Galveston Bay Area Chapter - Texas Master Naturalists October 2018

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Next Chapter Meeting

October 4th

Microplastics in the Galveston Bay Area

By
Theresa Morris
Turtle Island Restoration Network

Extension Office*

President's Corner by George Kyame, President 2018

It is a year after Hurricane (and regional super rain event) Harvey. I hope all that were affected have no lasting pains other than memories. Let us welcome the coming change of seasons with no destructive storm systems!

The GBAC-TMN Board has prepared updates to the Chapter's Bylaws and Operating Handbook to keep pace with the statewide Texas Master Naturalist Program. The proposed Bylaws document is specified by the statewide program. The updated Chapter Operating Handbook is in the statewide format, but includes processes and procedures specific to our Chapter. Please review the new documents in your email, or we can provide copies upon request, and send any comments to our treasurer Lynn Wright at lynn-wright@comcast.net. If you send comments or see Lynn, thank her for the difficult and beleaguering task of this preparation and review! The Board will review comments received and prepare final amended documents for the Chapter membership to vote on at a Chapter meeting. *(Editor's note: See page 13 for changes)*

Speaking of voting, I want to touch on the process of choosing officers. We have Nominating Committee that reaches out to possible candidates for potential chapter service. They accept suggestions and nominations as well. Questions? Contact any board member or Julie Massey, or check our website. There will be a slate at the December Meeting.

Upcoming October activities of note: Among several Armand Bayou plantings falls Prairie Pandemonium. Over 100 volunteers will plant grasses and forbs on a 3-acre plot on October 20. TCPP will host a Prairie Conference on October 19. Whether attending or volunteering, or both, we hope to see you at this collection of speakers and seminars, a premier event of everything prairie in our own backyard.

Congratulations to our member Tom Solomon, prairie guru and first GBAC -TMN to reach 20,000 volunteer hours! Thank you Tom! And Goodbye to Frankie Fox. We recently lost Frankie, lively and gregarious naturalist since 2002. Sympathies to husband T.J. and family.

Hope you are registered for the 20th Anniversary TMN Convention in Georgetown, TX on the 26-28 of this October. As you may be aware, there is a statewide buzz in our organization regarding the 20th Anniversary of the Texas Master Naturalist Program. Indeed, this is much ado about Something-Big. This Annual Meeting has had a lot of extra work and exciting additions. I attended last year with close to thirty of our own members. I was beyond impressed with the excellence of this convention. Please seriously consider making your plans for the end of October at TMN's modern Platinum Anny!

Wetland Wanderings: Invasive Apple Snails by Lana Berkowitz

Apple snails are big although maybe not as big as apples. Despite their size, people often don't know the snails have invaded a freshwater area until the bubblegum-pink egg clutches are spotted on vegetation above the waterline.

That's when the hand-to-slime warfare begins to destroy the eye-catching snail eggs before the pests hatch and begin to munch all the aquatic plants.


Photo by Mary Carol Edwards

Mary Carol Edwards, who coordinates the Stormwater Wetland Program, sometimes lists collecting egg cases as a chore for the Exploration Green wetland crew. It can be a messy business wading along the shoreline plucking egg clutches from plants.

Apple snails are indigenous to South America and were introduced into Taiwan from Argentina for commercial production in the 1980s, according to the Texas Parks and Wildlife Department. In the Philippines, they became the top pest in rice fields. When the snails reached Hawaii in the 1990s, they caused significant damage to taro, rice and other water-based crops.

Apple snails were most likely introduced to the Southeast United States through the aquarium trade, according to the U.S. Geological Survey's Wetland and Aquatic Research Center. Certain Apple snail species are established in Florida, Georgia, Louisiana and Texas.

There may be several *Pomacea* species at Exploration Green. Mary Carol said different people have variously identified the snails. Most of the invasives are *Pomacea maculata, Pomacea canaliculata* and *Pomacea insularum*, all of which are classified by TPWD as exotic, harmful or potentially harmful. In Texas it is illegal to possess apple snails without a permit.

All the species are bad news for the Bay Area region. "Where snails are present, the population does seem to grow each year," Mary Carol said. "I see evidence of them in more water bodies since I saw my first egg case in 2010 in Brazoria County."

In addition to eating aquatic plants and damaging wetland habitats, the snails can carry parasites. Although edible, the snails in globular-shaped shells with banded patterns of black, brown, green or yellow can transmit rat lungworm (*Angiostrongylus cantonensis).* If improperly cooked, the meat could cause a fever or death, in extreme cases. They also are known vectors for blood flukes (*Schistosoma* spp.) and intestinal flukes (*Echinostoma ilocanum*).

Handpicking is used to control the snails mostly because pesticides would kill crawfish and similar animals. Their known predators are limpkin and snail kite, birds of the Florida Everglades that researchers are studying to see if the birds are expanding their territory as the snails spread. Mallards also are known to eat the snails. However, apple snails are less active in the winter when more of the ducks are around, according to the Texas Invasive Species Institute.

During warm months, snails climb several inches above the waterline to deposit their egg clutches vegetation. The egg masses contain hundreds if not thousands of individual eggs. They hatch in 11-21 days.

The bubblegum-pink, gooey deposits are about the length of your thumb, but the egg cases get progressively brittle and pale, Mary Carol said. The clutches are popped off easily from stems. The Exploration Green team smashes the eggs. "In my experience the preferred way to deal with the egg clutches is to collect them and crush them onshore," she said.

Some apple-snail warriors dump the eggs into the water hoping they will drown or be destroyed. However, Mary Carol notes that all but the very freshest eggs will float if thrown in the water, and there don't seem to be many animals interested in eating them. The result is the eggs just float to the water's edge and probably hatch there.

The nocturnal adults go into deeper water at sunrise. But you might see some laggards in the early morning, especially if they are busy mating, Mary Carol said. Adult snails can be chucked onto higher ground and perhaps provide a feast for other animals, she said.

Mystery snails (*Cipangopaludina spp.*) from Asia, sometimes mistaken for Apple snails, are another

invasive found in the area. Mystery snails are not quite as large as apple snails.

Alas, a search on the Internet turns up apple and mystery snails for sale in the aquarium trade. Some have reported that apple snails may be shipped in place of mystery snails due to misidentification or deception.

