was composed of professional and

amateur botanists, students, and others who enjoyed nature. They collected and identified plants, met in the evenings to discuss their findings, and published a scientific journal that is still in print today.

When she was 23, Elizabeth published her first article based on unusual observations of plants. She began to focus on bryology (the study mosses and related plants) and her articles became models of writing popular scientific articles, with titles like “The Humpbacked Elves” and “The Brownies.”

At 27, she married Nathaniel Lord Britton, a geologist and botanist at Columbia College, and resigned from her teaching position. Britton took charge of the moss collection at Columbia, in an unpaid position. She continued her scientific studies and was appointed editor

of the Torrey Botanical Club’s journal. Her writings included an eleven-part series of papers called *Contributions to American Bryology*. She also wrote for popular magazines, including an eight-part series called *How to Study the Mosses*.

While collecting botanical specimens, Elizabeth traveled through the US, including the Adirondack Mountains and the Great Dismal Swamp. The couple made more than 20 trips to the Caribbean and West Indies. She published her findings in scientific journals and wrote the chapters on mosses for her husband’s books on the flora of Bermuda and Bahamas.

She promoted the study of mosses, especially by women scientists, and chaired the division of Bryophyta for the (Women’s) National Science Club (NWSC) in 1897. She also was an advisor to doctoral students at Columbia, in an unofficial capacity. Elizabeth joined with one of her students to form what would become known as the American Bryological and Lichenological Society.

Elizabeth became interested in the conservation of wildflowers and was a founding member of the Wild Flower Preservation Society of America in 1902. She was a strong supporter of conservation of wild plants for the next 35 years, publishing, lecturing, and sending correspondence intended to encourage adoption of legislation in various states. She was also active in local conservation activities in schools and garden clubs.

Britton wrote numerous articles under the series title of *Wild Plants Needing Protection*. Her accessible, non-scientific writing style is evident in the introduction to an article called “Wild Pink”: “Before the trees cast much shade, while their greens are still so exquisitely fresh and varied, a bright flash of color will attract the eye to the Wild Pink, growing in hilly places on rocks or often in their cracks and crevices with the Saxifrage.”

During the period 1881 to 1930, she published 346 papers, of which 170 were about mosses. Marshall Avery Howe, the third director of the New York Botanical Garden, described her as “a woman of extraordinary physical and mental energy—the possessor of a remarkably quick and brilliant intellect. She has left an enduring record in the literature of science, and her well-directed activities have had an outstanding influence in the conservation of the native flora of the United States.”

The moss genus *Bryobrittonia* is named for her, along with fifteen species of plants. Her papers are held by the New York Botanical Garden Mertz Library. The archive, all 10 linear feet, contains personal papers, published research, artwork, photographs and printing plates.



Author Elizabeth Gilbert used her papers as inspiration for Alma Whitaker, the heroine in her novel *The Signature of All Things*. Alma is a woman ahead of her time in 19th century Philadelphia, who wanders the forests looking for mosses, and becomes a leading moss expert, breaking free of the constraints most women faced during that time.

The Wild Flower Garden of the New York Botanical Garden has a memorial plaque honoring Elizabeth Britton. Mounted on a ten-ton boulder, the text reads, "Let those who find pleasure in this garden remember Elizabeth Gertrude Knight Britton, lover of wildflowers and ardent advocate for their protection," possibly a gentle reminder to not pick the flowers.

## Beach Heroes Art Walk by Kathleen McClean

The Edna Room of the 1894 Grand Opera was transformed by the colorful exhibit of local school children's art festooning its walls during the Galveston Art Walk this past January. A culmination of the annual Beach Heroes Project, the exuberant display consisted of over six hundred creative works representing five elementary schools and depicting the importance of keeping Galveston beaches free of plastic pollution.

In preparation of the exhibit, Texas Master Naturalist volunteers carefully matted and labelled each piece with the artist's name and school, and then rose to the challenge of choosing four works that would be featured on the latest set of Beach Hero Project notecards to be published. They then selected second place winners and mounted all winning submissions in sleek picture frames.

Although it was a cold and dark winter evening, over two hundred people attended the Beach Hero Project exhibit at The Grand, including several of the Beach Hero artists, who were announced with a hearty "Artist in the House!!" as they entered the building. TMN volunteers helped the artists find their exhibited art, guided them to sample some of the ninety dozen cookies provided by TMN bakers, then led them to a craft table where they could create more art.

