



Table of Contents

| | |
|---|----|
| Wetland Wanderings | 2 |
| Prairie Ponderings | 2 |
| Dire Diseases in Deer, Part 2 | 3 |
| AT: iNaturalist | 4 |
| AT: Gems of the Gulf | 5 |
| Heritage Book Study - Review | 6 |
| The Big Picture - Ocean Worlds and Our World's Oceans | 6 |
| Another Botany Question | 8 |
| AT: The Big Thicket | 8 |
| 2018 Class Fun and Adventures | 10 |
| June/July Activities | 11 |

President's Corner by George Kyame, President 2018

Greeting Fellow Naturalists.

As of this writing, we have come back to reality after an interesting spring. The mercury finally hit 90, and won't be changing soon. Of course this means we must properly prepare for all of our outdoor stewardship. Please remember the big three: hydration, sun protective clothing, and SPF 30 and above. A cooler beginning to 2018 was nice, although it was accompanied by a rather rainy season, which brings me to my next point.

Ah, Beach and Bay. Last year's record attendance would be hard to beat even without the wind and rain that was visited upon us! Impressive was the number of attendees that did come out, and, with our dedicated volunteers, braved the elements! Alas, we shut down a little early, but not before our participants got some extra hands-on attention. Thank you all for the hard work.

The City Nature Challenge wrapped up 96 hours of species observation on April 30. So how did the Houston Metro fare? In the Most Species category (my favorite), Houston placed 2nd. We were 1st last year. Apparently, the SF Bay Area was prepared, as they won all 3 categories, the other two being participants and total observations. Please view full results at <http://citynaturechallenge.org/>. My positive take on this year's Houston Metro performance is simple. With just under 700 observers, Houston had 3088 species. Compare that to 1532 and 1211 observers with 3211 and 2946 species for San Francisco Bay and San Diego, respectively! All right Houston Metro, let us take this next year!!

Finally, congratulations to our 2018 spring training class! On May 3rd, the class heard Julie Massey address the topic, "Being a Naturalist and Working with the Public". Remember "Advice from an Old Farmer"? Well I do! Some guests shared their own class memories and then, after 12 weeks, class members received their badges!

We then promptly assembled in classroom 2, where partners and chapter members introduced their representative opportunities and stewardships to our newest GBA members. As always, it was a lovely cacophony of exciting pitches and interesting conversation. I certainly hope our newest members will find the most rewarding naturalist niches! Bravo all.



Next Chapter Meeting

June 7

Dragonflies and Damselflies

By

Bob Honig
Environmental Consultant

At
Extension Office

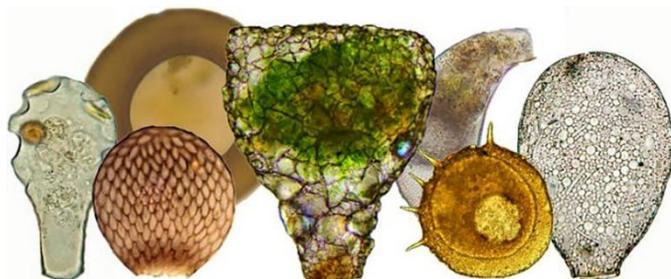
Wetland Wanderings: Let's Get Small With Shelled Amoebae by Lana Berkowitz

Sometimes while tramping through the wetlands to do seed collections, surveys or plantings, your imagination can go to wilder places.

It was a comment about amoeba that prompted Marissa Llosa's musings about a tiny world of wonder.

"I consider myself lucky enough to be in the field with Paul Roling, our volunteer botanist, but I am always astounded by his wealth of knowledge and my lack of it – as evidenced in this case," Marissa wrote in her field notes for her Wetland Restoration Team.

Paul mentioned shelled amoeba in the wetlands. "Holy cow!" Marissa thought, "There are amoeba snails."



Used with permission © Ferry J. Siemensma

"My knowledge of amoebae goes back to maybe junior high or high school. And what I knew was simply that amoebae were freeform and classified as protist (a eukaryotic organism that is not an animal, plant or fungus). Pass my test. Move on," Marissa wrote. "What I didn't know was there were both a naked (common image and idea of an amoeba as free moving and no shape) and a shelled amoeba, which has pseudopodia extending out the 'bottom' of the shell."