Prairie Ponderings: Swamp Rabbits by Diane Humes

Wet coastal tallgrass prairies easily blend into wetlands and bottomlands on our Texas Gulf Coast. All are home to the swamp rabbit, *Syvilagus aquaticus*, also called the swamp hare, marsh rabbit, and cane-cutter. This rabbit is the largest member of the cottontail genus - about 50 percent larger than a cottontail rabbit, but with smaller and rounder ears, and coarser fur with a more yellow cast.

The swamp rabbit has thick dense fur - a mix of dark brown, rusty brown, and black - providing excellent waterproofing for such a water-seeking mammal. Its throat and tail are white and it has cinnamon-colored circles around its eyes. Swamp rabbits weigh between three and six pounds and may be between 16 and 22 inches in length. Males are usually larger than females.

Swamp rabbits are herbivores, dining on a variety of grasses, sedges, shrubs, tree bark, seedlings and twigs. They feed mainly at night - hiding during the day and emerging at dusk - so are seldom seen; during rain showers you may find them feeding during daylight hours. Members of the Burn Team also see them running from the flames during a prairie burn. Some of their preferred foods are prickly species, such as dewberry and greenbrier. Clumps of those species might also serve as good hiding places!

In order to get full nutrition from their food, swamp rabbits practice coprophagy, that is, swamp rabbits eat their poop, but only after the first pass through the digestive tract, when their fecal pellets, which are wet and green, still contain nutrients. After the second pass, when the pellets are dry and brown, the rabbit has gained all the nutrition possible.

Unlike other cottontails, swamp rabbits are territorial. Males mark their home ranges and will fight to defend them from others. Territory sizes vary, but in good quality habitat, two or more males could inhabit a single hectare (about 2.5 acres). Swamp rabbits breed, well, like rabbits, and females may produce two - five litters of up to six young each year.

The female makes her nest in a depression on the ground, under brush, lined with grasses and rabbit fur, or in a hollow log or hole. She takes care of her babies until they can hop out of the nest - in about two weeks. Males do not help with the young.

Swamp rabbits are tasty and hunted by people and their dogs. Wild predators include alligators, raptors, bobcats, foxes, coyotes, and snakes. Swamp rabbits are good swimmers - this is the creature that President Carter encountered while paddling! They seek water to escape predators. Other potential major perils are floods and habitat loss. Swamp rabbits are considered a species of Least Concern, but their numbers are certainly lower than in the early days of Texas.


Photo courtesy of Houston Arboretum

Over 100 years ago, Vernon Bailey, in the *Biological Survey of Texas*, 1889 -1905, described the swamp rabbit as a common species. They were found living "in swamps, marshes, and low brushy woods near the bayous, making trails that often lead through shallow water. They usually jump from under old logs or tangles of briers and underbrush and go dashing off with a heavy thumping run, but usually with speed enough to escape the dogs. Fires are said sometimes to drive them out of the swamps and marshes by hundreds. In the Big Thicket in December,1904, they were especially abundant under the dense growth of palmettoes and tangle of vines. At this season the ground was dry, but the quantity of large flattened pellets covering the tops of old logs suggested that during wet weather the rabbits spent much of their time on the logs...they were great swimmers, and when chased by the dogs would invariable swim back and forth across the creeks."

Beach Patrol: The Great Fishing Line Tube Adventure by Maureen Nolan-Wilde

Monofilament fishing line, the most common type, preferred by fishermen worldwide for its buoyancy and stretch, is a major problem. Made of nylon, mostly, when discarded carelessly, it remains in the environment for many years and traps and kills all forms of wildlife, both on land and water. In addition, it fouls boat propellers and shafts requiring expensive repairs. Chapter members installed fishing line tubes on many piers and docks throughout our area to collect discarded fishing line, hoping to confront this problem. But, many tubes have been abandoned, stolen, or unofficially "re-purposed" (i.e. used as rod stands). The present process is broken.

Thinking we could challenge chapter members to come up with a better solution to the fishing line problem for Galveston County, in early July we invited everyone who wanted to join the "Great Fishing Line Tube Adventure" to attend a meeting to address the problem. Before even thinking of how to improve the process, we needed to determine just how many tubes there were, because, although the current map only showed 14 in the Galveston area, we felt the inventory had to be much larger. So, the first task for volunteers was to survey the county and find the true number of tubes deployed.

In less than a month, adventurous teams scoured the area's bays, beaches, marinas, and bait shops and reported their findings. We do indeed have more than 14 tubes in the county - there are 87! At each tube location, volunteers recorded GPS coordinates and took pictures to help determine its owner and the overall condition of the tube.

Now that we have an accurate inventory, what's next? We have identified a number of areas to be addressed:

- Identify the owner of each tube
- Develop a process to monitor and empty the tubes
- Replace, retrofit, add or decommission tubes
- Develop a comprehensive communication and outreach plan
- Develop a process to sustain and steward this effort

Our great adventure turned into a project; another facet of the work our chapter is doing to fight plastic pollution. If you are interested in joining in this great adventure, please do. Help make a difference for our birds, our sea turtles, and our community – now and in the future.

Monarch Butterfly Fall Migration: How can you help? by Candace Annen

Starting in August and September, the monarch butterfly population east of the Rockies begins a 3000-mile journey to its overwintering site in Michoacan, Mexico, located in the Sierra Madre mountain range. That's a pretty incredible distance, considering a monarch butterfly weighs less than one gram. Weeks after departing their summering locations in Canada and the Northern U.S., the monarchs begin to converge in Texas. Most monarchs migrate through the Texas Hill Country, where native milkweeds and other nectaring plants provide them the fuel that they need to keep going. Along the Texas Gulf Coast, where nectaring plants are abundant, but native milkweeds are hard to find, a growing percentage of monarchs stop migrating.

Female monarch butterflies lay eggs only on milkweed plants, which are the exclusive food source for monarch caterpillars. In efforts to boost the availability of the monarch's host plants, many well-intentioned gardeners along the Gulf Coast have planted tropical milkweed, *Asclepias curassavica*, a non-native plant, sometimes simply labeled 'butterfly milkweed'. There is much debate on the merits of using tropical milkweed to feed and host monarchs. Tropical milkweed is abundantly available year-round and easy to grow and care for. But left unmonitored, tropical milkweed becomes a threat to the eastern monarch's ability to complete migration.

