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**President's Corner** by Susette Mahaffey

COVID-19 arrived and life changed. Some changes have proved to be positive for the chapter and membership, and others have posed problems. We have turned the problems into triumphs, moved forward and are working to make a difference in the lives of those around us. We thank Maureen and Chuck along with their team for taking on the Zoom duties that have helped us stay connected. The new class has finished its curriculum and looks forward to field experiences in the fall. A couple of new programs, Emeritus and plans for our chapter's 20<sup>th</sup> anniversary celebration, have begun and are gaining traction. Many of us have returned to the volunteer work and projects outside our homes that brought us joy prior to COVID-19.

As life with the coronavirus evolves, we still do not know what to expect. As I write this, the August chapter meeting will be via Zoom, and the current plan is for the October meeting to use Zoom as well. Carbide/Texas A & M AgriLife Extension does not give us enough room to meet and be responsible with social distancing. As Texas A & M AgriLife Extension guidelines are revised, we will revise the next steps for the chapter meetings. In fact, the Texas Master Naturalist Annual Meeting, previously slated for Houston, will be a virtual conference, October 14 - 17. We have been fortunate to be able to offer AT online, and we have invited the Master Gardeners to join us for AT. We will continue to seek opportunities for the chapter members to be able to gather with each other responsibly.

I hope that during the COVID-19 'stay at home' time, you were able to read some and reflect on your experiences as citizen scientists and people who love the natural world. I read a book called *The Wisdom of John Muir* compiled by Anne Rowthorn. It is a collection of many of his writings with commentary by Rowthorn. Chapter six "Renew Yourself in Nature" spoke to my heart and soul during the time that I was indoors so much. Muir referred to the need to return to nature and renew his soul and spirits. Yosemite National Park was his source of renewal. We have our own natural areas to visit and work - prairies, marshes, wetlands, beaches, bayous - where the result is the same. We reconnect to nature and the peace that it brings to us. This is one of the many quotes that I noted in the book.

"Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul." **John Muir**

In the meantime, take care of yourselves, stay safe and healthy, and enjoy the renewing powers of the natural world around us.



Photo by Alan Wilde

**Next Chapter Meeting**  
 August 6  
 Restaurants to Reefs  
 By  
 Michael Niebuhr  
 Habitat Restoration Coordinator  
 Galveston Bay Foundation  
 via Zoom

## Wetland Wanderings: Plants and Projects During Pandemic by Lana Berkowitz

During the COVID-19 shutdown from March to June, volunteer wetland warriors had plenty of time to clean their boots and air out their dank-smelling vehicles.

When Texas Community Watershed Partners welcomed back volunteers June 23, new safety protocols practiced throughout the world were in place at Exploration Green nursery. Smaller groups were wearing masks, social distancing and cleaning with sanitizers. But the mud felt the same.



Photo courtesy of TCWP

During this return to work, it seemed like a good time to get an update from Christie Taylor and Colleen Ulibarri, leaders of TCWP/Texas A&M AgriLife Extension Service programs, about their wetland projects.

### **Christie Taylor, extension program specialist who leads the Stormwater Wetlands Team, says:**

The pandemic has affected all of our staff, volunteers and projects in some form or another, although no one from our office has been directly affected by illness. We have all been working remotely over the last several months and are continuing to follow all of the guidance provided by the state, various county officials and AgriLife agency, as we have projects in multiple counties.

It will take some time for everything to get back to “normal” or full scale. That being said, we have tested some new ways to continue moving our projects forward, even growing wetland plants in trays from our homes while we have been away from the office and nursery sites. The projects are continuing at a slightly slower pace, but we are still moving forward.

The Stormwater Wetland Team is preparing to plant the Houston Botanic Garden Stormwater wetland site when it is released from contractors later this summer.

Construction has continued on all of the stormwater wetland basins. Construction is also underway on Phase 2 and Phase 3A at Exploration Green with construction scheduled to begin on Phase 4 in the coming months.

### **Plant inventory**

We are happy to report that the plant inventory in the nurseries is looking well even after one to two months with little to no attention by staff as we were not allowed to travel to the nurseries until May.

The hardest part about working in the nurseries is keeping up with the ever-changing number of plants by species. The best thing about using native plants in all our projects is that they need little effort or attention to do well. We currently have over 30 species of wetland plants in the nurseries.

### **Fall plans**

I’m not sure what the fall will hold as we work again with volunteers in a limited capacity as directed by our agency guidelines. We will continue to wear masks when working in groups and social distancing as much as possible.

We will have two to three stormwater wetlands ready to plant this fall as well as continuing to propagate more plants, maintaining the existing phases of the Exploration Green Project and preparing to relocate the wetland nursery to its new home.

We will continue to do outreach and inform stakeholders about the benefits of wetlands using new methods and technologies.

### **Colleen Ulibarri, ecological restoration program coordinator who leads the Wetland Restoration Team, says:**

We have been impacted by the pandemic, but no more or less than any of our other partners. We had to place all in-person programming on hold, including the weekly workday, starting about mid-March. For the next 14 weeks, the team had the longest hiatus since it formed in 2003.

We were grateful in May to begin scheduling solo field days following Texas A&M AgriLife Extension’s guidance to do much-needed tasks in the nurseries. The newly built tanks at Anahuac National Wildlife Refuge had a bit of unwanted spring growth all around. And invasives were beginning to spread through the tanks at our Exploration Green nursery. We found that everything needed a drink as temperatures were heating up. Fortunately, wetland plant species are particularly hardy – even when water levels drop seasonally. They are

resilient just like our volunteers who have been quick to reassemble and answer the call to action in June.