"I was just amazed by this notion of amoebae with shells and it held my imagination for the rest of the day, thinking on what the shells must look like."

The shell of the tiny single-cell organism that lives in a range of wetlands and soil is called a test, so shelled amoebae are called testate amoebae. Most shells are formed from sand grains, diatom shells and other organic and mineral particles fixed together with organic cement. Some amoebae secrete silicium, calcium or hollow globules to form shells, according to Microworld: World of Amoeboid Organisms website.

The shells can have a variety of shapes so let your imagination run wild, or search YouTube for testate amoeba videos to see samples of their appearance and movement. Amoebae are microscopic, but their size depends somewhat on the available food supply. Freshwater species living in deeper water can be larger. The amoebae typically feed on bits of fungi, microalgae and bacteria.

The shells provide protection for the amoebae, which can retract. Amoebae use projections of cytoplasm from the shells to help them move. The projections are called pseudopodia (which translates to "false feet.")

The strong shells are often preserved long after the amoeba has died. Shells found in core samples have been used as bioindicators to reconstruct past climates.

And if you want to know more, the Ninth International Symposium on Testate Amoebae will be held Sept. 10-14 in Belfast, Northern Ireland. Maybe we could carpool!

Prairie Ponderings: Sam and Sheila Swainson by Diane Humes

According to the Texas Parks and Wildlife Department, "Swainson's Hawks are gentle birds that live harmoniously with other birds in their nesting habitat. They eat grasshoppers, crickets, and small mammals that they hunt on the ground or catch in midair."

Swainson's Hawks, *Buteo swainsoni*, are buteos named for British naturalist and illustrator William John Swainson, 1789 - 1855, whose name has also been given to a warbler, thrush, sparrow, francolin, ant catcher, fire-eye, flycatcher, and toucan.

Usually Swainson's Hawks are considered birds of North America's western grasslands; according to our books

they occur east of San Antonio only during migration. Actually, they are world travelers, forming huge flocks to migrate up to 12,000 miles, round trip, on a seemingly perpetual quest for summer. Breeding as far north as western Canada and Alaska for our summer, they return to Brazil, Uruguay, and Argentina for a second summer.

These prairie and grassland birds scoop up grasshoppers and small mammals by kiting, soaring, hunting from a perch, or walking on the ground. They make their nests in any tree or cliff face.

Most Swainson's Hawks, and those seen on hawk watch, are the light morph variety; when seen from below, their

trailing edge flight feathers are dark, while the leading edge feathers are white, and their upper breast is brown. They soar with a slight dihedral, like a Turkey Vulture - about the same size, but their light/dark color patterns are opposite. A dark morph occurs in 10 percent of birds living west of the Rocky Mountains; we have never seen this variety on hawk watch.



Photo by John Wright

With 580,000 breeding birds, Swainson's Hawks are considered a species of Least Concern, although they

have been affected by loss of prairie habitat and pesticide use. In the 1990s, South American farmers sprayed monocrotophos on sunflower fields to control grasshoppers and killed an estimated 35,000 Swainson's Hawks in a single season. That chemical is no longer used in Argentina and hawk population levels are now stable.

Although our bird books say Swainson's Hawks shouldn't be here, they have been sighted commonly along the Gulf Coast prairies, eastward into Louisiana and a few have summered on the NASA-JSC prairies. Having entertained hawk watchers for several seasons with their hunting, soaring, kiting, and "sky dancing" over LaPorte, this year we have nicknamed them "Sam" and "Sheila". Are these birds lost or lazy? Or, is all our hard work with prairie restoration showing results? After all, we aren't putting all those thousands of plants in the ground just because we like flowers! Will they return next year with extended family? We can only hope and keep watching.

One thing is clear: our "Sam" and his lovely wife "Sheila" have never read the manual about gentle behavior toward their bird neighbors. Shocking all watchers, the irascible Sam decided that baby grackles in the treetops of Sylvan Beach were tasty snacks that a big, bad Swainson's Hawk could easily snatch - never mind the wrath of all grackle parents!

As Yogi Berra said, "You can observe a lot by just watching".

Dire Diseases in Deer, Part 2 by Madeleine K. Barnes

This is the second part of an article that I started last issue. The purpose of Part 2 is to present the facts about two other diseases that can have devastating consequences for deer and have been found in Texas. These diseases are Epizootic Hemorrhagic Disease (EHD) and Bluetongue Virus. Both are found in North American ruminants, which are hoofed, even-toed animals.