As native plants die back in the winter and day lengths shorten, these and other cues normally tell the monarchs it is time to move on. But, studies indicate that an abundance of tropical milkweed may induce monarchs to abandon migration and stay put. And when they do, they have a much greater risk of becoming infected by OE (*Ophryocystis elektroscirrha*), a naturally occurring protozoan parasite specific to monarchs, which thrives on the year-round plants.

Exposure to OE weakens monarchs and shortens their life span, threatening their ability to migrate. An infected female monarch, while nectaring and laying eggs, spreads the disease, infecting her own offspring with OE spores. As the use of tropical milkweed increases, so does the risk of the Texas Gulf Coast becoming an OE hotspot. Data collected by Project Monarch Health in 2017 show an OE rate of 67% along the Florida and Texas coasts, where *Asclepias curassavica* is popularly grown. Comparatively, in the Northern U.S., the 2017 OE rate was drastically lower at only 5.5%. At the over-wintering site in Mexico, OE rates were a mere 2.2%.

So, what can we Gulf Coasters do to support monarchs on their epic journey? First, keep an abundance of nectaring butterfly plants! Fuel is their most pressing need in the fall and winter.

Monitor your milkweed plants for disease or caterpillar activity during August and September. While most female monarch butterflies will not lay eggs on their way back to Mexico, a small percentage of the migrants do and it's this new generation that will (hopefully) complete the migration cycle.

If you use tropical milkweed, cut it to the ground in early November. This will help eliminate any potential OE spores from remaining on your plants. Preliminary findings in 2018 show that OE rates are down considerably!! Clean your pots and nets with a bleach solution before reintroducing caterpillars. **After the initial cutting, keep tropical plants cut, unless covered and out of reach of non-migratory monarchs, until February**, in preparation for the spring migrants. And let's keep OE down again this year!

Seek out and plant native milkweed! *Zizotes* and Aquatic are proving to respond well to our climate. Check out the native plant society for support.

Spread the word!! Despite good intentions to increase monarch populations, few people know of the danger that year round milkweed presents.

Become involved in one of the many monarch specific projects (see list below).

The monarch butterfly's multigenerational migratory cycle is awe-inspiring. And while overwintering populations in Mexico have dropped significantly, there are many citizen science projects devoted to bringing those numbers back up! With help from the hard freezes last winter, Gulf Coast OE rates are down and by spreading the word on the dangers of tropical milkweed, we can keep that trend going! Check your butterfly gardens regularly and cut back that tropical milkweed!

For more information, contact Candice Annen or Chris Anastas.

- Project Monarch Health http://www.monarchparasites.org/
- Journey North https://journeynorth.org/
- Monarch Larva Monitoring Project https://monarchlab.org/mlmp
- Monarch Joint Venture https://monarchjointventure.org/
- Monarch Watch https://monarchwatch.org/

Botany: Plants are Precious by Verva Densmore

Emmeline Dodd taught botany for 39 years at College of the Mainland. She confessed that when she began teaching botany it was not a subject she considered herself trained to teach, yet over the years it became her favorite subject. Her work earned her The Piper Professor Award, which recognizes superior teaching at the college level in the state of Texas. Only 10 professors receive this award each year. Emmeline brought her

passion for teaching, her love of her subject, and her exceptional clarity to the extension office in July where more than 30 master naturalists, plus several area teachers, gathered for an advanced training class. We were a fortunate group indeed!

In addition to encouraging us to become more aware of plants and to appreciate them, the objectives for this class were for us to learn the taxonomic groups of higher plants, to know the 3 major plant organs and their functions, to know leaf venation and leaf arrangement and the parts of a flower, and to be able to differentiate monocots from dicots, all of which are crucial to identifying plants. In other words, it was a 2½-hour class that packed a wealth of information into every minute.


Photo by Mike Wehrman

The three major plant organs are roots, stems and leaves. Roots anchor the plant, absorb water and minerals and, sometimes, store food for the plant. Stems support leaves and flowers, contain conducting tubes and sometimes store food. Leaves perform photosynthesis to make glucose (sugars) and oxygen (O_2).

Emmeline reminded us that plants are essential to life on Earth. Certainly humans use all three plant organs; we eat roots, like sweet potatoes and carrots. We eat stems when we eat celery, asparagus, or broccoli. And of course, we eat leaves when we eat spinach, lettuce, or onions. Even the most carnivorous animals are dependent on the plants that feed the animal, fish, or bird that they consume.

The class learned to classify plants by identifying the venation, arrangements and complexity of the leaves. We learned to separate monocots and dicots, which allowed half of the botany book to stay closed while narrowing down the plant in question. Emmeline also gathered an impressive collection of plants - more than 2 dozen - that we were asked to examine using the lens of our new knowledge. Most students were impressed by how much of her clear lesson had “stuck” and allowed them to get most of the questions on the after-test correct.

At the end of this advanced training class, one long-time Master Naturalist commented that this was as close to perfect as a class can be. I’ll second that.

Education Outreach – Bay Adventures Module Training by Sara Snell

The Education Outreach Committee sponsored the second session of module training for future instructors of our Galveston Bay Adventures program. These teaching modules are filled with information and a variety of fun activities that can be tailored to several age groups.

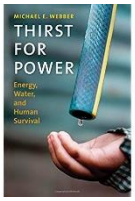
Congratulations to Terry Gaustad, Cindy Liening, Mary Vogas, Karen Pierson, Janet Mason, Patty Trimingham, Lisa Little and Karen Hazen who completed the instruction on the six modules used for the basis of the program.

The Education Outreach committee will be updating the modules with photos taken from our database and will continue developing the crates of materials for our various outreach activities. We meet the third Tuesday of the month at 1:00-2:30 in Classroom 2 at AgriLife and welcome anyone who would like to join us.

Photo by Chris Anastas

Heritage Book Study – Review of *Thirst for Power: Energy, Water, and Human Survival* by Madeleine K. Barnes

In our history as a book study, we have read several books about various aspects of water as a natural resource for people, wildlife, and our environment. The current book, *Thirst for Power: Energy, Water, and Human Survival*, combines, explores, and explains the relationships between water and energy that allow us to live our lives comfortably.