We sure missed our volunteers! The support that they bring to these projects is really unparalleled. Everyone was eager to visit with one another, work diligently and take a couple of extra precautions.

### Plant inventory

The 14-week pause on plant collection has been a small price to pay for health and safety of our volunteers, partners and local community. Staff has been able to spend some time testing different germination methods and growing a number of species in our backyards.

Despite the delay in pond construction due to rain at our site at Anahuac NWR since last June, we've already amassed quite a bit of plant stock over the past year. Even with crowded tanks and certain species bursting out of their pots, the inventory is looking healthy.

We'll get back to collection soon. But in the meantime, the offspring from our previous collections are ready for pots of their own. There is no shortage of work to be done!

### Fall plans

If I'm being honest, I'm not sure. We've gotten into the habit of contingency planning and playing out numerous scenarios given all the uncertainty surrounding the pandemic. This is only going to make our programming more resilient for the next wrench in the road. But we're hoping for workdays to continue consistently each week. And we're hoping we can place the first plant in the ground at Anahuac!

We anticipate the completion of the basins on the Pintail Unit at Anahuac NWR. Disking and excavation resumed in May, thus, planting those basins will likely become a reality in the not so distant future. We're now challenged to coordinate planting events to promote public health while working with our partners' agency guidance, that of our own and those of the multiple counties our volunteers live in.

As workdays progress and the work shifts, we understand more change may come. But we're ready to problem solve on our feet and trust in the great support of all our many volunteers and partners.

To get info on joining their teams, email [cctaylor@tamu.edu](mailto:cctaylor@tamu.edu) and [culibbarri@tamu.edu](mailto:culibbarri@tamu.edu).

## Prairie Ponderings: Prairie Dogs by Diane Humes

Ecologists call prairie dogs a keystone species – one that other species depend on for some part of their survival. They are important prey and the primary diet for black-footed ferrets, swift foxes, golden eagles, red tailed hawks, American badgers, coyotes and ferruginous hawks. Their unused burrows are nesting sites for golden-mantled ground squirrels, mountain plovers and burrowing owls; their tunnels direct rainwater to recharge aquifers. And their town sites offer preferred grazing for plains bison, pronghorn and mule deer.

Farmers, ranchers and some suburbanites, have other ideas, and usually call the exterminator! Some think prairie dogs will eat all the grass intended for their livestock or a horse will break its leg in a burrow. And prairie dogs can carry bubonic plague, actually carried in their fleas.

Prairie dogs are most closely related to squirrels, chipmunks and marmots. Never considered game animals - nobody would eat "man's best friend" - their common name derives from their prairie habitat and warning call, which sounds like a dog's bark. There are five species found from Mexico to Canada in the western parts of North America. Prairie dogs are very social, living in large "towns" covering from one to 1,000 acres, as noted by early explorers.



In 1844 Josiah Gregg wrote in his journal, *Commerce of the Prairies*, about prairie dog towns: "A collection of their burrows has been termed by travelers a 'dog town,' which comprises from a dozen or so, to some thousands in the same vicinity; often covering an area of several square miles. They generally locate upon firm dry plains, coated with fine short grass, upon which they feed; for they are no doubt exclusively herbivorous. But even when tall coarse grass surrounds, they seem commonly to destroy this within their 'streets,' which are nearly always found 'paved' with a fine species suited to their

palates. They must need but little water, if any at all, as their 'towns' are often, indeed generally, found in the midst of the most arid plains—unless we suppose they dig down to subterranean fountains. At least they evidently burrow remarkably deep. Attempts either to dig or drown them out of their holes have generally proved unsuccessful.”

Texas is home to the Black-tailed prairie dog (*Cynomys ludovicianus*) found in the Panhandle and western parts of Texas. Early explorers and settlers did not fail to notice them; there are reports of a prairie dog town in Texas formerly covering 25,000 square miles with a population of some 400 million animals. Our Texas species, encountered by Lewis and Clark, was named in 1817 by Constantine Rafinesque, a master-namer of American species (see Midden June 2012 *Master Naturalist Ramblings and Connections*).

Prairie dogs are diurnal creatures, mostly active in the cooler parts of the day, with large eyes, short tails, and brown-tan fur. They are herbivores, eating grasses and seeds. They create tunnel systems where they live in family groups within large colonies. Scientists believe they communicate with complex language.

Prairie dog population numbers and their prairie habitat follow a familiar pattern; less than one percent remains of either. But you can still find them in Texas – just not here. Prairie dogs are not found on our coastal tallgrass prairie; they prefer the good visibility found in short prairies with few shrubs and, I suspect, our ground is too wet to make them happy.

To see prairie dogs in Texas, the “go to” place is Mackenzie Park in Lubbock. Visit the famous Prairie Dog Town, a local landmark since 1930 and one of the most popular sites in Lubbock. It is free and open from dawn to dusk and a great place to take the family. The irony is that prairie dogs are not allowed anywhere else in Lubbock without risking instant extermination.

The Amarillo Sod Poodles, a minor league baseball team, commemorates local prairie dogs. Apparently you don't need to go too far out of town to find them. But still there is conflict; ranchers detest them, and city-folk think they are cute.

The real point is that so few of them remain because of human activities, endangering them and all the other species that depend on them.