What these two diseases have in common is that they are transmitted by the bite of an infected midge fly in the genus *Culicoides* (commonly referred to as no-see-ums) and are acute infectious viral diseases, often fatal to some wild ruminants, including white-tailed deer. EHD is the most commonly found disease in white-tailed deer and has been found in cattle without any outward symptoms. Neither is transmitted to humans or domestic pets.

It takes roughly 7 days after infection for the white-tailed deer to develop signs of the diseases, which have



Photo courtesy of Acarologiste

identical symptoms. Within 8-36 hours following the first signs, deer go into a shock-like state and become prostrate and die, usually near or in the water. As these diseases progress, animals lose their appetite and fear of humans, grow progressively weaker, salivate excessively, develop rapid pulse and respiration rate, bloody diarrhea, fever, and finally become unconscious. During the fever, animals lie down in water to reduce their body temperature. They suffer extensive hemorrhaging and lack of oxygen in the blood resulting in blue-looking mouths (oral mucosa) and tongues.

Culicoides flies are parasitic; however, only the females feed on blood, which is needed for the maturation of fertilized eggs. Females typically bite at dusk or dawn, often in dense swarms and usually in the vicinity of water, marshes, or rotting vegetation. They then lay their eggs en masse in a range of wet habitats from water vegetation, slow running streams, damp soil or manure heaps; larvae are usually aquatic.

Infection with EHD and Bluetongue usually occurs in late summer or early fall when warm, dry weather limits water resources, concentrating animals in places where the midge flies breed. An outbreak ends with the first frost, which kills the midge flies. In 2012, there was an EHD outbreak that killed more than 11,000 deer across the

southern Lower Peninsula of Michigan. The severe drought intensified the spread of the disease and helped to produce outbreaks from Ohio to Montana. Outbreaks of both diseases have occurred in both wild and captive herds of bison and cattle.

Unlike EHD, Bluetongue can also affect sheep, llama, alpaca, and goats. It causes a similar disease in all ruminants with variable mortality rates depending on virus strain and livestock species affected. Horses are not affected by EHD or Bluetongue.

Currently there is no prevention or treatment available. The only way to accurately determine whether a deer has either EHD or Bluetongue is to have its blood tested.

According to the U.S Fish and Wildlife Service, there are no known health risks from eating the meat from an infected deer, however they do advise against consuming meat from any game animal that appears ill.

While I have only touched on three of the many challenges impacting the white-tailed deer population in Texas, so far, they have been very successful in recovering their numbers after these outbreaks. As they live alongside us, I hope to continue to enjoy their presence.

AT: Citizen Science, Texas Nature Trackers, and iNaturalist by Chuck Snyder

Citizen science - the engagement of amateur naturalists in scientific investigations - has been an important and growing component of the Texas Master Naturalist program since its inception. Recently, chapter members received advanced training on systems and tools used to capture and identify field observations, which ultimately wind up in databases used by researchers worldwide.

Marsha May, Texas Parks & Wildlife Department (TPWD) biologist and coordinator of the Texas Nature Trackers program, led the training. Marsha's lecture was followed by a field practice session in the use of the observation data capture tools.

Part of the TPWD Wildlife Diversity Program, the Texas Nature Trackers program was established to help track the status of wild populations of plants and animals throughout Texas. Data collected by field observers - including master naturalists - is analyzed and validated before being transferred to the NatureServe Network, a data source for scientists performing biodiversity research. Many local programs are supported by Texas Nature Trackers, including an inventory of Species of Greatest Conservation Need (SGCN) by region within the state.



Photo by Mike Wehrman

The effectiveness of the Texas Nature Trackers (TNT) program is highly dependent of the amount and quality of data collected. Several years ago, TNT embraced the use of iNaturalist, a computer-based system for efficient collection of field observations. Developed at UC-Berkeley in 2008, the system has been continuously

improved as computer and smartphone technology has advanced.

The iNaturalist system has two major components for field data entry: an interactive website and a smartphone app. The website - accessible at www.inaturalist.org, provides access to naturalists who want to post their observations or participate in identifying the species posted by others. The companion smartphone app is designed for use in the field, where observations can be recorded and immediately uploaded to the iNaturalist database with no further handling necessary.