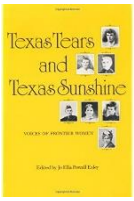
The author is Michael E. Webber, Deputy Director of the Energy Institute at the University of Texas. In addition, he is the Josey Centennial Fellow in Energy Resources and serves as Co-Director of the Clean Energy Incubator and Associate Director of the Center for International Energy and Environmental Policy. Dr. Webber is an Associate Professor of Mechanical Engineering, teaching and researching energy and environmental issues. I was curious about what the Energy Institute does. This is their mission statement: "The Energy Institute leverages UT's breadth and depth of expertise to educate the energy leaders of tomorrow, foster innovation, and inform the policy-making process through rigorous, interdisciplinary research."

Webber begins his book with a history lesson of how water and water systems played a major role in the advancement of civilization, while drought and loss of water systems led to past destabilization and civilization collapse across the world through centuries. Hence water and civilization are linked, as are water scarcity and societal downfall. How does that apply now? According to Webber, "Modern water systems depend so heavily on energy; modern society depends on energy and water. Unfortunately, an energy shortage can become a water shortage, critically destabilizing society." He cites several strong examples, Hurricane Katrina being one of those.

In order to understand energy, Professor Webber provides an overview of the laws of thermodynamics – fundamentals of the nature of energy and the consequences and transformations of energy. He gives a historical timeline of energy sources and the transitions – wood, coal, whale oil, kerosene, oil, natural gas, nuclear, solar, wind, and biofuels. Now I am not an engineer, but I can see why he has been honored for exceptional teaching. Using his mastery and knowledge, he is able to explain this in basic understandable terms.

"Energy and water are the world's two most critical resources," according to Webber. The U.S. is responsible for 20% of the global energy consumption and 20% of the global economic economy. These are important facts that illustrate what is at stake and our part in it. We hear about the issues that are impacting our earth, people, wildlife, and the environment each day. Wait - there are understandable solutions being presented here. Given the need for clean water by the growing world's population, water which is supplied by energy, we need to ensure sustainability for both water and energy without adversely impacting the environment. According to Webber, solving these issues will require new thinking, clever innovation, and technical solutions. He states "By saving water, we can save energy and by saving energy, we can save water." Sounds simple doesn't it. What may be complicated is having the will to accomplish this.

I know that you understand that this is a very important and timely subject given the impact of global change, the vulnerability of precious resources, and the seriousness of these challenges. Dr. Webber has done extensive research and preparation in writing this book. He is an authority on this issue of water-energy solutions. To learn more, I would highly recommend this one for your reading.



We will complete our discussion of *Thirst for Power* on October 1 after reading pages 102-202. On November 5, we will meet to discuss pages 1-128 of our next reading selection, *Texas Tears and Texas Sunshine, Voices of Frontier Women* edited by Jo Ella Powell Exley.

We welcome your participation each month for two hours on the first Monday of the month starting at 10 am 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!

Big Picture: The Meteoritical Society and Armand Yramategui by Diane Humes

Meteors are space rocks, the "shooting stars" burning through Earth's atmosphere. Meteorites are their earthly remains. If detected before entering the atmosphere, these objects - smaller than asteroids or planets - are called meteoroids. Meteorites are named for the location

they were found; they land everywhere, but are easiest to locate where vegetation is sparse.

Every year the U.S. sends a team (ANSMET) to Antarctica during its summer to collect them, since, if you find a black rock on the top of a snowy ice field, it is most likely a meteorite! Meteorites are stored at Johnson Space Center where the collection contains over 22,000 samples for scientific study.

Meteorites are classified according to their chemical and mineralogical characteristics; those with melt droplets are chondrites, and the others are achondrites. Making sense from the growing body of data makes for a grand interdisciplinary puzzle pertaining to all sorts of questions about our solar system. So far, researchers have determined that some young achondrite meteorites have a lunar origin and others are Martian, while older chondrite meteorites originate from asteroids, such as Ceres, or comets.

It is a long field trip to any of these destinations and scientists are thankful for all the rocks that have come to them on Earth and, also, that Apollo astronauts brought rocks home from the Moon!

Scientists who study extraterrestrial rock samples are generally members of the Meteoritical Society, founded in 1933 to promote studies of meteorites, tektites, cosmic dust, impact craters, meteors, and fireballs. For years a small society, its membership grew quickly with the beginning of the Space Age and an influx of young scientists and new technology. One member of the Meteoritical Society during this formative time was Armand Yramategui from Houston.

Armand Yramategui was born in Houston on March 2, 1923. He served in World War II, then earned a degree in electrical engineering from Rice Institute in 1947. Armand, as everyone called him, seems to have worked for a time managing and acquiring family properties in Houston, which indirectly led him to his life's passion for nature and conservation. After purchasing a wooded parcel, he wanted to identify all its trees, so he joined the Houston Outdoor Nature Club and became a man possessed (and a Life Member!).

Armand studied and acquired a detailed and profound knowledge of botany, birds, shells, and ecology and traveled widely in Texas and the tropics, which he loved. He joined and founded other organizations: Texas Conservation Council, Texas Ornithological Society, Houston Audubon Society, Texas Nature Conservancy, Houston Sportsmen's Club, and the Sam Houston Resource Conservation and Development Area. A passionate naturalist, he tirelessly advocated for preservation of wild spaces for the benefit of wildlife and human enjoyment.

Actively involved in the environmental issues of the day, Armand testified against a Texas Water Bill by showing its huge environmental and financial costs; the bill was defeated. He successfully campaigned for the Texas Open Beaches Law and advocated for creation of Padre Island National Seashore and the Big Thicket National Preserve. He personally purchased a few prime parcels of the Big Thicket omitted from the plan; they were eventually given to The Nature Conservancy. He sought to protect the Ivory-billed woodpecker, thought extinct, but re-discovered by him in 1967 and saw one of the last Eskimo curlews in Galveston. He helped in the fight against channelization of Buffalo Bayou.