## Coastal Corner: A Morning of Memories by Maureen Nolan-Wilde

For years, Carlos Rios and I have been monitoring the beaches of Galveston during the months of April through July looking for Kemp's ridley sea turtles coming ashore to lay eggs - or even their tracks, which would help us locate a nest.

On June 22, our dream came true. We were just saying that it was a perfect day for a sea turtle to nest (windy, cloudy and ready to storm) when we saw something in the water that made us stop. Within a few seconds, up came a head and we stared in wonderment as a Kemp's emerged from the water and started her crawl to the dunes. We alerted the Turtle Island Research Network hotline that we had spotted a sea turtle, then maintained a safe distance so as not to disturb her.

Carlos and I watched in awe as the Kemp's searched for a suitable nesting spot on the higher dunes and kept our fingers crossed it would not be a false crawl (going back to the water without laying her eggs). Within a few minutes, however, sand started flying as she began to dig a nest chamber for her eggs; meanwhile, we kept watch to ensure that she was not disturbed.

Gene Fisseler, patrolling that day further down the beach, also joined us to witness this event.

Once she had completed her turtle dance (using her flippers and body to cover the nest), the Kemp's made

her way back to the Gulf. Our team of master naturalists (Carlos, Gene and I) and Gulf Center for Sea Turtle Research representatives (Kari Howard and Dr. Chris Marshall) was then able to spring into action.



The great news is that both Carlos and I had already taken the requisite training and had been permitted to help collect the eggs. Gene was deputized for the day by Dr. Marshall and was able to assist.

The team recorded information about the size and location of the turtle's tracks and then began excavating

the nest chamber, eventually collecting 117 eggs. We transferred the eggs to special carriers for transport to Padre Island National Seashore (PINS), where the eggs will be incubated in controlled conditions and the hatchlings released.

Such special care is taken with the eggs because the Kemp's ridley is an endangered species. Incubation success is much higher at PINS (over 85%) than it would

be if the eggs were left on a Galveston beach where they would be subject to predation and interference.

Once our work was done, we had a chance to reflect on what an amazing experience nature had provided for us. Our hopes are always high when we start the sea turtle monitoring season, but little did we know that this year we would have that experience of a lifetime and yes, we will be back next year!

## My Grandmother's American Elm by Mark D. Carter

I remember a warm summer day sitting on a homemade quilt as a youngster in the 1960s alone with my grandmother in the shade of her rural Missouri front yard. There were many such days, but one day, my grandmother told a story about two of her shade trees.

The Chinese elms (*Ulmus parvifolia*) had been planted about 30 years earlier by my grandfather, who died a few months before I was born. They had been my grandparents' best hope to replace American elms (*Ulmus americana*), decimated in the early twentieth century by Dutch elm disease. My grandmother lamented the impossible dream of ever replacing the beautiful arching flow of branches and shade from the vase of an American elm.

Many years passed before I understood my grandmother's heart-broken story about the American elm, and its allegorical relationship to my grandfather.

The only American elm I ever noticed in my youth was a rather sickly tree in my parents' yard in northwestern Missouri. It was clearly struggling, dying a little more every time I mowed the lawn around it. About 10 inches in diameter, it was not impressive, and life had many other distractions. So, I filed away my grandmother's story with other tales from the "old timers". Still though, in the back of my mind, I tried to keep an eye out for my grandmother's lost elm.

Over the next several decades, moving from Missouri to Wisconsin, and then on to the forests of east Tennessee, I pretty much gave up looking for the magnificent American elm my grandmother had described. It no longer seemed to exist... Then, I found it in a most unexpected place.

In early 2006, my wife and I moved our family to southeast Texas, the Clear Lake area of Houston, in the third most populous county in the United States. There, just over the fence in the neighbor's backyard, low and behold, was one of the most magnificent shade trees I have ever seen. It was the American elm my grandmother had longed for. Only it was 900 miles away from her front yard.

A magnificent tree, with limbs arching well over the roof of our house and garage, its shade weighed heavily on the turf grass in our postage stamp back yard. Way too big for its location, its base at chest height was approximately 3 feet in diameter. Who knows how old - probably older than my centenarian grandmother and certainly much older than the subdivisions built around it in the 1970s and 1990s.

Grandma was right about this tree.

Now insurance companies, especially in hurricane zones, frown on tree branches of any size hanging over roofs. Some of the elm's "offending" branches over our house had nearly 4" diameters. We waited until winter to have it safely pruned back, but we allowed several boughs to remain over our yard.

The elm continued to give us wonderful backyard shade. It's springtime seed explosion annually clogged our gutters. Seedlings beneath our ornamental shrubs required removal year after year. But wow, what a beautiful tree!



Photo by Diane Humes

In 2019, our neighbor decided the elm was too large for his yard, and he, or maybe his insurance company, might have had a point. He had the entire canopy stubbed... In

July. The beautiful vase scaffolding, now completely naked, tried to send out new shoots. But, it was hot. It died...

This spring, I noticed just a few of those new elm seedlings in our yard. Inspired by my grandparents, I grabbed some pots for the tiny sprouts, hoping to somehow replace the irreplaceable.

PS. My grandmother's American elms live on, but they are hard to find. During walks with my wife under COVID-19 restrictions this spring, we discovered another mature American elm in a subdivision about one half mile away. I hope it does not meet the same fate as the one that graced our yard. I suspect it takes more than a century to really impress and probably a quarter acre to safely survive longer than that.