Two first place winners attended the exhibit: Jewel Stripling, representing Parker Elementary, won her distinction with an inspirational drawing of a girl sporting a Beach Heroes cape and swimming in the ocean whilst combatting plastic pollution. Her family had delayed their ski trip departure just so they could see her creation displayed at the Beach Heroes Project Exhibit. L.A. Morgan Elementary was proudly represented by Lillyana Rosas, whose illustration depicted a stingray and bright red octopus enjoying their fresh seascape with a group of

smiling marine friends. In addition to having their artwork beautifully framed, the winners each received a commemorative set of Beach Hero notecards featuring their designs.



There were several dozen cookies left at the close of the exhibit. Alice O'Quinn arranged for them to be donated to the Casa Juan Diego Women's Shelter, where they were most appreciated by the resident children. According to the shelter, the kids were overwhelmed with happiness that there were enough cookies to dunk into their milk for a WHOLE WEEK!!

The TMN Beach Hero volunteers are continuing their presentations to elementary school children through the spring of 2024, and another collection of Beach Hero artwork is in the making. If you are interested in participating, their schedule is posted on the GBAC calendar. Beach Hero Project notecards are available for purchase at all GBAC chapter meetings; proceeds support the Beach Hero Project.



## Dragonflies are Us by Diane Humes

Unlike a court of law where we might ask "why" to understand motive, as scientists we are taught to ascertain truth using measurable quantities - units such as weight, time, volume, height, length, in other words, numbers. So, we may not be able to say why, out of the 5,000 existing dragonflies and damselflies in the world, the Cyrano darner (*Nasiaeschna pentacantha* (Rambur, 1842)) became our Texas master naturalist symbol, but we can learn quite a lot about it.

First, the name: Cyrano de Bergerac, French novelist, playwright, and duelist, lived from 1619 to 1655, but he has, perhaps, become most famous for being the main character in a play written by Edmond Rostand in 1897 and its many stage and film adaptations. Cyrano, a swaggering poet with "*panache*" - the word coined in the play - was notable for his large, ugly nose, a distinguishing feature on our dragonfly's forehead or *frons*, noted both by the common and unpronounceable-looking scientific name.

Linnaeus (1707 - 1778) began his system of binomial nomenclature using Latin and Latinized names, beginning with plants. With his system established, perhaps to avoid confusion or duplication, he and the zoologists began naming animals, mostly using Greek words, which are less familiar to us. But *nasi* or *nas* means nose, *aesch* means ugly, *penta* is five and *cantha* means spines or thorns. So, (*Nasiaeschna pentacantha*) refers to a five-spined creature with an ugly nose - our Cyrano darner. (The five spines refer to a patch of spines under the female's tenth abdominal segment.)

The designation (Rambur, 1842) refers to Jules Pierre Rambur, French entomologist (1801 - 1870) who first examined insect genitalia, realizing their importance for species identification. He published a large volume, *Histoire naturelle des insectes*, in 1842 categorizing dragonflies, damselflies, and scorpionflies - at that time grouped together taxonomically. Although not widely known during his lifetime, Rambur's meticulous drawings show that he was first to pay attention to the definitive distinguishing characteristics of these species.

Dragonflies and damselflies are beautiful insects, grouped in the ancient order Odonata. While dragonfly fossils date from 327 Mya, those of damselflies are much younger - from the Late Jurassic, only 153 Mya. Most dragonflies and damselflies live in the tropics; altogether they comprise 25 families. North America accounts for 471 dragonfly and 140 damselfly species out of the worldwide total.

Members of the order Odonata may be told from other insects by their minutely small antennae, extremely large eyes, their two pairs of membranous wings with many

small veins, long and slender abdomens, and an aquatic larval stage - nymph - with posterior tracheal gills, and extendable jaws underneath the head that hatches directly into an adult. Nymphs live months or years underwater, molting multiple times, depending on the species. After the final molt, the adult emerges as an adult with functional wings - no pupal stage as with butterflies.