In 1963 Armand joined the staff of the Houston Museum of Natural Science as an instructor; in 1965 he became the Curator of its Burke Baker Planetarium. As curator, Armand appeared on television, radio, and in regular newspaper columns, commenting on space events and wildlife. From the front steps of the museum, he took the photo below which appeared in *LIFE*.

An avid photographer and astronomer, Armand was interested in tektites - small black, green, brown or gray glass bodies formed during meteorite impacts. He attended the 1966 Meteoritical Society meeting in Washington D.C. - see the group photo. As an aside, these days the Society has far more young faces, many more women, and hardly any suits with ties!

On February 8,1969, residents of Pueblito de Allende in the state of Chihuahua, Mexico witnessed a fireball in their neighborhood. Right away, Armand and Dr. Elbert King, first NASA lunar curator, traveled to Mexico to collect samples of the Allende meteorite, the largest chondrite meteorite ever found on Earth. Armand actually made two collecting trips, returning 800 pounds of meteorite to the Houston Museum of Natural Science.

Armand's final conservation project was to seek funding for the creation of more parkland and open spaces around Houston. He thought that parkland might logically be acquired from low-lying, flood-prone areas - along lakes and bayous - incurring little expense for upkeep and increasing desirability and value to adjoining development. He was scheduled to appear before Houston City Council and the Harris County Commissioners to present his plan, but he never made it.

On the evening of January 27, 1970, seeking good viewing conditions in the country for Comet Tago-Sato-Kosaka, which he had been trying nightly to observe, he left Houston with camera and telescope. His car - license

plates ASTRO - had a flat tire along the Southwest Freeway. While attempting to fix it, he was robbed and senselessly shot by three teens and died at the site.

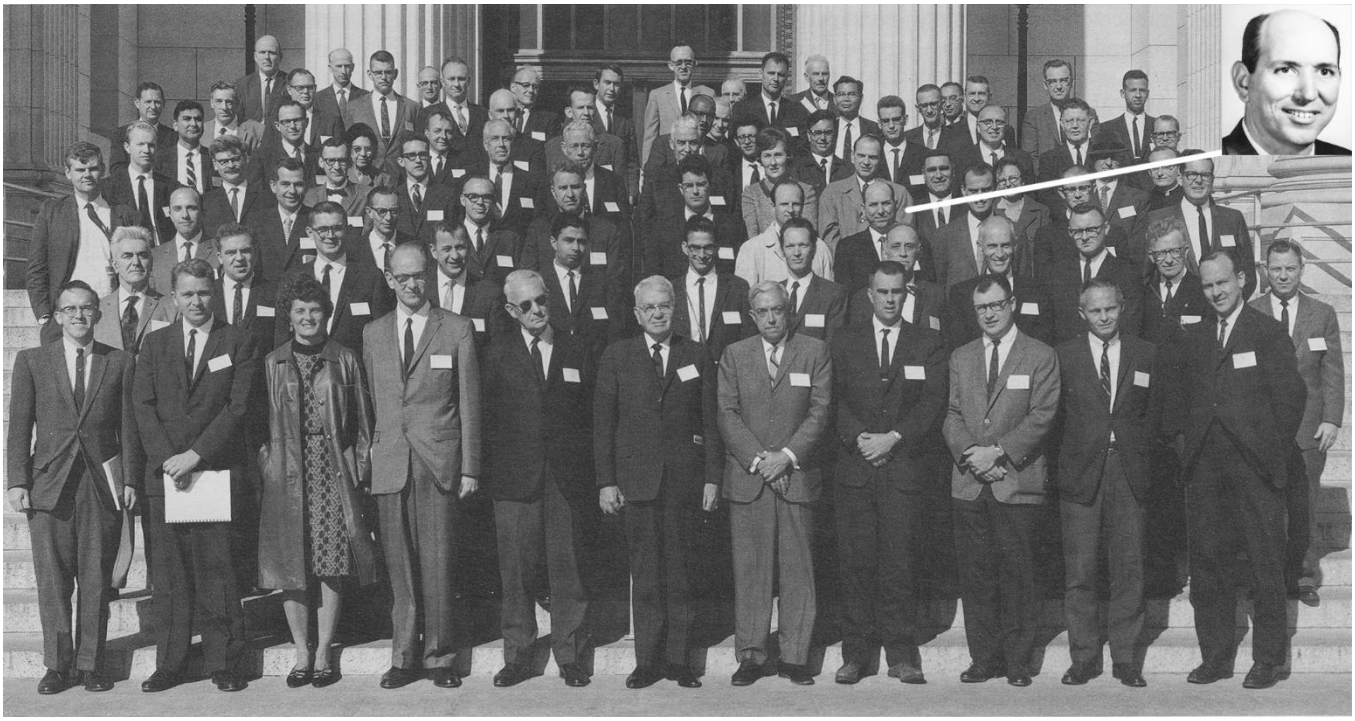
His death at age 46 set events in motion for the preservation of Middle Bayou, which Armand had considered the best remaining undeveloped place in the area. Middle Bayou was described as “a tangled thicket of trees, bushes and wild flowers,” which “provided cover for red wolves, deer, alligators, turtles, herons, roseate spoonbills, falcons, hawks, anhingas, Attwater prairie chickens, ospreys and egrets,” and whose “waters had crabs, shrimp, redfish, spotted trout, and menhaden.” With huge public support and the collective work of Hana Ginzbarg and Armand's closest friends, the bayou was re-named Armand Bayou and land acquired for the largest urban wilderness park in the U.S. - Armand Bayou Nature Center, which opened in 1974.

Few people remain alive who actually met Armand Yramategui, but in Armand Bayou Nature Center's library is a large volume in Armand's memory. As I read the hundreds of letters from friends and colleagues, and accounts of his accomplishments, I was stunned at the magnitude of our loss suffered almost 50 years ago. What else would he have done and what more can we do?

At the 81st annual Meteoritical Society meeting, held July 2018 in Moscow, Russia, Brother Guy Consolmagno, SJ, Vatican Observatory astronomer, speaking of science and scientists, inspired us with words I’m sure Armand would have appreciated. He said, "In addition to time, money, and talent, scientists are also people and people need each other. Science is sharing stories with a community, both to do the work and to pass along what you have learned to the next generation...Science is a great puzzle and we can help each other out.”

Amen, Brother Guy. So is nature preservation and conservation.