## COVID-19 and Attwater's Prairie Chickens by Sandy Parker

There has been some exciting news at the Houston Zoo's Attwater's Prairie Chicken (APC) breeding facility at Johnson Space Center. This year several hens were able to sit on nests and raise the young chicks in the pens! Normally the Zoo collects all the eggs for incubation back on the Zoo grounds. Of the 80 chicks that hatched, some were hand reared by Zoo staff and fostered by domestic hens, the others were raised by their moms at NASA. There were 11 pairs of birds this season resulting in over 125 fertile eggs.



Photo courtesy of USFWS

Although only essential personnel are currently allowed on-site, I was able to get approval to walk the prairies with Jim Duron (also a former NASA employee). We were treated to a quick look at the chicks in the pens. It was an epic moment!

There is more good news from the Attwater's Prairie Chicken National Wildlife Refuge in Eagle Lake Texas: The wild bird population increased from 108 in April 2019 to 142 in April 2020. This number is the highest spring APC count since the mid-1990s. Nesting efforts on the Refuge were one of the most successful they have seen since 2010. Large flocks of 30 to 40 birds were spotted throughout the winter months on the Refuge. The efforts of treating for fire ants for several years, a highly successful release of captive-bred birds in 2019, improved nesting season and good weather have all contributed to the population increase.

So although the overall captive breeding efforts have been somewhat curtailed during COVID-19 for several reasons like lack of personnel, the U.S. Fish and Wildlife is very hopeful for a productive release of captive bred birds this fall.

## Flower Garden Banks by Diane Humes

The Flower Garden Banks National Marine Sanctuary (FGBNMS) protects 56 square miles of ocean in the Gulf of Mexico about 100 miles south of the Texas-Louisiana border. Established in 1992 by President George H.W. Bush, the sanctuary is managed by the National Oceanic and Atmosphere Administration (NOAA).

The area of FGBNMS contains the East, West and Stetson Banks – underwater salt domes providing hard substrate at the right depth to allow coral reefs to grow and thrive. There are 20 species of coral that create the undersea wonderland for sponges, sea plants, sea turtles, snappers, spaghetti eels, manta rays, hammerhead sharks and whale sharks that scuba divers and fishermen love – our closest coral reefs.

Oil and gas companies love the underlying geology for providing access to potential riches below the sea floor.

Since drilling for oil began in 1942, 6,000 oil and gas structures have been erected in the Gulf of Mexico. As of April 2019, there were 1,862 active platforms, mostly within the same general area as FGBNMS. Interestingly, a good many of them, if they are old enough, have grown their own coral colonies, albeit slowly. So oil platforms provide additional habitat for corals to establish a "reef."

After years of study and, considering the damage from the Deepwater Horizon oil spill and its effects on wildlife, NOAA proposed to expand the FGBNMS to 380 square miles of protected area. Although public comments were highly favorable, the expansion proposal was reduced to

160 square miles in 2018, which includes 14 additional reefs and banks – a compromise with the oil companies. I have tried to understand the possible scale of each variation in the marine sanctuary's size. First of all, the Gulf of Mexico is big – 617,800 square miles – more than twice the size of Texas. A protected area of 380 square miles would be in between the sizes of Dallas and San Antonio, whereas the current proposal to protect 160 square miles compares with the area of Corpus Christi.

The Flower Garden Banks National Marine Sanctuary was the tenth U.S. marine area protected. Currently there are 14, with two additional proposed. In these days of lower catches and smaller fish, fishermen have long noted the presence of very large fish just outside the boundary of a marine reserve. For me, any amount of protection for habitat and biodiversity is a good thing, but more is better.

We may learn the final decision soon; public meetings were held in early June and comments were accepted until July 3. Thank you Rose Merle Symmank for bringing the Flower Garden Banks to our attention.



Photo courtesy of Flower Garden Banks National Marine Sanctuary

## Night of the Squid by Pamela House

Several years ago, I was with a group of friends on a diving vacation to the atolls off the coast of Belize. On a night dive we encountered an extraordinary sight. As we descended through the water, we were suddenly surrounded by what appeared to be hundreds of squid in a seeming frenzy; flashing fluorescently and changing colors and patterns with incredible speed. Although occasionally we had encountered a few squid in previous dives, none of our group had ever seen anything like this before. The squid darted about from every direction at high speed. During our hour long dive, the numbers never diminished and the bioluminescent display continued to dazzle. The experience became known in our retelling as “the Night of the Squid.”

After the passage of a few years, my curiosity about the incident was rekindled. It was during one of the last hands-on experiences of the 2020 training class. Splayed on the newsprint in front of us that afternoon was the cold, dead corpse of a pale, slimy squid. The class, led by Bill Ashby and Julie Massey, became an exploration of the strange anatomy of this denizen of the deep. Fascination with this alien appearing creature was reborn in me.

There are more than 300 known species of squid and some researchers estimate there are another 200 species yet to be catalogued. They range from the huge giant squid (*Architeuthis dux*) at over 40 feet in length, to the Southern pygmy squid (*Idiosepius notoides*) which grows to less than ¾ inch in length. The squid we dissected in class was not local, but was a West Coast import, a California market squid (*Doryteuthis*

*opalescens*). The squid I observed in Belize was most likely a Caribbean Reef Squid (*Sepioteuthis sepioidea*).