Generally, dragonflies are stouter-bodied and hold their wings extended to each side at rest, while damselflies are slender and delicate, with wings held above their bodies while at rest. Even in the egg stage, dragonflies can be told from damselflies; dragonfly eggs are round and tiny (0.5mm), while damselfly eggs are cylindrical and longer (1mm). Dragonfly nymphs are short and bulky with internal gills, whereas damselfly nymphs are slenderer and have external gills.



Photo Mary Keim

The Cyrano darner belongs to the family of darners, Aeshnidae, sometimes spelled Aeschnidae. In Texas and the southern U.S., this group makes up a relatively small number of 24 species in 10 genera, often brilliantly colored and among the largest dragonflies flying today. Their large heads and eyes and long, slender abdomens suggested their similarity to "darning needles", hence the name "darners". Found worldwide, they are the strongest fliers, tirelessly flying forward, backward or hovering like a helicopter on their four large wings; they are the largest of all dragonflies. The Springtime Darner, Fawn Darner, Swamp Darner, Riffle Darner, and Cyrano Darner are the single species in their respective genera.

"Our" darner is widespread, but uncommon, ranging from New Brunswick to Minnesota and Nebraska and south from Florida to Texas. A creature of sluggish, shaded streams and swamps, it seldom perches except to eat and endlessly patrols its territory in a "slow and fluttering" pattern through overhanging grasses and branches, with wings held up at an angle. Adults are voracious predators most active in mid-summer, catching insects and other small invertebrates, including other dragonflies

and mosquitoes! Females deposit eggs in wet logs or stumps in or near water; nymphs, also predatory - they eat mosquito larvae - spend months in the water, before becoming adults.

Fascinatingly, at least 16 dragonfly species, within the darner and skimmer families, are known to migrate, some for great distances and across oceans, using the same flyways as falcons and hawks. Also, amazingly, this migration, like that of Monarch butterflies, encompasses multiple generations! However, this is not known with our Cyrano darner.

Dragonflies, strong flyers with light bodies, have inspired NASA engineers. The *Ingenuity* flyer, during its 3 years on Mars, has made 72 flights in the thin Martian atmosphere, traveling 10.5 miles and soaring to 78.8 feet before grounding itself with a damaged wing. *Ingenuity* exceeded all expectations, so an updated and more robust version of this spacecraft, called *Dragonfly*, will

launch in 2026 to explore Saturn's moon Titan, for arrival by 2034. Go, *Dragonfly*, go - we can't wait!



Photo courtesy of NASA

## Invasive Hammerhead Flatworms by Madeleine K. Barnes

What are they and could this creepy creature be the monster in a Hollywood movie? Or is it a biological threat lurking just under your feet? Warning: keep your shoes on, no more barefoot walking in the yard after you read this. You may need to reconsider wearing gloves when potting, planting, or weeding too.



Photo courtesy of Wikimedia Commons

The common name for this invader is the Hammerhead flatworm or Broadhead planarian since the head resembles the shape of a Hammerhead shark, only rounded. This terrestrial flatworm, *Bipalium kewense*, has a snake-like, very narrow body measuring up to 15 inches long (usually in the range of 8 to 12 inches) with a half-moon shaped head. The Latin name *Bipalium* comes from bi-, "two" + pala, "shovel" or "spade", because species in this genus resemble a pickaxe. Typically, light or honey-colored, with 1 to 5 dark dorsal stripes (median stripes are thin), and a dark collar that is incomplete in

this species. A complete dark collar could be a different species, *B. vagum*.

Like all *Bipalium*, the hammerhead flatworm is hermaphroditic. Although sexual reproduction has not been observed, egg cases have been found. Reproduction seems to be primarily achieved through fragmentation: a small rear portion of the worm will pinch off, and "stay behind" as the worm moves forward. The head begins to form on the new worm within about 10 days. This reproduction by fragmentation may happen a few times a month. If injured, worms rapidly regenerate damaged tissue.

*Bipalium* is a carnivore and uses chemoreceptors located under the head or ventral groove to detect prey, which include earthworms, slugs, snails, insect larvae and each other. After tracking its prey, the hammerhead worm pushes it against a surface and entangles it in slimy secretions. Once the prey is immobilized, the worm extends the pharynx from the midway underside of its body and secretes digestive enzymes, and then ingests this liquefied tissue. When digestion is complete, the worm's mouth also is its anus. Hammerhead worms store food in vacuoles in their digestive epithelium. A worm can survive several weeks on its reserves and will cannibalize its own tissues for food. They are real survivalists.

