



Table of Contents	
Wetland Wanderings	2
Prairie Ponderings	3
MN Funny Fill-In (Part 1)	4
UN Decade of Ecosystem Restoration	4
MN Funny Fill-In (Part 2)	5
What is that tree by the trail?	5
Women in Nature: Ellen Quillin	6
Jim Duron reaches 25,000 Hours	7
Compilation of Recycling and Plastic News	8
My Summer Internship	10
Heritage Book Study - Review	11
Aug/Sep Activities	12

## President's Corner by Pam House

It is really happening! We have begun to come together in person for master naturalist events. It will be amazing to be able to experience all aspects of Food, Fun and Friendship again. But we have also learned so much about presenting events virtually, we will want to integrate the benefits of those presentations into our activities going forward. How to do that will be the focus of the board in its mid-year planning session.

“Hybrid” is the go-to term for events that include in person and virtual attendance. I’ve wondered whether that is the best description. Perhaps our planning should focus on the “diverse” activities and presentation. Just as prairie and wetland restoration focuses on the biodiversity of plant and wildlife to build resilient and stable natural communities, the inclusion of many avenues for participation in our meetings and AT’s can help the chapter develop in healthy ways. I like the idea of diversity and inclusion to be broad enough to not only address racial, cultural, gender, age, and ability differences, but to allow distance, work, and other practical life barriers to be overcome.

Zoom meetings seem to work well for committee meetings. Field experiences pretty much require getting out there and getting hot and dirty. (As an aside, our training committee has planned those long-delayed field experiences for our 2020 class to take place in September, October, and November.) Zoom allows those from around the country to join with us - either in purely virtual or hybrid events. Education and outreach can engage with others using these new tools.

To make this diversity of presentation happen, I want to give a special shout out for volunteers to join our Zoom team. These folks have done yeoman work over the past year to allow so much to continue to function. Now that our activities are opening back up, those hard workers are returning to many of their outside-the-home commitments with less time available for monitoring their computers. We need to find more folks to share the tasks involved in making the virtual components of our events possible.

And now for something completely different (for those who still remember Monty Python), some event updates:

The state meeting this year (October 21 - 24) will be a “hybrid” event. Participation can either be virtual or in person. Details at <https://txmn.tamu.edu/2021-annual-meeting/>

Our August chapter meeting is still in planning but will be August 5 at Carbide Park / Extension Office\*! Suzette Mahaffey and her committee will be helping us continue to celebrate our 20<sup>th</sup> anniversary. We’ll let you know about food, plans and other updates via email.

I look forward to greeting you all in August, some of you in person. What fun that will be!

**Next Chapter Meeting**

August 5

Urban Heat Island  
C 40 Cities

By

Jaime Gonzalez  
The Nature Conservancy

Extension Office\*  
and via Zoom

## Wetland Wanderings: Focus on Aquatic Plants by Lana Berkowitz

If you need another reason to explore our wetlands, bayous and other waterways, here's a reminder that the Texas Master Naturalist Aquatic Plant Photo Contest is accepting submissions through Sept. 30.

"This is a great citizen science project as each volunteer is helping our understanding of aquatic plants and their importance to our beautiful Texas ecosystems," said project coordinator Cynthia Sechrest, who is a member of the Capital Area (Austin) chapter and a botanist.

Images will be used for online courses, programs, social media, AquaPlant website and fact sheets. Brittany Chesser, Texas A&M AgriLife aquatic vegetation management program specialist and lead diagnostic scientist, presented the project as a statewide activity at the TMN Volunteer Fair.

In addition to documenting aquatic plants and building up the photo bank, the contest offers prizes for the most species submitted by a chapter and most species submitted by an individual. And, of course, there are bragging rights.

"We'd love to get more submissions from your area as it is the place that salinity varies as you reach the coast and one would assume plant species would change dramatically. That would be an interesting project all by itself," Cynthia said.