There are many common features shared by most, if not all, species of squid. They have eight arms and two more slender tentacles which are used to pull food into the shorter arms. The tentacles have suckers and sometimes suckers are also found on the shorter arms. Their beak is used to tear larger prey into smaller bites. Squid generally consume 30-60% of their body weight per day. They have a small head, large eyes, and a feather shaped internal structure called the pen or gladius composed of chitin-like material. This is an artifact from the shelled creatures from which they evolved. It acts as a backbone for the main body of the squid, the mantle. Squid have three hearts, feathery gills, and ink sacs from which they can disperse a cloud into the surrounding water to confuse and hide from predators. Their brains are highly complex and their extremely long axons have led to their use for research into the mechanics and chemistry of nerve transmission. Squid have an internal siphon organ that is used for jet propulsion as the primary means of movement. Their fins, that vary greatly in relative length and size between species, are used for slow, constant movement. Most squid are semelparous, dying after reproducing.

Several varieties of squid can be found locally. Four species have been identified in the coral cap region (0 - 130 ft.) at the Flower Garden Banks: southern shortfin squid (*Illex coindetii*), longfin inshore squid (*Loligo pealeii*), Roper inshore squid (*Loligo roperi*), and flying squid (*Ommastrephes pteropus*).

[As a brief aside, exploration of the naming of squid species becomes a lesson in the strange byways of taxonomy. Nearly every species has at one time or another been classified by a different genus name. Squid are members of the class Cephalopoda, subclass Coleoidea. After that things get complicated and changeable. The taxonomic names used for the Flower Garden Banks squid are those used in the listing of species provided by the sanctuary.]

The southern shortfin squid exhibits diurnal vertical migration. They dwell in the cooler deep water during the day and rise higher in the water column during the night. They are also seasonally migratory from deeper waters in the winter to shallower waters in the spring. They have been observed as deep as 3,300 feet. The southern shortfins are generally reddish brown in color. The females are larger than the males, with an average adult female mantle being about 10 inches in length and the male a couple of inches shorter. They eat crustaceans, cephalopods, krill and, occasionally, other shortfins. They have chromatophores, but do not have photophores (more about this later).

The longfin inshore squid live in schooling groups with individual life spans of about a year (the average for most squid). They are also a sexually dimorphic (different sized sexes) species, but in this case, the males grow to be larger adults than the females. The average length of an adult male mantle is about 12 inches. The depth range is less than that of the shortfin with a maximum observed depth of 1,200 feet. They eat primarily crustaceans and small fish, but also can be cannibalistic. They are seasonally migratory from depth to shallower waters. This species has been studied extensively for axonal studies and in research exploring its camouflage abilities using chromatophores.

The first documentation of the Roper inshore squid in the Gulf of Mexico was a study conducted at the Flower Garden Banks in 2001 and 2002. They are a small squid with an adult mantle length averaging 2.5 inches. During a coral spawn, schools of several hundred squid were observed to be rising in the water column at night. They are relatively shallow dwellers, with a maximum observed depth of 160 feet.

The flying squid are primarily found in tropical waters, but have been observed at the Flower Garden Banks. They are the largest of the species found there with a typical adult mantle length of 26 inches. They are found as deep as 1,600 feet, but can be observed in large schools at the surface on dark, moonless nights. This species actually launches itself out of the water using its siphon for jet propulsion. They have been observed to be using their fins in an apparent active process of flying. The fins are spread out and held in a position that has supported speculation that they might be providing aerodynamic lift. They are very dark maroon in color with an orange

luminescent glow from a dorsal patch. They have prominent photophores on their heads, on one set of arms, and on the mantle.



All of these species have some skill in the art of color change. This can be used for camouflage, to startle predators, and as a means of communication with other members of their group. It is sometimes a sign that the animal is disturbed or threatened.

The primary means for color change is through those specialized cells we saw in our squid dissection, the chromatophores. These are pigment cells connected to the squid's nervous system. The size of the cell is controlled by muscular contractions. These contractions have been measured to allow color change in a millisecond. Chromatophores are typically only red, yellow or brown.

Other colors are displayed by a number of squid. This is obtainable by using a second layer of structures called iridophores. These are stacks of very thin skin able to reflect light at different wave lengths and at different polarities. The color is dependent on the angle from which they are observed. A sophisticated interaction between the chromatophores which generally lie shallower in the skin and the iridophores can result in a large spectrum of color and iridescent effects.

But that isn't the end of the end of the display story. In addition to controlling color, many squid use bioluminescence in an effort to confuse or startle predators or as a means of communication in the dark. The primary light-producing organs are photophores and appear as luminous spots on many species of squid. The glow is created in these organs by the mixing of two chemical substances. A third substance is formed from the combination that gives off light. It is not unlike the reaction that causes the plastic fluorescent glow-sticks to work. Squid that have chromatophores, iridophores, and photophores within their skin can control both the color

and intensity of light produced. The control is so fine, that squid have been observed flashing one color and pattern on one side of the body, and a completely different one on the other side.

This brings me back to my encounter with the light and color show of the squid in the Caribbean. Those Caribbean reef squid are probably closest in behavior to the Roper inshore squid of the Flower Garden Bank. Although larger than the Roper (eight-inch mantle length), the behavior we witnessed matches that described by in the report of the initial identification of the Roper squid at the Flower Gardens. They witnessed large schools of squid, but were unable to confirm whether they were witnessing feeding or mating behavior, or a combination of the two. The Caribbean reef squid are known for their amazing color change

displays. Although normally a muddy brown during the day, they are almost colorless at night, but when mating or feeding during coral spawns, they have been observed flashing almost instantaneous color changes. This has included displaying false eye spots, showing stripes, saddle shapes and even zebra displays. They are one of the species observed with different displays on the right and left of their bodies.