For more detail, some meteorite research has been covered in *The Midden* (“Falling Stars”, April 2013 and PP “Finding Meteorites”, October 2017). Guy Consolmagno has written: *Brother Astronomer*, *Turn Left at Orion*, and *Would You Baptize an Extraterrestrial?*



Why Ecology Matters! Part 1 AT by Bruce Niebuhr

Why are individuals of a particular species present in some places and absent in others? What limits the distribution of that species? These are fundamental questions, according to Dr. Cindy Howard, UHCL Professor and Master Naturalist who presented *Why Ecology Matters! Part 1: Why Do Organisms Live Where They Live?* on August 4. There were 55 participants, including several school teachers.

Cindy warned us that she would try to trick us. What did she mean? As an example, she showed a map of the distribution of the horned lark in North America, 1994-2003. Why has the species not spread above southern Canada? Many of us said "temperature." But is that the reason?

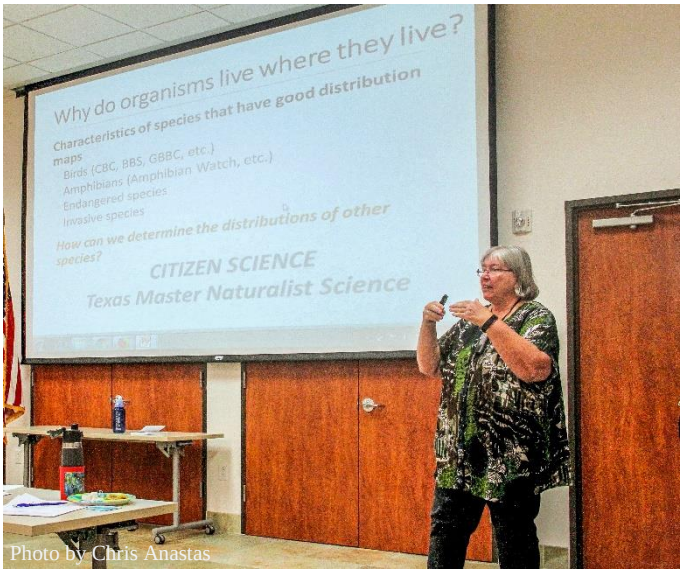


Photo by Chris Anastas

Cindy showed us a flow chart of how to systematically determine why organisms live where they live. The first step is not a physical factor such as temperature but *Dispersal*. Is the area inaccessible? As an example, for many birds and other species crossing salt water is a barrier.

The second factor is *Behavior*. What causes a species to select a particular habitat?

The third factor is *Other Species.* Are there predators or competitors for the habitat?

The final factors are *Physical and Chemical factors* such as climate, temperature, light, water and soil.

Cindy also gave us a brief history of ecology, including the pioneers and the interesting derivation of the term. And what is an ecological niche? Pronounced "nitch" not "neesh" to distinguish it from other definitions.

Part 2: Lions and Tigers and Bears, Oh My! Why are Competitors and Predators Important is scheduled for November 17.

Fish Tales by Nelda Tuthill

August 8, 2018 Julie Massey and Sara Snell traveled to Livingston near Lake Livingston to present Julie's famous presentation on Ichthyology at the request of former Galveston Bay Area Chapter member, Nelda Tuthill. Besides members and trainees of the Piney Wood Lakes MN Chapter, there were visitors from the Lower Trinity Basin and Longleaf Ridge Chapters. They travelled from one to two hours at attend. Also attending were representatives from Lake Livingston State Park, Inland Fisheries and The Hookers, a local fishing club in Livingston. They all wanted to learn about Ichthyology from the Master.

Julie presented a two-hour program including an overview of the Galveston Bay, fish and ended with a dissection lesson.

The program was so well received that one of the visiting MNs told the Piney Wood Lakes president, Timi Maples, "You should do this about 6 times a year." During the Question and Answer section, another visiting MN from Longleaf Ridge of Jasper asked "How far will you travel to give a presentation? We have a fishery."

So Julie and Sara will be hitting the road with their show.


Photo by Carl Maples

The Piney Wood Lakes Chapter appreciated that Julie and Sara had traveled two hours to give the presentation so they presented each of them with handmade aprons made from seed bags. They are made from plastic bags so they are ready for their next show.

Behind the Scenes: AT Committee by Madeleine K. Barnes

You have registered for and find yourself sitting in an approved Advanced Training (AT) sponsored by your chapter's Advanced Training Committee. How did all of this happen? Let's take a look behind the scenes to follow how this AT was developed so that you could attend, enhance your naturalist knowledge, and meet your advanced training requirements for re-certification.

The purpose of advanced training is to provide Texas Master Naturalists with opportunities to focus on topics of interest or expand their knowledge base and skills. Advanced training on an annual basis promotes continued learning and development and provides the tools for skilled work in volunteer efforts.

Your hard-working AT Committee, consisting of an Advanced Training Director, appointed by the chapter's board of directors, and at least 10 master naturalists, identifies and provides these opportunities for your edification. There are currently 12 committee members plus Julie, our sponsor. The committee meets monthly to initiate and coordinate AT workshops and field trips.

Once a presentation topic has been suggested, the committee discusses and explores this proposal for further development. The GBAC Advanced Training Director and/or Advanced Training Committee reviews and approves each proposed AT based on criteria in the Chapter Management and Operations Protocols, December 2017.

The next step is for a committee member to volunteer as the project lead for the AT. The project lead takes over the planning and implementation of the AT, coordinating with the presenter(s) to determine the scheduling/location and number of participants, reviews the goals/objectives of the AT, books the venue, develops/prepares the publicity notice for the next chapter meeting or email, and applicable *The Midden* newsletter/chapter website calendar listing. Next the project lead coordinates room set-up, copies any hand-outs, prepares/provides the participant satisfaction survey (as needed), purchases the speaker gift or honorarium, and prepares *The Midden* review article (unless another member volunteers to write it).

In addition, the project lead coordinates with other committee members who agree to provide AT registration, photography, tech support, and coordinate the refreshments. All of these steps precede the AT opportunity where you sit ready to learn. At the AT presentation, the project lead conveys workshop timelines and all safety and housekeeping instructions, and introduces the speaker(s). Putting all the details on a tracking form documents the event for future reference. The goal is to provide the highest quality AT experience for you as the master naturalist participant.