Since the project started May 1, there have been submissions from Dallas/Fort Worth and areas north of those cities, Austin, Houston, Galveston and Washington County.

"So far the pace of the submissions has been good and the quality of photographs very good compared to last year," Cynthia said. Photos can be submitted through iNaturalist by joining the TMN Aquatic Plant Photo Submission Project or via Google Forms.

For the step-by-step guide on submissions and how to get the best photo samples, go to <https://bit.ly/2U3Qrpi>. To record volunteer hours, use the code TMN Virtual Volunteer Service Fair with an explanation of what you did for the project. The photographer's name will be associated with each photo.

Smart phone photos are acceptable, but all images must be sharp. In addition to a site photo, you will need a closeup using a white board or shallow pan with water to provide a background for the plant. And use your hand, a coin or ruler to indicate scale. The sample photo of

Nipplebract Arrowhead (*Sagittaria papillosa*) was taken by chapter member and photo guru Scott Buckel.



Photo by Scott Buckel

Photographers should focus on obligate wetland plants. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils near the surface. This would include plants that are classified as floating, submerged and emergent (algae included).

### Texas Master Naturalist State Meeting

Save  
the  
Date  
for  
2021!

OCT. 21ST - 24TH  
IRVING, TX



## Prairie Ponderings: Get Ready; Monarchs Butterflies Are Coming Home

by Diane Humes

Monarch butterflies (*Danaus plexippus*), weighing between .01 and .2 ounces - somewhat more than the average weight of one feather from an average bird - migrate farther than some hawks, flying up to 1 kilometer in height. Even more intriguing, their migration takes four generations to complete; no one individual has ever been to the place it is going.

Adult monarchs spend the winter (November - March) roosting on 12 mountaintops of central Mexico, where they are protected from weather extremes, yet temperatures are cool enough to keep them in diapause - suspended development - until spring. They may roost in other species but prefer the oyamel fir (*Abies religiosa*) growing at high elevations - between 2,400 and 3,500 meters - thought to be relict habitats left over from the Ice Age. Monarchs cluster by the millions draping branches of the fir trees in a spectacle of nature seen by the fortunate few.

With warm spring breezes, monarchs mate and begin flying north, laying eggs on emerging milkweed plants (*Asclepias sp.*) - food for larvae of the first generation of the year. Adults die, but this generation and possibly two more continue the journey north, breeding, laying eggs and dying. It takes 25 days for an egg to hatch and complete its larval life cycle and become adult.

Most monarchs east of the Rocky Mountains have left Texas by early summer; the fourth generation returning south to the oyamel forests of Mexico will be arriving on the Gulf Coast about the third week in October.



Population counts for monarchs are difficult to accurately determine; however, it is known that the area used by the overwintering butterflies has declined severely for the past 20 years. Many factors are known to be causing monarch decline in Mexico, including logging (mostly illegal) of oyamel forests, storms and weather, land conversion to farming, especially avocado groves, and mining.

On the summer habitats of the U.S. and Canada, farmers growing corn and soybeans on vast acreages have moved to glyphosate-resistant corn varieties, which means that the farmer can spray the herbicide glyphosate (Roundup) to kill weeds - including milkweeds. It has been thought that milkweed losses may be the contributing factor to monarch losses. Also, Mexican milkweed, (*A. curassavica*), grown in the South to help monarchs, often carries a deadly protozoan parasite, OE.

Very likely, all of these factors contribute to monarch decline; all are caused by people.

What can people do, then?

Farmers in the U.S. grow corn to feed cows, so if we ate less beef, cornfields might become prairies again. Farmers in Mexico grow avocados to make money; if we made sure the fruits we ate were certified forest products, it might help. Also, remember to cut down Mexican milkweed in October to remove OE spores. Fixing climate change, mining and the weather seem like harder problems.