Although I am still not certain what caused the squid display on the night we witnessed, it obviously has remained memorable. The investigation into that remarkable phenomenon has reinforced my appreciation for the polymorphous diversity of nature and the importance of the master naturalist mission to educate and preserve.

## BIG PICTURE: Quiet Places by Diane Humes

The launch schedule is in flux; hopefully, by the time you read these words, the Perseverance rover will have blasted off from Cape Canaveral toward a landing in Jezero Crater on Feb. 18, 2021. If all goes well, Perseverance will continue the search for life on Mars and collect rock samples to be picked up by a later mission, perhaps in 2027.

The rover goes equipped with cool tools – measuring devices, cameras, ground penetrating radar and a TINY helicopter! Perseverance is also taking a pair of microphones – ears, if you will. We may be able to listen in on the spacecraft's landing, hear the sounds of the parachute deploying and the actual impact of arriving on Mars.



Photo courtesy of NASA

We also expect to hear crunching sounds as the rover's wheels travel over the Martian soil, wind whistling around the mast, and noises from dust devils whirling across the crater. Perseverance will generate its own sound signature as it fires the laser at rocks, drills core samples, or moves the arm. Broadcast by the microphone, the sounds may help the team on Earth diagnose problems

with instruments. These will be the first sounds humans hear from another planet, but nobody really expects a lot of noise from Mars.

On Earth, we humans are accustomed to hearing LOTS of sounds, called "noise" if you don't like it, and "noise pollution" if you really object. Aside from wind and waves, thunder and rain, birds singing, and animals calling, a great cacophony is produced by cars, trucks, motorcycles, planes, helicopters, ships, lawn mowers, leaf blowers, chainsaws, sirens – motor-driven anything.

Human-caused sounds can significantly affect humans and wildlife; sound is measured in decibels and anything over 85 decibels can harm our hearing. Researchers often have a difficult time finding background noise levels without human contributions.

In this time of COVID-19, as most of the world's human population stayed home, researchers at New York University were able to record astonishingly low baseline sound levels with its "Sounds of the City Project." Using 30 recording devices, project scientists discovered sound levels five decibels lower than normal at usually busy intersections, making daytime more like quiet nights. This quiet accentuated the nightly sound spike at 7pm, when citizens clapped for essential workers.

Closer to home, Houston Transtar reported a 65 percent decrease in the number of vehicles on Houston freeways in March compared to the same day in March 2019. If you had driven to town, you would have noticed decreased commute time and, apparently, the driving speed actually approached the posted speed limit! Too bad we stayed home.

Road noise at my house was noticeably lower, although I did not measure it until recently. Now rush hour has returned. Ambient noise on my driveway, as recorded by my phone app, is 63 decibels at 5:30pm, with a 10-15 decibel decrease at 10:30pm.

We are not the only ones who have barely ventured farther than the grocery store; all passenger airline traffic decreased by 95 percent and air cargo traffic cut to nearly half. At sea as in the air, all shipping was severely reduced globally. Normally, up to 53,000 ships carrying general cargo, bulk cargo, crude oil, chemicals, containers, LNG, and passengers ply the oceans.

Sound travels farther and faster underwater. Fish make their own sounds, as do dolphins and whales. Orcas use echolocation to hunt and communicate with complex calls, whistles and low-frequency pulses. Humpback whales make grunts, groans, snorts and barks to communicate, and are famous for their long songs. Each of the four humpback whale populations sings its own distinct song. Blue whales, the largest mammals on Earth, use low frequency sounds and, it is thought that their lives are seriously disrupted by underwater seismic testing and sonar pulses.

Scientists believe that human-made underwater noise pollution affects all marine life.

Oceanographer David Barclay, shut out of his lab at Dalhousie University by the pandemic, instead used hydrophones to record underwater sound levels near Vancouver Island. In March, he tracked a drop of 4 to 5 decibels, due to the 20 percent reduction in shipping traffic through the Port of Vancouver. Barclay hopes to continue studying the effects of the quieter waters on marine life.

Acoustic ecologist Gordon Hempton, author of *One Square Inch of Silence*, is passionate about quiet places and travels the globe recording the world's natural sounds. (see: Midden, Aug. 2017, Human Noises - Where is Quiet?) To recognize the places on our planet where natural sounds predominate with minimal human intrusion, he recently founded Quiet Parks International (QPI). On Earth Day 2019, QPI designated the First Wilderness Quiet Park to the Cofan Nation along the Zabalo River in Ecuador's Amazon rain forest.

Said Hempton, "Until now, not one place on Earth has been off-limits to noise pollution; natural quiet has become an endangered species without people knowing it. Science has made it abundantly clear that noise pollution is not just an annoyance, it causes health loss and dramatically impacts wildlife's ability to survive. By certifying the Zabalo River as the world's first Quiet Park we are paving the way for many more Quiet Parks around the globe."

QPI welcomes suggestions for quiet park certification. Check out their map of Wilderness Quiet Parks at: [www.quietparks.org](http://www.quietparks.org). Big Bend National Park is on the QPI map, as are Grasslands National Park in Saskatchewan, home to bison and prairie dogs (they sent six female bison calves to Wanuskewin this past January!) and the American Prairie Reserve. Other potential quiet parks are the Monarch Butterfly Biosphere Reserve in Mexico and Jaú National Park, a natural wonderland, way up on the Rio Negro in Brazil, where the loudest creatures are howler monkeys and screaming pihas. How about that?