If an AT opportunity is not an official chapter class, or presented by our chapter's partners, the AT Director must pre-approve the advanced training before the master naturalist attends. If it is approved, the AT Director notifies the chapter membership. There will soon be a new and improved on-line form to use when applying for approval of these non-sponsored opportunities. Until that is available, please submit your request for approval by email to the AT Director, Ellen Gerloff.

Hopefully this article provides more information on how your GBAC chapter works "behind the scenes" to help you fulfill your mission as a Texas Master Naturalist.

Photo by Chuck Snyder

Hawk Watch: Fall Migration by Diane Humes

I know many of you are missing the spring hawk watch. And, right now the birds we counted in March and April are coming back!

Want to keep your "eagle eyes" ready? Want to get out of town for the day? The Gulf Coast Bird Observatory (GCBO) hosts an official fall migration hawk watch practically in our backyard. Don't forget about visiting the Candy Abshier Wildlife Management Area on Smith Point from August 1 - November 15. Visitors are welcome on the 30-foot observation tower, staffed any day of the week from 8am - 4pm. Check the weather before you head out because birds don't usually do thunderstorms (and neither should you!)


Photo courtesy of U.S. Fish and Wildlife Service

The GCBO website posts the daily bird count and great pictures. You can get to the hawk watch either by taking the Bolivar Ferry from Galveston or driving east from Houston. Here are directions for the drive from Houston:

To reach Smith Point from Houston, take I-10 east to the Texas Hwy 61 exit. Turn south (right) on Hwy 61. In a few miles it changes number to FM 562 and continues south to Smith Point. At the intersection of FM 1985, which branches left at a Y intersection, continue right to Smith Point. Once in Smith Point continue on 562 until you pass Hawkins Camp Road on the right. Turn left at the next intersection and proceed to the parking lot for the tower.

This may be old news by the time you get it, but if you feel like helping out at Smith Point, the GCBO might be able to put you to work helping with data collection, greeting visitors, selling t-shirts, or other general help. (Might also be a big help to buy yourself a t-shirt!) To ask about volunteering, call Susan Heath at 979 480-0999.

The hawk watch begins on August 1 to catch the earliest migrants flying by, the Swallow-tailed kites. A few weeks later the Mississippi Kites and Broad-winged Hawks begin winging south. They can be seen in huge numbers, mostly in the last weeks of September, and may still be flying in November. In 2014, Broad-wing Hawk totals came to almost 104,000 birds! Accipiters to watch for are Cooper's and Sharp-shinned Hawks. The tower is close to Galveston Bay, so you also often see Magnificent Frigatebirds. And, sometimes the dragonflies swarm the airspace below the tower.

Smith Point is a peninsula jutting out into Galveston Bay from the east opposite San Leon on the western shore. Soaring raptors avoid flying over bodies of water to save energy and avoid hazardous crossings. Therefore, at the hawk tower the birds may not fly directly across to San Leon, but instead turn around and head north to loop around the top of the bay. From the tower you may get spectacular views of birds swirling over the tower.

If you're feeling like a long drive, another excellent location to view fall migrants is at Hazel Bazemore Park in Corpus Christi. The park is famous for its large flights of migrating raptors. In 1977, after a huge early cold front, observers counted over 750,000 broad-wings settling down to roost for the night from October 3 - 4. This is the largest so far witnessed there; single kettles of 10,000 broad-wings are "routine". Lots of other birds besides raptors also fly along the coast, so you should also check out the shrubbery, ponds, and beaches.

The counts from both locations are reported to Hawk Watch International where the data, along with data from other sites around the US and Mexico, is used to track long-term population trends of diurnal raptors.

In the fall migrating raptors are returning to Central and South America from their breeding grounds to the north. They follow the coastline; whole populations of species are funneled by mountains and ocean toward Veracruz, Mexico where as many as 3,000,000 raptors are counted each year. This year the GCBO is leading a tour to Veracruz in the second week of October; you can't go on that trip, but maybe next year.

Don't pass up this wonderful, potentially spectacular fall migration - maybe see some birds you recognize - hopefully also their offspring. See what the young birds look like - check out how many of them fly over the water. Perhaps we should also sit at Sylvan Beach, chairs turned to the north, and watch for fall migrants!

Proposed Bylaw Changes by Lynn Wright

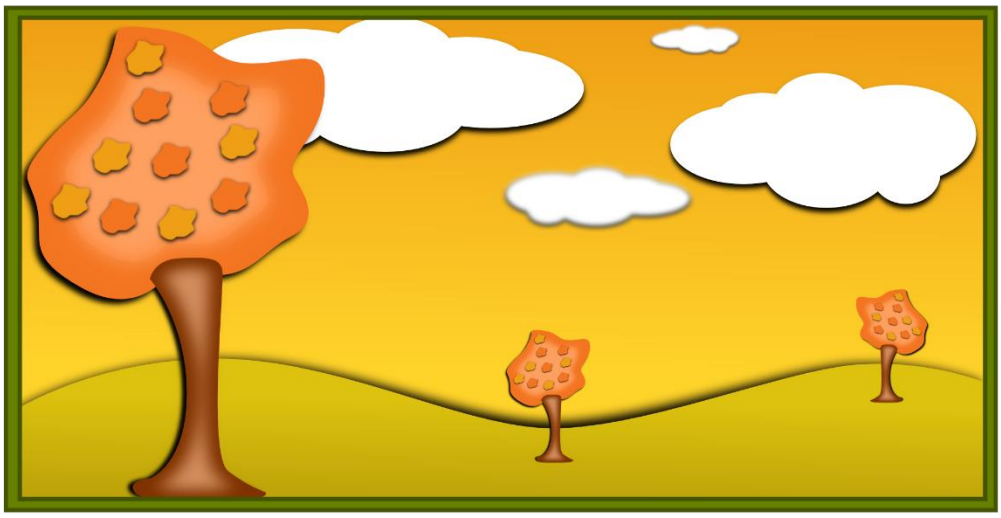
The chapter bylaws and operating handbook have been updated, based on changes requested from the the Master Naturalist's state office. The complete Bylaws and Chapter Operating Handbook may be found on the chapter website under Membership / Resources, https://txmn.org/gbmn/chapter-bylaws-and-handbook/. All chapters have been requested to follow the same template. Please review the documents. Questions and comments should be directed to Lynn Wright, lynn-wright@comcast.net. Changes will be discussed at the October chapter meeting and voted on either then or in December, depending on comments. Below, please find a summary of the changes