Hammerhead flatworms are native to Southeast Asia / Vietnam and were accidentally transported in the soil along with horticultural plants and have been regularly found in greenhouses since 1901. In Texas, there were limited reports of this flatworm around the Beaumont area in the



1980s. *Bipalium kewense* is considered an ecological threat to earthworms which are essential for the health of soil - affecting forests, prairies, crops, yards and gardens, and composting. Its skin secretions, used for defense and to disable or digest its prey, contain the potent neurotoxin tetrodotoxin, found in pufferfish, the blue-ringed octopus, and rough-skinned newts. It can cause human skin irritation if touched (could lead to worse if you have an open cut) and internal poisoning (illness) in mammals if consumed. (Could affect our small pets in the yard.) In addition, many flatworms can carry parasitic nematodes within their bodies. *Bipalium* has no known predators due to these same noxious secretions. There are other invasive *Bipalium* hammerhead flatworms posing the same threats and appearing in Texas including *Bipalium vagum* from the Houston area.

Removal of these invasive flatworms is the current management method necessary for the protection of naturalized earthworm populations. To kill *Bipalium*, it is recommended to place them in entirety inside a plastic bag and then spray them with a mixture of orange essence (citrus oil), and salt directly to contain both the flatworm and the spray. Citrus oil and vinegar spray will also work, or just vinegar alone. Seal and dispose of the bag. Note: Safe handling practices using gloves, paper

towels, or sticks and proper disposal of the entire *Bipalium* is encouraged. Hands should be washed in warm soapy water and rinsed in alcohol or a standard hand disinfectant.

*B. kewense* prefer hot, humid environments like ours and can currently be found throughout much of Texas except for the drier, desert areas. In colder climates, the worms can survive freezing temperatures by seeking protected locations. They are photo-negative (light-sensitive) and usually move and feed at night. *Bipalium* can be found in cool, damp places, spending days in shaded areas under leaf litter, mulch, rocks, logs, and shrubs. After heavy rains they exit the soil for driveways, patios, and sidewalks. They are currently found in nine other coastal states.

If you see one of these *Bipalium kewense*, you can help by providing information in order to understand the established range of this predatory flatworm in Texas. The Texas Invasive Species Institute (TISI), <https://tsusinvasives.org/home/database/bipalium-kewense> is requesting distributional data of this flatworm. Please take a picture along with coordinates for distribution (before you destroy that flatworm) and send it to: Ashley Morgan-Olvera ([invasives@shsu.edu](mailto:invasives@shsu.edu)).

## State of the Chapter by Patty Trimmingham

As of February 16, 2024, we have 258 Active members (dues paid, eligible to volunteer). This number does not include the few who need to pay their dues and those who have not certified (45 in training status, 31 of those in the 2024 class).

Please welcome the new transfers to our chapter!

**Jan 2023** - Jason Miles from Gulf Coast chapter  
Lisa Scobel from Heartwood

**July 2023** -Billie Brinkley from Lower Trinity Basin  
Joan Ward from Gulf Coast

**January 2024** - Mary Warwick from Coastal Prairie  
Kjell Lindgren from Gulf Coast  
Kristi Lindgren from Gulf Coast  
Bobbi Brand from Gulf Coast

**February 2024** - Beth Free from Lower Trinity Basin  
Roger Free from Lower Trinity Basin

## Common Pillbugs, Not-So-Common Knowledge by Rebekah Gano

Pillbugs are one of those very common creatures that people don't seem to know much about. Even though most children have handled these tiny animals and recognize the gray, pill-shaped bodies at once, most adults don't know that they have antennae. Children might tell you that pillbugs are "nice" - that is: they're sturdy, don't feel slimy or sticky, don't carry diseases, and won't bite or sting! Most people, however, don't have any idea where in the animal kingdom pillbugs belong. So, let's take a moment to learn a few facts about these commonly crawling critters.