Photo courtesy of  
Quiet Parks International

We live in one of the largest metropolitan areas in our country. Quiet is as difficult to find as dark skies. Both quiet and dark AND biodiversity tend to exist in the same locations – those with fewer people and all their stuff. Most people live in cities; what could we all do to reduce the sound and light show? We can't all move to a quiet park; we need to make our own where we are.

Taipei, Taiwan, with 7 million residents, is highly urban, yet has a nearby park - Yangmingshan National Park - that became the world's first Urban Quiet Park on June 5, 2020.

Given that the Martian atmosphere has 1/3 the density of Earth's and much less than water, probably the rover's contributions to noise on Mars will be minuscule – faint, slow and won't travel too far. Can't wait to hear the natural Martian noises. Go safely and quietly, Perseverance!

## ***The Midden Deadline***

for the next issue

**August 31**

If you have Advanced Training or Volunteer Opportunities, please submit information to Mike Pettitt, [mpettitt\\_houston1@comcast.net](mailto:mpettitt_houston1@comcast.net).

## Marie Asscherick Earns 15,000 Hours by Diane Humes



Photo by Chuck Snyder

Please offer your congratulations to Marie Asscherick for achieving the incredible milestone of 15,000 hours of

volunteer service! Marie completed her master naturalist training in 2000, in the second class of the Gulf Coast Chapter, before our Galveston Bay Area Chapter existed. She transferred membership as soon as she could.

Marie has avidly absorbed all the master naturalist knowledge she could get; I'm fairly certain that she might have as many AT hours as VT. She has participated in many chapter activities, but I think her favorites are bird surveys, bat education at the Waugh Street Bridge bat colony and volunteering at Armand Bayou Nature Center - especially the Martyn Farm Harvest Festival each fall where volunteers dress in 1890s costumes.

When asked about important master naturalist memories, Marie remembered a young boy who had informed her that, "he wanted to be just like her when he grew up - except a boy".

Thank you, Marie, for all you do.

## Advanced Training Adventures by Verva Densmore

First, I want to give a shout out to the Zoom advanced training team, led by Chuck Snyder and Maureen Nolan-Wilde. Over a 4-month span, Chuck and Maureen and a treasure trove of dedicated chapter members helped to provide our chapter with 15 AT Zoom opportunities, the Heritage Book Study AT, and a chapter meeting presentation. That is no small feat of on-line coordination.

These on-line Zoom opportunities were well received, as shown by attendance of 70 to over 100 people. The electronic, rather than face-to-face format, helped keep the chapter members safe from the coronavirus.

Eliminating the attendance restrictions also allowed us to invite the Master Gardeners to participate and, on at least one occasion, the Piney Wood Lakes chapter joined the session.

Here is a brief summary of the recent advanced training presentations:

- April 10: Monarch Butterflies with Chris Anastas, GBAC. (1.25 hour)
- April 17: American Oystercatchers with Dr. Sue Heath, GCBO. (1.25 hour)
- April 24: The Unseen World Around Us with Rick Becker, GBAC. (1.25 hour)
- May 1: Birding 101 with Stennie Meadours, GBAC. (1.25 hour)

- May 8: Plastic in the time of Coronavirus, hosted with GBAC's Green Team and featuring Theresa Morris of TIRN. (1.25 hour)
- May 15: Bats with Diana Foss, TPWD. (1.5 hour)
- May 22: Hummingbirds & More with Celeste Silling, GCBO. (1.0 hour)
- May 29: Exploring Shark Senses with Lauren Simonitis, TAMUG. (1.0 hour)
- June 4: Talking Trash at our June chapter meeting with Diane Humes, GBAC. (1.25 hour)
- June 12: Green Infrastructure of Texas with Charriss York, TX A&M AgriLife Extension. (1.5 hour)
- June 18: Tepees of the Southern Plains with Mike Wehrman, GBAC. (1.0 hour)
- June 24: Mud Monsters of Galveston Bay with Cindy Howard, GBAC. (1.25 hour)
- July 8: Native Bees of Texas with Jessica Beckham, UTSA
- July 15: Early People of Texas with TJ Fox, GBAC
- July 29: Whooping Cranes with Ray Kirkwood, Mid-Coast Chapter

If you missed some of these sessions, don't despair. There are more in the works. Watch your Constant Contact email notifications; you will receive information as classes develop.

## Top Ten Quiz Galveston Bay Area Butterflies



1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



4. \_\_\_\_\_



5. \_\_\_\_\_



6. \_\_\_\_\_



7. \_\_\_\_\_



8. \_\_\_\_\_



9. \_\_\_\_\_



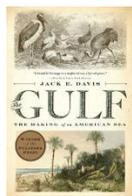
10. \_\_\_\_\_

**Possible Answers**

- Black Swallowtail, *Papilio polyxenes*
- Brazilian Skipper, *Calpodus ethius*
- Buckeye, *Junonia coenia*
- Cloudless Sulphur, *Phoebis sennae*
- Giant Swallowtail, *Papilio cresphontes*
- Gulf Fritillary, *Agraulis vanillae*
- Monarch, *Danaus plexippus*
- Painted Lady, *Vanessa cardui*
- Pipevine Swallowtail, *Battus philenor*
- Tiger Swallowtail, *Papilio glaucus*

## Heritage Book Study - Review of *The Gulf: The Making of an American Sea*

by Madeleine K. Barnes



Upon first glance at this book, you might conclude that it looks like a textbook. Yes, it is a thick one at 532 pages. Disclaimer: Any similarity to a text quickly disappears when you begin to read it, as you are transported on a time-travel trip starting before the Pleistocene epoch, as the body of water we call The Gulf of Mexico went through various changes in formation, up to what you see today.