To date, more than 9 million observations worldwide have been recorded on iNaturalist. Texas observers are major contributors to this data; over one million observations have been submitted by the Lone Star State alone.

At the conclusion of the classroom session, the group went outdoors to test the iNaturalist app on live subjects. Scott Buckel led the exercise and provided on-the-job consultation for new iNaturalist users.

Participants in the training were presented with an opportunity soon after completing the class: participation

in the International City Nature Challenge, organized by the Natural History Museum of Los Angeles County and the California Academy of Sciences. The City Nature Challenge (CNC) is an international effort for people to find and document plants and wildlife in cities across the globe, with 69 cities around the world participating. Teams and individuals vie to see who can make the most observations, identify the most species, and involve the most individuals. iNaturalist is the platform used to capture the data and analyze the participation.

Texas cities were among the leaders in all CNC categories. For number of observations, Dallas/Ft. Worth took second place; Houston was in sixth place. For number of observers, Dallas/Ft. Worth was in fifth place, with Houston taking eighth.

For the all-important category of number of different species identified, Houston leapfrogged Dallas to take second place against all international competitors, being edged out only by San Francisco. Dallas placed fifth with Austin close behind.

Thanks to everyone who helped Houston perform so well in this large-scale demonstration of our ability to mobilize people to collect scientific data.

AT: Gems of the Gulf by Bruce Niebuhr



Sara Snell led the advanced training class Gems of the Gulf for more than 20 participants on March 15, 2018. The goal of the class was to familiarize the participants with the top 10 shells, plus some other shells, found on our Galveston County beaches and bay shores. Shell types are bi-valves (two shells just alike), gastropods (the shell spirals around like a snail), and others such as sand dollars, slipper shells and barnacles. The top ten were: blood ark, *Anadara ovalis*, Atlantic giant cockle,

Dinocardium robustum, fossils of which go back 65 million years, disk dosinia, *Dosinia discus*, carnivorous moon snail or shark eye snail, *Neverita duplicata*, lightning whelk, *Busycon pulleyi*, Texas state shell, lightning whelk's egg case, channeled duck clam, *Raeta plicatella*, coquina or bean clam, *Donax variabilis*, sawtooth pen shell, *Atrina serrata*, eastern oyster, *Crassostrea virginica*, and sea beans commonly found, such as the hamburger bean and the marriage bean. The top 10 list was compiled by members of the Education Team from a 2006 survey of our beaches.

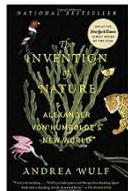
Participants were assigned a shell, either a top 10 or other, to present to the group in two minutes. Photos or shells themselves were used. I presented the common rangia bi-valve, *Rangia cuneata*. An interesting fact is that the common rangia has been introduced into the Baltic Sea because of its water filtration properties.

We took the Top 10 shell quiz (just like lab practical quizzes we took in high school!) to see if we qualify as a "Tenner." I didn't make it - only five out of ten. Oh, well.

The class ended with a video taken on Sanibel Island, Florida. The video showed carnivorous mollusk attacking and eating its prey, and some of the amazing ways in which some creatures are able to propel themselves.

Heritage Book Study - Review of *The Invention of Nature, Alexander von Humboldt's New World* by Madeleine K. Barnes

Who was Alexander von Humboldt and how does this book relate to us as master naturalists? If you are like me, you knew nothing about this person or how he impacted the world - not just one country, one region, but the entire **world**, not only during his life, but long after.



Now, I have read about Charles Darwin (*On the Origin of Species*), who sailed aboard *HMS Beagle* to the Galapagos Islands and John Muir, naturalist and environmental activist, founder of the Sierra Club and considered by many to be the father of the national parks. Who was their mentor and

from whom did they get their perspective and ideas about nature? You guessed it, Alexander von Humboldt, the pre-eminent scientist of his time. His name is recognized throughout the world in towns, rivers, mountains, bays, waterfalls, plants, and animals. The giant Humboldt squid swims in the Humboldt Current, and there is also a Humboldt asteroid.