Ordinary pillbugs belong to the family Armadillidiidae in the order Isopoda. *Armadillidium vulgare*, the common

pillbug, is known especially for its tendency to roll up into a ball. This ability called "conglobate" is shared by armadillos, some millipedes, and a few insects. Pillbugs' exceptionally hard outer exoskeletons offer protection against many predators; though, some animals like rodents, insects, and arachnids will still gobble up the bite-sized balls.

Pillbugs have many names: roly-poly, doodlebug, slater, butchy-boy, pillbug, potato bug, woodlouse, and carpenter are just a sampling! Almost every distinct location seems to have its own handle for the small animals. In the Houston area, pillbugs are usually known as "roly-polies" (also spelled "rollie-polies") or

“doodlebugs”. Take note that true “sowbugs” are not pillbugs; they are members of the similar *Oniscus* and *Porcellio* genera, and these flatter isopods cannot roll up because of appendages on the last abdominal segment. Some of the names listed above are used for both sowbugs and pillbugs, and the two groups of isopods share many characteristics.

Pillbugs are not native to the Americas. Along with earthworms and many species of plants, roly-polies crossed the Atlantic Ocean to North America on ships from Europe in the early 1800s. Given that they have not misplaced native wildlife, they are not considered invasive. They have naturalized and contribute as decomposers to ecosystems, only rarely causing crop or garden damage.



Photo by Rebekah Gano

In general, pillbugs are very beneficial to the natural environment where they break down dead materials, remove heavy metals, and add nutrients to the soil through their excrement. Decaying logs and vegetation are especially attractive habitats that provide moisture as well as food. As terrestrial crustaceans, pillbugs breathe through a special type

of gills and rely on humid environments to survive. They usually avoid lengthy sun exposure and are more active in the night, early morning, and evening.

For such a small invertebrate, pillbugs have a substantial life span of 2-5 years. Females carry their eggs in a brood pouch (marsupium) where eggs and newly hatched young often remain in the pouch and feed off of marsupial fluid. Young pillbugs may stay in the pouch for two weeks after hatching and typically molt for the first time within a day of leaving.

Although the young leave the pouch, they usually stay near their mother in a loose family group. They are much lighter in color than their parents and do not have a seventh pair of legs until they molt again around three to four weeks of age. When pillbugs molt, their exoskeletons split in half, with the posterior portion shedding before the anterior, so occasionally, you may see a pillbug with half-and-half coloring.



Photo by Lyle J. Buss

Full-grown pillbugs are 8.5 to 18mm in length and have a thorax with seven segments, each with a pair of legs. A roly-poly has both a pair of antennae and a pair of antennules on its head, along with compound eyes.

Most pillbugs are dark gray to light brown in color, with occasional light yellow or white spots. A bright blue exoskeleton indicates that the isopod has a sickness called iridovirus which can infect other invertebrates, especially those that live in damp locations. Varied coloration (purple, green, or even orange) may also be a sign of illness. On the bright side, healthy isopods can come in a variety of natural as well as intentionally bred colors from yellow-spotted to peach to powder blue. A recent trend has been to raise these unique isopods as pets. Armand Bayou Nature Center raises *Armadillidium gestroi*, yellow-spotted pillbugs, and I care for *Armadillidium maculatum*, zebra-striped pillbugs, at my house.

If you decide to keep some pillbugs for a closer study, all you need to create a home for your own roly-polies is a small container with some damp soil, pieces of wood, vegetable bits, and a rock or some eggshells for calcium; just remember to keep the habitat damp but not soggy. Perhaps you will want to give these delightful isopods a closer look through naturalist eyes.

Many facts from the University of Florida's entomology department ([https://entnemdept.ufl.edu/creatures/MISC/Armadillidium\\_vulgare.htm](https://entnemdept.ufl.edu/creatures/MISC/Armadillidium_vulgare.htm)) and Armand Bayou Nature Center's animal care specialist Chris Vazquez.



## Master Naturalist Ramblings and Connections by Diane Humes

*Rafinesque's Big-Eared Bat is a rare species with little known about it except that its numbers have greatly declined since 1977. Since it is a target species for the TPWD Bat Acoustic Monitoring Project, I updated this article first printed in The Midden, June 2012.*

The "Year of the Bat", represented by the TMN Mexican free-tail bat 2012 re-certification pin, was the topic at our April 2012 chapter meeting, presented wonderfully by Diana Foss, TPWD urban biologist. Our meeting was well attended, including spouses, which often has unexpected consequences, herein described.