The author, Jack E. Davis, environmental historian and professor, received the Pulitzer Prize, among other awards, for *The Gulf: The Making of an American Sea*, which has been identified as belonging in the genre of science, history, and current affairs. To say that it covers a broad spectrum is like comparing a drop of water with the 10<sup>th</sup> largest body of water in the world -The American Sea, as the author Davis identifies it.

This is an ambitious undertaking and the author has written in an engaging style, reading like a novel. He begins by describing the beauty of this estuary environment in the time of the self-sustaining Calusa indigenous people. Traveling on in history, he writes about human exploration, conquest, habitation, development, greed, misuse, pollution, and our decisions about the future of The Gulf, along with our own in the time of climate change and sea level rise.

I was so amazed by Davis' references to the historical figures, scientists, and events that we have read about in previous books, that I wanted to share a few that were used in his writing. You may find them interesting: *Half Earth: Our Planet's Fight for Life* by scientist and author E. O. Wilson, *A Land So Strange: The Epic Journey of Cabeza de Vaca* by Andre Resendez, *Walden* by Henry David Thoreau, *The Edge of the Sea* by Rachel Carson, *Wilderness and the American Mind* by Roderick Nash, *Karankaway Country* by Roy Bedichek, *An Unreasonable Woman* by Diane Wilson, and *The Book of Texas Bays* by James B. Blackburn.

In addition, we have read other books that address more of the historical context: *Texas Market Hunting* by R.K. Sawyer, *The Invention of Nature, Alexander Von Humboldt's New World* by Andrea Wulf, *The Wilderness World of John Muir* by Edwin W. Teale, and *The Life History of a Texas Birdwatcher: Connie Hagar of Rockport* by Karen Harden McCracken,

I hope that I have hooked you - a little like the marlin in the book - without giving too much away. In my opinion, this is an epic book, a comprehensive picture of our Gulf of Mexico, identifying human behavior, intervention, and nature's lessons. I have to say that this is one of the best

books that I have read in the book study. You may have a little more time right now and this would be a good one to spend some of that time with.

Our next Zoom AT meeting will be on Monday, August 3, 2020, to conclude our discussion of *A Farewell to Ice: A Report from the Arctic* by Peter Wadhams, with the second half, pages 104-206. Due to the Labor Day holiday, we will convene the Zoom AT meeting on Monday, September 14, 2020, when we will begin our discussion of *The Worst Hard Time: The Untold Story of Those Who Survived The Great American Dust Bowl*



with pages 1-156. If you want to join us for either or both of these AT opportunities, please contact Madeleine Barnes at [Mad2Btmn@aol.com](mailto:Mad2Btmn@aol.com) to be added to the list for additional information and receive the Zoom meeting link and password.

We welcome your participation each month for two hours on the first Monday of the month (except for September) starting at 10am for this AT. Please note that we welcome anyone to participate whether you are TMN certified, recertified, or just want to remain a chapter member. We look forward to seeing you and let us know if you have read any good naturalist books lately.

Happy trails!

### *The Midden*

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

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La Marque, TX 77568

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

#### Midden Team

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

## August and September Activities

### ADVANCED TRAINING OPPORTUNITIES

**Chapter Meeting** - August 6; Restaurants to Reefs  
Presenter - Michael Niebuhr, Galveston Bay Foundation  
6:30 Meeting, 7:00 Speaker  
Via Zoom; 1 AT hour

**Red Wolves on Galveston Island** - Tuesday, August 11  
7pm; Via Zoom  
Presenter - Ron Wooten

**The Secret Life of Seeds** - Saturday, August 15  
10am; Via Zoom  
Presenter - Laurie Gonzales

**Galveston Bay Bottlenose Dolphin Research**  
Thursday, August 20  
10am; Via Zoom  
Presenter - Kristie Fazioli

### Ongoing

**Galveston Island SP**  
10am at the Welcome Center  
Every Saturday - Prairie Adventures  
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: Madeleine Barnes 281-474-9406  
See Pg. 14 for meeting dates and books.

### STEWARDSHIP OPPORTUNITIES

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

### 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](mailto:snellsw@verizon.net).

**Education and Outreach Committee** - We can use your help in supporting outreach efforts, responding to requests for exhibit booths and presenters, planning Treasures of the Bay; and developing a library of education-outreach materials. Contact Sara Snell [snellsw@verizon.net](mailto: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 (via Zoom monthly unless specified)

**Board Meetings** - usually First Tuesday, see the chapter calendar at <https://txmn.org/gbmn/events/month/>

### Committee Meetings

Advanced Training - Third Monday, 10-noon  
Education/Outreach - Third Tuesday, 1-2:30pm  
Communication - Meets quarterly, check calendar  
Midden Team - August 31, Monday, 9-noon



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### Answers to Butterflies Top Ten Quiz

1. Black Swallowtail, *Papilio polyxenes*
2. Gulf Fritillary, *Agraulis vanillae*
3. Giant Swallowtail, *Papilio cresphontes*
4. Cloudless Sulphur, *Phoebis sennae*
5. Brazilian Skipper, *Calpodus ethius*
6. Buckeye, *Junonia coenia*
7. Pipevine Swallowtail, *Battus philenor*
8. Tiger Swallowtail, *Papilio glaucus*
9. Painted Lady, *Vanessa cardui*
10. Monarch, *Danaus plexippus*