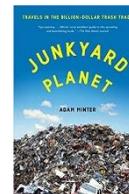
Alexander von Humboldt (1769-1859) lived an amazingly productive life as an adventurer, explorer, scientist, and author of 34 bestselling volumes, and his ideas live on into the present day. Most of what he learned was from first-hand observation. He did not just see things in terms of a narrow taxonomic label, but rather his vision was of the totality of a single web of life. From weather maps (Humboldt's invention of curvy temperature lines called "isobars"), to the debate over climate change, his discoveries are part of our understanding of the world around us.

The author, Ms. Wulf, has extensively researched von Humboldt's life, his writings, and even his very footsteps. His friends were the movers and shakers of the century and his influence extended beyond the scientific world to poets and writers like Goethe, Wordsworth, Coleridge,

Edgar Allan Poe, and Henry David Thoreau. Thomas Jefferson used his factual information for international diplomacy. He was the father of nature writing, friend to revolutionaries (Bolivar and others), and a visionary. In 1832, von Humboldt talked about the three ways that humans were impacting the natural world - deforestation, irrigation, and energy (steam and gas). Over 175 years ago, he had already developed the ecological conservation perspective. According to Ms. Wulf, talking about her book, "it's the biography of how we came really to see nature the way we see it."

I truly hope that I have piqued your interest in learning more. This is a page-turner following the travels of von Humboldt, his discoveries, and his inspiration to those around him. What really sets von Humboldt apart is his willingness to share his knowledge with others. Sounds like the master naturalist mission statement doesn't it? This is one of the Top10 naturalist books, in my opinion, for your summer reading pleasure.

We will finish our discussion of *The Invention of Nature, Alexander von Humboldt's New World* on June 4th after reading pages 269-402. Our next selection is *Junkyard Planet* by Adam Minter for the following three months. Due to holidays in July and September, the book study schedule will change to the second Mondays for those months. We will meet on July 9 to discuss pages 1-90, on August 6 to discuss pages 91-181, and on September 10 to close our discussion with pages 182-270. We



welcome your participation each month for two hours (normally on the first Monday of the month) starting at 10am at the Agrilife Extension office. We look forward to seeing you and let us know if you have read any good naturalist books lately. Happy trails!

The Big Picture - Ocean Worlds and Our World's Oceans by Diane Humes

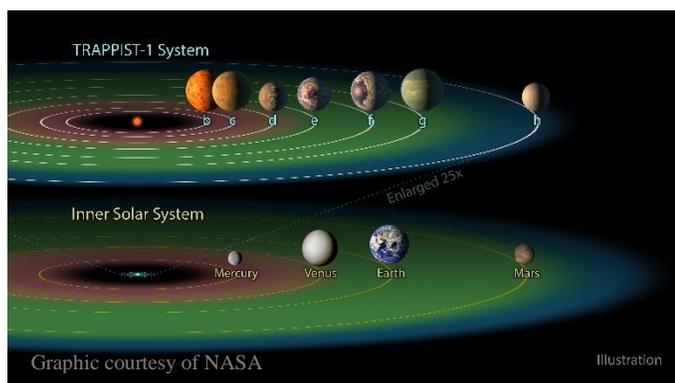
Astronomers and planetary scientists are inherently curious, as are master naturalists, studying the secrets of the universe and probing our galaxy for clues to answer perennial questions, such as, "Are there other Earth-like planets that could support life?". They assume that physical and chemical processes obey the same laws everywhere, but keep checking - just in case.

In 1999 - very recently in galactic terms - astronomers discovered an ultra-cool red dwarf star - far too dim for naked-eye viewing - in the constellation Aquarius (the

water carrier). It is best viewed by us on October evenings in the "watery" part of the sky with Cetus (the whale), Pisces (the fish), Delphinus (the dolphin), and Eridanus (the river). The dwarf star was catalogued as "2MASS J23062928-0502285". More recently in 2015, Belgian astronomers, using a ground-based telescope in Chile - TRAPPIST-South (TRAnsiting Planets and Planetesimals Small Telescope), made the exciting discovery that this seemingly insignificant star had a system of three planets. They named the star

TRAPPIST-1 and toasted their discovery with Belgian beer - Trappist, of course.

Enlisting colleagues from around the globe, the research team pooled its resources to study the TRAPPIST-1 system using all available means, including the Hubble Space Telescope, the Kepler Space Telescope, the Spitzer Space Telescope, and the European South Observatory's SPECULOOS (Search for habitable Planets EClipsing ULtra-cOOI Stars). Bet you didn't know we had either that many telescopes or acronyms! Fast forward to February 2017 and data from the Spitzer Space Telescope and the Very Large Telescope at Paranal Observatory (Chile), showed the TRAPPIST-1 system to have a grand total of seven planets!