Photo courtesy of Natural Science Research Laboratory



When Diana described Rafinesque's Big-Eared Bat (*Corynorhinus rafinesquii*), an uncommon and threatened species, the spouse sitting beside me perked up his ears. He later professed more familiarity with an Ordovician brachiopod fossil (*Rafinesquina* sp.) than a Texas bat with large ears, but, knowing that the genus and species names for these creatures had to be Latinized forms of a name, we wondered who this Rafinesque person was.

Constantine Samuel Rafinesque, perhaps the greatest of all early naturalists, was born in Constantinople - now Istanbul - in 1783 to a French merchant father and German merchant's daughter and lived in France and Italy. He was a prodigy and genius, mostly self-educated. At age 12 he was collecting plants for an herbarium and by age 14 had taught himself perfect Greek and Latin in order to decipher the footnotes in books.

Rafinesque never attended university; instead, he traveled to America at age 19 to apprentice at the Clifford House mercantile firm in Philadelphia. For two years he roamed the woods between Virginia and Pennsylvania, collecting plants and animals and corresponding with

other naturalists. He returned to Europe and lived in Sicily, working as secretary to the U.S. Consul, trading in commodities, while exploring for plants and identifying scientifically unrecorded fishes in the Palermo market. During his ten years in Sicily, he published his first of his 220 essays and scientific publications.

Rafinesque returned to America in 1815 and remained until his death in 1840. Shipwrecked upon arrival, he lost everything - books, specimens, including 60,000 shells and unpublished manuscripts - and had to start over. Brilliant, but disorderly in mind and habit, he constantly delved into and wrote copiously on such varied fields of knowledge as botany, fish and other aquatic life, chemistry, medicine, astronomy, Indian languages and mounds, the Bible and poetry. He had a mania for discovering and naming new forms of plant and animal life; he named specimens from the Lewis and Clark Expedition, including Mule Deer (*Odocoileus hemionus*), Black-tailed prairie dog (*Cynomys ludovicianus*) and White-footed mouse (*Peromyscus leucopus*), gave binomial names to 6700 plants and catalogued fishes of the Ohio River.

He worked prodigiously at whatever he did and flooded the taxonomic literature with reports, which seemed incomplete, confusing, and excessive to other naturalists. Considered eccentric, he offended many of his contemporaries, who later dismissed his findings and excluded them from the biological literature, treating him with pity and contempt. However, his meticulous field notes show beautiful landscape drawings, sketches of specimens with thorough descriptions, measurements and many hand-drawn maps.

In his autobiography, *A Life of Travels*, he says, "Versatility of talents and of profession, is not uncommon in America; but those which I have exhibited in these few pages, may appear to exceed belief: and yet it is a positive fact that in knowledge I have been a Botanist, Naturalist, Geologist, Geographer, Historian, Poet, Philosopher, Philologist, Economist, Philanthropist...by profession a Traveller, Merchant, Manufacturer, Collector, Improver, Professor, Teacher, Surveyor, Draftsman, Architect, Engineer, Pulmist, Author, Editor, Bookseller, Librarian, Secretary and I hardly know myself what I may not become as yet: since whenever I apply myself to any thing, which I like, I never fail to succeed, if depending on me alone, unless impeded and prevented by lack of means, or the hostility of the foes of mankind."

Rafinesque discovered America in its youth, hardly imaginable to us today; he knew Thomas Jefferson, John Adams, James Madison and John James Audubon. Traveling, mostly on foot, the better to "herborize", he "was enabled to detect a great number of New Species



and examine many plants alive in full bloom in their native wilds." He advised the practical botanist to "be fully prepared to meet dangers of all sorts in the wild groves and mountains of America. The mere fatigue of a pedestrian journey is nothing compared to the gloom of solitary forests, when not a human being is met for many miles, and if met he may be mistrusted; when the food and collections must be carried in your pocket or knapsack from day to day; when the fare is not only scanty but sometimes worse; when you must live on corn bread and salt pork, be burnt and steamed by a hot sun at noon, or drenched by rain, even with an umbrella in hand, as I always had." He spoke of mosquitoes, flies, ants, wasps, but "ticks the worst of all are unavoidable...spiders...hateful snakes...rough, muddy roads and blind paths."