A study suggests one other possibility, especially for us here on the Gulf Coast monarch flyway. Citizen Science data collected throughout the U.S. and Canada shows robust monarch population numbers on the breeding grounds, yet numbers on the wintering grounds have declined. Could it be that the 4th generation adults lack enough energy to return? To make it to Mexico, adults need nectar to sustain them.

Only larvae eat milkweed, whereas adults nectar on a variety of species found on our coastal tall grass prairies. Let's plant asters, coneflowers, ironweeds, boneset, liatris, goldenrod, compass plant, and buttonbush. If not at home, then find a prairie near you.

The monarch butterfly is the Texas State Insect and the master naturalist 2013 certification pin. And Texas is in a critical location for these charismatic migrating insects. We can truly make a difference!

## Master Naturalist Funny Fill-In (Part 1) by Rebekah Gano

Think about your adventures as a master naturalist and write down a word to fit each category. Then use your list to fill in the story on the next page.

- |                            |                                 |
|----------------------------|---------------------------------|
| 1. Verb + ed _____         | 10. Verb +ing _____             |
| 2. Adjective _____         | 11. Noun _____                  |
| 3. Adjective _____         | 12. Animal (plural) _____       |
| 4. Noun _____              | 13. Adverb _____                |
| 5. Adjective _____         | 14. Type of precipitation _____ |
| 6. Number _____            | 15. Adverb _____                |
| 7. Type of ecosystem _____ | 16. Verb +ed _____              |
| 8. Adverb _____            | 17. Noun _____                  |
| 9. Verb + ing _____        | 18. Adjective _____             |

## UN Decade of Ecosystem Restoration by Diane Humes

The United Nations has declared the beginning of a decade of ecosystem restoration, stressing the urgent need to revive damaged ecosystems. As stated, "Ecosystems support all life on Earth. The healthier our ecosystems are, the healthier the planet - and its people. The UN Decade on Ecosystem Restoration aims to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean. It can help to end poverty, combat climate change and prevent a mass extinction. It will only succeed if everyone plays a part."



Many nations and organizations are already beginning projects to address degraded grasslands, coastal wetland and mangrove forest losses, peatland drainage and loss and wildlife connectivity. These issues are of primary importance throughout the world. Urban areas, which occupy less than 1 per cent of the Earth's land surface but house more than half of its people, also have ecosystem needs; cities need clean air and water; urban heat islands must be cooled; city dwellers need recreation. Cities host a surprising amount of biodiversity and, therefore, urban wildlife cannot be overlooked.

The Society for Ecological Restoration (SER), a conservation organization founded in 1988, held its 9th World Conference in June - in virtual format - attended by

1,300 of its more than 4,000 members from 70 nations of the world. As a member of SER, I was privileged to attend the meeting from the comfort of my living room and learn about projects to restore land: beaches ravaged by hurricanes in Puerto Rico; rainforests for people and jaguars in the intersection of Brazil, Argentina, and Paraguay; overgrazed and depleted grasslands and forests of Lebanon, Kuwait and Jordan; urban parks in Shanghai and Beijing to increase wildlife connectivity.

The conference provided an amazing experience to learn from dedicated restoration practitioners around the world and the lessons they had learned. I was humbled to realize some of the difficulties they face which we do not. For example, in Kuwait, the land remains contaminated by oil byproducts from the 1990-94 Iraq war and they still find unexploded ordnance. Probably shouldn't get too complacent - they did excavate a Civil War era cannonball recently in Houston!

Messages from the meeting stressed the inherent value of heeding indigenous knowledge. Speakers were the faces of global diversity and all expressed hope for the future, proclaiming that ecological restoration works, global land degradation is not yet irreversible and biodiversity is the key to resilience. HRH Princess Basma bint Ali of Jordan spoke for the world by reminding us that, "we do not own the world, but instead hold it in care future generations" - a message all master naturalists already know.

Keep up the good work in this decade of ecological restoration!