Forty light years from our Sun, the TRAPPIST-1 planets - b, c, d, e, f, g, and h - orbit their Jupiter-sized star in tight, stable configurations. Incredibly, all of them orbit within the distance of our Mercury's orbit! Each is a rocky world, similar in size to Earth or slightly smaller and contains water in some form. Planet b, the closest to TRAPPIST-1, is believed to have a "runaway greenhouse effect" with excessive atmospheric water vapor - think about Venus. Planet d has 250 times more water than Earth's oceans; planets e, f, and g are within the "habitable zone" - that Goldilocks area where conditions may be favorable for life.

Since we assume that water is necessary for life, these potential ocean worlds offer glimmers of tantalizing possibilities; stay tuned for more exciting information, especially after NASA's James Webb Space Telescope launches in 2019 and turns its "eyes" on clarifying atmospheric data for each planet. This is a grand detective story - how much can you deduce from the clues available to you from 40 light years away?

For more information about TRAPPIST-1, Spitzer, Kepler and Hubble, visit: <https://exoplanets.nasa.gov>, <https://www.jpl.nasa.gov/news/news.php?feature=7052>, http://hubblesite.org/news_release/news/2018-07

Thinking globally, oceanographer Sylvia Earle, "Her Deepness", has said that we know more about other

worlds than our own oceans. Recent reports suggest that we need to pay more attention; we are filling our oceans with plastic at the rate of 8 million metric tons each year - an amount that is expected to double within 10 years.

From a business perspective, plastics manufacturing is a huge global success story, showing continuous growth for 70 years. Starting in 1950 with 2 million metric tons, plastic production is currently over 400 million metric tons annually. So, what is the problem?

To date 8 billion metric tons of plastics exist on our planet; 6 billion metric tons have become waste, of which 9 percent has been recycled, 12 percent incinerated, and 79 percent is in landfills or the environment. Most of it has had a short lifespan, such as a disposable shopping bag that may have been used for 15 minutes!

Plastics are light and strong - part of their virtue. Sixty percent of plastic floats, but the rest of it sinks, perhaps to rest on the seafloor. None of it is edible, yet many marine species ingest it, such as the sperm whale that washed up on a beach in Spain; necropsy revealed the cause of death was the 64 pounds of plastic in its gut. Plastics break into ever smaller bits without degrading into elemental forms and have entered the food chain leading to humans. We will be eating it soon, if we aren't already.

Researchers calculate that 245,000 metric tons of plastic float in the oceans right now. The bad news is that a LOT of it washes up on Texas beaches - more than on any other state's coastline! The good news is, if it lands on the beach we can more easily pick it up.



So, as master naturalists, I think we are bound to do what we can, wherever we can, as much as we are able, to get and keep the plastic out of our ocean and off our beach. Every year since 1986 the Texas General Land Office has sponsored Adopt-A-Beach cleanup days. Around 518,000 volunteers have removed 9,550 tons of trash from our beaches. The next date is Sept. 15, an International Coastal Cleanup, so mark your calendars! Or if we want to get really inspired, we can sponsor our own event on the day we choose; say at Galveston Island State Park. Our friends at GLO will be delighted to help us with details.

In the spirit of acting locally, we should pick up trash before it washes into the ocean, but when it gets flung back at us, why not take the hint and remove it?

Another Botany Question by Diane Humes

Keep those botany questions coming! At the April chapter meeting, our speaker described his chapter's planting efforts on Lake Houston. Partnering with prisoners in the Ellis Unit of the Texas state prisons, they are able to propagate American water willow plants in large numbers for planting along the lake, hoping to stave off bank erosion and improve habitat for aquatic animals.

The question of the evening was whether water willow was related to maidencane, a species commonly planted by the Wetland Restoration Team.

American water willow, *Justicia americana*, is a herbaceous, aquatic flowering plant, native to North America and Texas, in the Acanthaceae, or Acanthus family. It is the hardiest member of its family; gardeners will be more familiar with tropical *Thunbergia*, *Ruellia*, and more closely related, *Justicia brandegeana* - shrimp plants. The genus name honors Scottish horticulturalist James Justice (1698-1763).