Image courtesy of Wikimedia Commons

Again, in his words, "I think to have already gone over nearly 25,000 miles, on the surface of the earth, half by sea, and half by land, or on rivers, canals, etc. Nearly the fourth or 6,000 miles have been pedestrian journeys, the most arduous, but the most useful of all. These travels have not been performed by racing; but at leisure, always observing, collecting, surveying, mapping, drawing, and accumulating treasures of knowledge if not of metals. I have travelled by nearly all the possible manners, except by Camels and in Balloons. By land I have travelled on foot and on horseback, with mules and asses, in stages, coaches, carts, waggons, litters, sedan chairs, sledges, railroad cars, etc. and even on men's back...By water I have tried canoes, boats, felucas, tartans, sloops, schooners, brigs, ships, ships of war, rafts, barges, tow boats, canal boats, steam boats, keel boats, arks, scow, etc. These travels have costed me between \$8,000 to \$10,000, which with the interest would now be a fortune. Since I have seldom travelled except at my own expence, altho 'sometimes on business. I have never been sent nor paid by amateurs, societies or governments, like so many other learned travellers."

Rafinesque had insight about plant geography, plant succession, fossil stratigraphy and impermanence of species. "Many botanists mistake real botanical species for varieties or viceversa. In fact, all species might have been varieties once, and many varieties are gradually becoming species by assuming constant and peculiar characters", he wrote, anticipating Charles Darwin's theory of evolution. He knew he was ahead of his time,

"If I have often "gone beyond the actual state of knowledge in my views and opinions, or anticipated on future knowledge, it was with the noble aim of adding my mite to the mental improvement of mankind."

Rafinesque reckoned that he had surveyed plant species in more states than any other botanist, perhaps with the exception of Thomas Nuttall, who named the genus *Rafinesquia* for him in 1841 - the genus now having two species - California plumeseed (*R. californica* Nutt.) and New Mexico plumeseed (*R. neomexicana* A. Gray). In addition, he is honored with *Rafinesquina* sp., the brachiopod fossil, and its family Rafinesquinidae, named for him in 1892. Knowing how often scientific names change, more of Rafinesque's nomenclature still stands than that of any other taxonomist.

So, a man who died one hundred years before most of us were born still speaks to curious naturalists. He said, in closing, "May this inspire youthful minds with a wish to do as well; and the friends of sciences with the wish to know me, or patronize the labors of my old age: permit me at last to produce under their shield, those works, fruits of my travel and researches, which I desire to leave as monuments of my life and exertions."

If you would like to participate in the TPWD Bat Acoustic Monitoring Project, check out the related TMN Tuesday at <https://txmn.tamu.edu/tmntuesdays/#tntjanuary>. Ask GBAC contact: Laura Clark, [xcranch@gmail.com](mailto:xcranch@gmail.com), about local bat monitoring.

### ***The Midden Deadline*** for the next issue

**April 28**

### ***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](mailto:treimanhumes@gmail.com).

Texas AgriLife Extension Service  
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*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 the extension office at 281-534-3413.

#### **Midden Team**

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Verva Densmore	Sheron Evans
Rebekah Gano	Meade LeBlanc
Carolyn Miles	Chuck Snyder

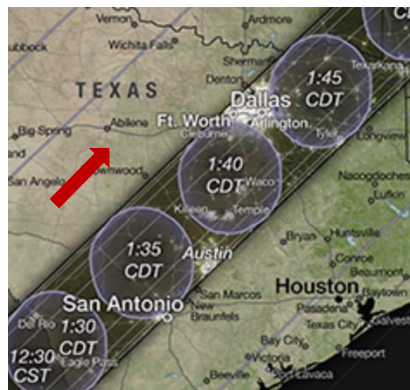
## April 8<sup>th</sup> Solar Eclipse by Carolyn Miles

In 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.

The first eclipse happened on October 14, 2023, and was an annular eclipse. 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.