## Master Naturalist Funny Fill-In (Part 2) by Rebekah Gano

Use your list of words from the previous page to complete this story.

Yesterday morning I woke up early and \_\_\_\_\_ (1. *Verb +ed*) \_\_\_\_\_ for a day of volunteering with the Texas Master Naturalists. I packed my \_\_\_\_\_ (2. *Adjective*) \_\_\_\_\_ hat, my \_\_\_\_\_ (3. *Adjective*) \_\_\_\_\_ (4. *Noun*) \_\_\_\_\_, and of course, my water bottle. Then I ate a \_\_\_\_\_ (5. *Adjective*) \_\_\_\_\_ breakfast.

I drove for \_\_\_\_\_ (6. *Number*) \_\_\_\_\_ minutes until I reached the \_\_\_\_\_ (7. *Ecosystem*) \_\_\_\_\_. I parked, gathered my supplies and \_\_\_\_\_ (8. *Adverb*) \_\_\_\_\_ joined the other volunteers.

We started by \_\_\_\_\_ (9. *Verb +ing*) \_\_\_\_\_ and \_\_\_\_\_ (10. *Verb +ing*) \_\_\_\_\_ along the trails. We heard a noise in the \_\_\_\_\_ (11. *Noun*) \_\_\_\_\_ and were thrilled to see three \_\_\_\_\_ (12. *Animal, plural*) \_\_\_\_\_ peering back at us.

After that, our project went \_\_\_\_\_ (13. *Adverb*) \_\_\_\_\_ until it started to \_\_\_\_\_ (14. *Precipitation*) \_\_\_\_\_. We \_\_\_\_\_ (15. *Adverb*) \_\_\_\_\_ collected our belongings and \_\_\_\_\_ (16. *Verb +ed*) \_\_\_\_\_ back to our vehicles. Along the way, I almost stepped on a \_\_\_\_\_ (17. *Noun*) \_\_\_\_\_! What a \_\_\_\_\_ (18. *Adjective*) \_\_\_\_\_ day as a Texas Master Naturalist volunteer!

## What is that tree by the trail? by Diane Humes

Several months ago and before February's freeze, I was taken to see a "mystery tree" just off the Martyn Trail at Armand Bayou Nature Center (ABNC). Growing in the understory of wet woods, the "tree" has obviously been there for years with a thicket of branches about eight feet tall and maybe twenty feet in diameter, or more. Although winter was upon us, dark green leaves remained on the tree, linear in shape, some as much as four inches long, opposite, with prominent straight pinnate veins, and no teeth, pointed tips. In spring, after the freeze, the tree produced a profusion of new bright green leaves, although many older leaves remained. I later noticed they had interpetiolar stipules - needed a hand lens for that! I could find no fruits or flowers. Branches that touched the ground had rooted and made new plants. It is the only such specimen on ABNC property.

Those were my clues. Perusing *The Sibley Guide to Trees* by David Sibley, I guessed at six choices of species with similar leaves from the trees native to North America. I further refined my search with *The Manual of Vascular Plants of Texas*.

Disqualifying five contenders due to various combinations of wrong characters - leaf size or shape, fall color, habitat, leaves alternate, not known to live in Texas - I narrowed the search to Carolina false buckthorn (*Frangula caroliniana*) still an imperfect choice. Flowers and fruits are needed for positive ID. So, I waited for the tree to bloom.

As you know, horticultural species are usually omitted from native plant manuals. The stipules suggested instead a gardenia, as did the new spring leaves - thanks to A&M Forester, Mickey Merritt, for this ID idea. Could it be? How did a gardenia get to the ABNC woods? When will this tree flower?



Photo by Diane Humes

Finally, in May, the plant on the Martyn Trail bloomed, filling the air with sweet gardenia fragrance - definitely not Carolina false buckthorn! Gorgeous creamy white flowers, double and huge - 3-4 inches in diameter - floated on branches, especially in the center of the thicket. By mid-month flowers numbered over 100; by mid-June they were a memory. My search for fruits or seeds resulted in slightly swollen inferior ovaries with no signs of seed growth. A source stated that double gardenia blooms are sterile; it seems true and helps explain why this is only gardenia in the forest.