Photo courtesy of the Wildflower Center

This plant grows partially submerged in freshwater and its creeping rhizomes allow it to form large colonies on or near shorelines, as long as the water is still or slowly moving, which sounds a lot like the lakes around here. The clumps are known to provide excellent spawning sites for many fish among the rhizomes and habitat for invertebrates within its floating mats. Small fish beware - various bass, bluegill, and sunfish favor hanging out around water willows, hoping for good hunting. Apparently human fishermen also have figured this out.

Water willow plants, growing in full sun, flower from May to October, with white or light violet tube flowers with purple spots in the throat and purple-red stamens. The leaves are about 4 inches long and linear - resembling willow leaves.

Maidencane, *Panicum hemitomon*, also has thin, linear leaves and, therefore, superficially resembles American water willow. It occurs in very similar habitats - freshwater ponds and lakes and along streams. It spreads quickly from underground rhizomes and produces floating mats of vegetation. It is planted to stabilize stream banks and create wetland habitat.

If we had been able to closely observe either plant we would quickly have realized that they could not be closely related at all; for starters, water willow is a dicot and maidencane is a monocot. Maidencane is, in fact, a grass - family Poaceae - in the same genus as Switchgrass, *Panicum virgatum*. Its flowers will be small, growing in a panicle - a much-branched spray of tiny flowers - nothing like the gorgeous purple-lobed corollas of the water willow.

This is an excellent example of why botanists insist on seeing the whole plant with ALL its parts before making an identification. You could hardly come to a conclusion seeing only the habitat or leaf or rhizome, unless you were extremely familiar with both plants. But thanks very much for asking the question, because how can you learn if you don't ask?

AT: The Big Thicket by Frank Budny

On March 27th, 48 master naturalists and friends gathered at Carbide Park to board a chartered bus traveling to the Big Thicket National Preserve. The bus ride was pleasant once we passed the Houston city limits. We traveled through some pretty countryside on the way to our destination. The travel time was further spent by watching several videos providing an

introduction to the history and natural environment of the Big Thicket.

The Big Thicket is possibly the most biologically diverse area in the world. A convergence of ecosystems occurred here during the last Ice Age bringing species from very different habitats together in a relatively small area. Ten distinct ecosystems have been identified in the

Big Thicket. Species from the coastal plains, eastern forests, and central plains share space with species indicative of swamps and bayous. The Preserve contains more than 200 species of trees and shrubs and it's been estimated to have at least 1,000 flowering plants, including 20 orchids and four of the five carnivorous plants found in North America. About 200 species of birds live in or migrate through the Thicket, as well as about 20 mammals and 50 species of reptiles. The Big Thicket Region refers to an area of about 3,500,000 acres in Southeast Texas. The Big Thicket National Preserve, which was established on October 11, 1974 to protect its rich diversity, consists of 15 units covering over 108,000 acres of this region.



importance. When we arrived at the Big Thicket Visitors Center, we were greeted by two park rangers. After a short stop at the Visitor Center, we proceeded to the Kirby Trail. This trail provides an excellent introduction to the Big Thicket. We split into two groups and walked in different directions around this 1.7 mile loop trail. The trail traverses several ecosystems starting in the slope forest of pine and oak trees. It winds through acidic baygalls, floodplains, and cypress sloughs, each with its representative vegetation.

There was much to see and photograph, stopping often as our guides pointed out different plants and organisms and talked about the history, cultural, and economic importance of the area. After all, we are master naturalists and you can't hurry through a place like this. After eating lunch at the picnic area by the trailhead, we proceeded to our next stop, the Watson Rare Native Plant Preserve. This site is not part of the National Preserve; it was purchased by Geraldine Watson, a plant ecologist and park ranger, to preserve it from development. The site exhibits most of the Big Thicket plant communities and native plants. The highlight of this visit was seeing the many pitcher plants and sundews that bloom in the early spring. We were too early for the orchids that are prominent here later in the spring.

Thanks to our two guides, we received a wonderful introduction to the Big Thicket. Many of us were left with the desire to see more of this fascinating place. Some people have asked about borrowing the DVD videos that were shown on the bus to Big Thicket. These DVDs are available for checkout from the Master Naturalist library at the Agrilife Extension Office. Whether or not you attended this trip, the videos are worth viewing.