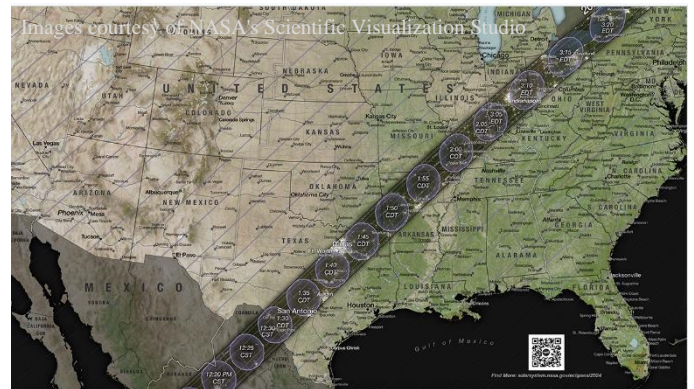
My husband and I were able to watch the eclipse from a friend's family ranch in west Texas. We used solar filters on our cameras and spotting scope and got some good photos. After experiencing the first eclipse, we are very excited about the next one.

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

If you are fortunate enough to view the April eclipse, 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 nor binoculars. Before totality, the sun's rays can actually damage your camera and smart phone camera.

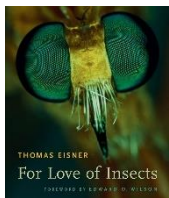


Helpful eclipse websites:

- <https://solarsystem.nasa.gov/eclipses/home/>
- <https://www.timeanddate.com/eclipse/>

## Heritage Book Study by Cheryl Barajas

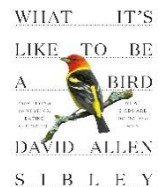
By the time you read this article, we will have moved the time forward an hour. That means more daylight for our native and other plants to grow and start flowering. It also means more insects will be out and about for us to observe!



In March, we started discussing *For Love of Insects* by Thomas Eisner. We learned about beetles, ants, fireflies, and other insects that have evolved and adapted by spraying chemicals, disguising themselves as plants and secreting poisons that repel potential predators.

On April 1st, we will finish Eisner's book and the last five chapters appear even more interesting! We will discuss spiders, millipedes, caterpillars, and moths. It is fascinating to learn how these creatures have survived.

On May 6th, we will be covering *What it's Like to be a Bird: From Flying to Nesting, Eating to Singing. What Birds are Doing and Why* by David Allen Sibley. Sibley goes into great detail about different types of birds, and it looks like this book will be a great reference for anyone who wants to learn more about our flying friends!



(Please note that there is an error on the bookmark - author is incorrect).

Our Book Study meets on the 1<sup>st</sup> Monday of the month at 1 PM. If you are interested in joining our lively discussions, please contact me at [cherylbarajas9@gmail.com](mailto:cherylbarajas9@gmail.com) and I will add you to the group.

## April and May Activities

### ADVANCED TRAINING OPPORTUNITIES

**Chapter Meeting** - April 4; Movement Behaviors of Sharks at the Flower Garden Banks  
Presenter: Brett Swezey, TAMU at Galveston  
6pm Dinner, 6:30pm Meeting, 7pm Speaker  
At Extension Office\* and via Zoom; 1 hour AT

**Get Ready for City Nature Challenge with iNaturalist**  
Saturday, April 6 at 9am at Carbide; 3 hrs. AT  
Presenter: Scott Buckel

**Botany: Plants are Precious**  
Monday, April 22 at 2pm at Carbide; 3 hrs. AT  
Presenter: Emmeline Dodd

**Opossums**  
Wednesday, May 8 at 6pm via Zoom; 1 hr. AT  
Presenter: Opossum Rescue Group

**Invasive Worms**  
Tuesday, May 21 at 2pm via Zoom; 1 hr. AT  
Presenter: Ashley Morgan-Olvera

### Ongoing

**Heritage Book Study Group**  
First Monday of every month via Zoom  
2 hours AT  
Contact: Cheryl Barajas [cherylbarajas9@gmail.com](mailto:cherylbarajas9@gmail.com)  
See Pg. 10 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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A colorful advertisement for Youth Birding Clubs. It features a blue and yellow background with binoculars on either side of the text. The text reads: "YOUTH BIRDING CLUBS", "Experience the magic of birds through the eyes of children!", "Volunteer leaders needed for 2024 - 2025 after-school programs.", and "Learn more: texaneowyn@gmail.com or 832-259-1063."/>

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