The Bylaws are the State's template. Here are the major changes:

1. The TMN State Coordinator Role is added with authority to oversee and audit any Chapter's practice and procedures.
2. All Chapters must adopt Chapter Bylaws using State language/template. Bylaws must be uniform.
3. If a chapter doesn't follow state guidelines, their Charter can be revoked.
4. Added a member category for Pledges (completed training class but not certified).
5. State Coordinator may provide oversight and input to a Chapter's nomination process for officers.
6. New Class Director is an appointed board member.
7. Newly elected officers or appointed board members begin their duties in January.
8. Requires two signatures for $1000 expenditures instead of $500.
9. A Chapter can merge with an adjoining Chapter.
10. Addendum for 501(c)(3) Chapters (conflict of interest policy)

The Operating Handbook has a lot of formatting changes. We took the State template and changed it to match the Chapter's procedures. Here are the major changes:

1. The Board may conduct votes by email on issue between meetings if necessary.
2. Need State approval for written commitments to County Governments or other entities.
3. For any payments greater than $1000, the Treasurer must co-sign the payment with the President. (The Chapter requires two signatures on all checks and Board approval of all amounts over $250 already.)
4. Financial records for the Chapter must be prepared using a financial management system (Quickbooks for example) and according to Generally Accepted Accounting Principles (GAAP).
5. The New Class Director is an appointed board member.
6. Education and Community Outreach is now Outreach.
7. Added a Historian/Archivist committee and the Hospitality Committee.
8. Added sexual orientation and gender identity to the list of items that the Chapter will not discriminate on.



Happy Fall!

The Nature Pyramid by Diane Humes

But are not exercise and the open air within the reach of us all? Walt Whitman

I like to be outside. Too hot, too cold, too wet, too dry, too much of the time - just breathing the air and feeling the sun and wind, make me feel happy and invigorated. Sure, far-away and more exotic places are enticing and wonderful, but we need not travel to go outside.

I also very much like reading books and *The Nature Fix: Why Nature Makes Us Happier, Healthier, and More Creative* by Florence Williams (thanks Liz, for recommending this one!) describes the joy and necessity of humans interacting with the natural world.

As master naturalists, we most assuredly value outdoor experiences. As recounted in *The Nature Fix*, Tim Beatley, leader of the Biophilic Cities Project at the University of Virginia, has come up with the nature pyramid. Similar to the food pyramid to help us all choose what to eat in the healthiest way possible, the nature pyramid suggests our necessary daily doses of nature.

Daily nature interactions, at the pyramid's base, are those we have with the birds and trees in our own neighborhoods, our pets and plants, and the blue sky and fresh air around us - our daily vegetables. Weekly outings to parks and waterways are the next step up in the pyramid. These parks might be wilder, bigger city parks, or regional parks nearby.

Moving up the pyramid further are those natural places - perhaps forests - that take more effort to get to. Perhaps, we could only visit one weekend a month. At the pinnacle of the pyramid are those rare wildernesses, maybe reachable yearly or biyearly, but in intense bursts of multiday enjoyment, where we completely escape all traces of the city.

How do you get your daily dose of nature?

The Midden

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

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

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

Midden Team

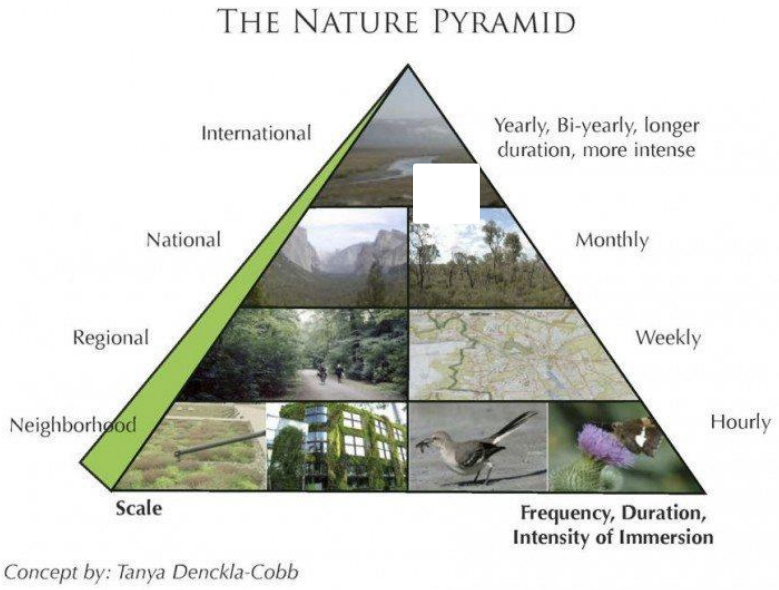
Diane Humes, Managing Editor
Lana Berkowitz
Verva Densmore
Madeleine K. Barnes
Carolyn Miles
Chuck Snyder

The Midden Deadline

for the next issue

October 28

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



October and November Activities

ADVANCED TRAINING OPPORTUNITIES

Chapter Meeting – October 4th; Microplastics in the Galveston Bay Area
Presenter – Theresa Morris
6:15 Social, 7:00 Meeting, 7:30 Speaker
Extension Office*; 1 AT hour

More Ecology Matters! Part 2 – November 17
9:30-Noon; 2.5 hours AT
Location: Extension Office*
Presenter – Cindy Howard
Register with Emmeline Dodd txdodd@aol.com

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. Extension Office*
10am-Noon; 2 hours AT
Contact: Elsie Smith (409) 392-7003
See Pg. 7 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 – usually First Tuesday, check calendar

Committee Meetings
Advanced Training – Third Monday, 10-Noon
Education/Outreach – Third Tuesday, 1 to 2:30pm
Stewardship – Meets quarterly
Communication – Meets quarterly, check calendar
The Midden Team – October 29, Monday 9-Noon

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