On December 15, 1981, the Preserve was designated an International Biosphere Reserve by the United Nations Education, Scientific, and Cultural Organization (UNESCO), further emphasizing its biological

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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The Midden is posted on the GBAC-TMN chapter website: www.gbamasternaturalist.org 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

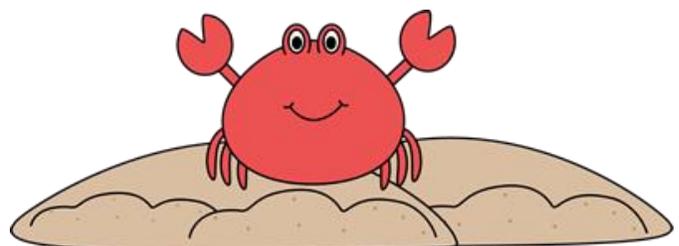
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|------------------------------|---------------------|
| Diane Humes, Managing Editor | Madeleine K. Barnes |
| Lana Berkowitz | Carolyn Miles |
| Verva Densmore | Chuck Snyder |

The Midden Deadline

for the next issue

July 1

If you have Advanced Training or Volunteer Opportunities, please submit information to Tim Long, tikibloke@yahoo.com



2018 Class Fun and Adventures Photos by Chris Anastas



June and July Activities

ADVANCED TRAINING OPPORTUNITIES

Chapter Meeting - June 7; Dragonflies and Damselflies
Presenter - Bob Honig
6:30 Social, 7:00 Meeting, 7:30 Speaker
Extension Office; 1 AT hour

No Chapter AT scheduled during June and July

Ongoing

Galveston Island State Park
10am at the Welcome Center
Every Saturday- Beach Explorations
Every Sunday- Bay Explorations
Tours 1 to 1 ½ hours long. Bring water and family.

Heritage Book Study Group

First Monday of every month. AgriLife Extension Office
10am-Noon; 2 hours AT
Contact: Elsie Smith (409) 392-7003
See pg. 6 for meeting dates and books.

STEWARDSHIP OPPORTUNITIES

Ongoing Activities:

Mondays - Galveston Island State Park, Contact: Chatt Smith chattsmith@gmail.com

Tuesdays -

- Sheldon Lake State Park, Contact: Tom Solomon crandtr@sbcglobal.net
- Texas City Prairie Preserve, Contact: Jim Duron wishkad@yahoo.com
- Environmental Institute of Houston at UHCL, Contact: Wendy Reistle reistle@uhcl.edu

Wednesdays - Wetland Restoration Team, Contact: Marissa Llosa mllosa@tamu.edu

Thursdays -

- Stormwater Wetland Team, every Thursday, 9am - Noon. Contact: Mary Carol Edwards mary.edwards@agnet.tamu.edu
- San Jacinto State Park, Contact: Jim Duron wishkad@yahoo.com

Fridays - Prairie Friday, ABNC, 8:30 - 11:30am, Contact: Chatt Smith chattsmith@gmail.com

EDUCATION - OUTREACH VOLUNTEER OPPORTUNITIES

Bay & Island Adventures - Volunteers teach six in-class hands-on modules on a once a month basis in Dickinson and Galveston Schools. Presenters and helpers are

needed for eleven 4th and 5th grade classes. Contact: Sara Snell snellsw@verizon.net.

Education and Outreach Committee - Lots of work to do and we can use your help developing a speakers bureau; responding to requests for exhibit booths, fieldtrip guides and presenters, planning Camp Wild and Treasures of the Bay; and developing a library of education-outreach materials. Contact Sara Snell snellsw@verizon.net

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.

BOARD AND COMMITTEE MEETINGS

(At Extension Office monthly unless specified)

Board Meetings - First Tuesday, 2-4pm

Committee Meetings

Advanced Training - Third Monday, 10-Noon
Education/Outreach - Third Tuesday, 10 to 11:30am
Stewardship - Meets quarterly
Communication - July 2, Evelyn Meador Library, 10am to 1pm



Texas A&M AgriLife Extension provides equal opportunities in its programs and employment to all persons, regardless of race, color, sex, religion, national origin, disability, age, genetic information, veteran status, sexual orientation, or gender identity. The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.