The hunt for this tree's identity revealed layers of fascinating connections across time and place, involving people around the globe, as you will see.

Gardenias, in the coffee family (Rubiaceae), are native to Asia and found along streams and in forests at elevations below 5,000 feet from Japan to India. They have been

cultivated in China for over 1,000 years. When first brought to England from the Cape of Good Hope, they were thought to be jasmines, in the olive family (Oleaceae). From the *Proceedings of the Royal Society of London*, Daniel Solander, reported in 1762 on the plant by the, "name of the Cape Jasmine... It was first brought here, 1744, from the Cape of Good Hope by Capt. Hutchenson, in the *Godolphin Indiaman*, and by him presented to Richard Warner, Esq., of Woodford Row, Essex; in whose garden it long remained without the least sign of vegetation; but at last proved to be the most beautiful shrub that has been introduced among us for a long time...When this plant first appeared, it was thought a new and unknown one to the European botanists; and though it came to blossom freely, the flowers unfortunately proved double. For notwithstanding the fructification is the only material thing in plants, whence they can be sufficiently known and described, yet double flowers are really a kind of monsters in the vegetable kingdom."

Solander, a pupil of Linnaeus, later accompanied fellow botanist Joseph Banks on Captain Cook's first voyage to Australia; Botany Bay is named for them. The Cape Jasmine flower - wildly popular - fetched high prices and was known to be used in China for making a scarlet dye. Therefore, Solander recommended that it be sent throughout the colonies to test its usefulness and sent plants to physician and botanist Dr. Alexander Garden residing in Charleston, SC.

Back in England, botanist John Ellis in 1761 realized that these plants were most certainly not jasmines and searched for a suitable new genus name. He chose to honor Alexander Garden with the name for the common gardenia (*Gardenia jasminoides*); it is seldom called either Cape Jasmine or Cape Jessamine today.

Garden, a Loyalist during the Revolutionary War, fled America after the British surrender and moved to London. He became vice president of the Royal Society; his namesake plants continued to be propagated throughout the South.

How did a gardenia get to ABNC?

Middle Bayou, which later became Armand Bayou, had European settlers living along it for well over 100 years prior to ABNC's establishment. The Martyn family raised cattle and farmed, along with 8 other families living closer to the bayou. Then, as now, people planted gardenias near their houses (or, perhaps near their outhouses!); this one is situated right next to a higher, flatter patch of ground along the trail. Is it an old homesite?

If so, where did the family get the plant? Bay Area Blvd was not built until 1967; Middle Bayou was the road to Seabrook and Galveston on your boat; Red Bluff Road went to the small settlement of Red Bluff, now Shoreacres. James Martyn traded at J. E. Idlebrook's store in Red Bluff - he bought his sailboat there and, presumably, sailed it home! Gardenias, commercially grown in Alvin beginning in 1894, may have been available in these locations. (See postcard page 12.)

Growing gardenias for sale, especially buds to commemorate Decoration Day - now Memorial Day - was very big business; by 1924, within the city of Alvin, 60 acres had been planted with gardenia bushes. With refrigerated rail cars and the rail line, Alvin growers could ship gardenia flowers across the country. Imagine the heavenly fragrance in 1929 when, as reported by the Gulf, Colorado & Santa Fe Railway Company, "38,000,000 Cape Jasmine buds shipped from Alvin in the season just closed. A tree produces about 500 buds."

Commercially, gardenias are grown from cuttings and replanted every year or two. Probably the gardenia thicket along the Martyn Trail began as a small cutting and has survived and thrived at the old homestead even without its people. I have also learned that this tree is well-known to some ABNC volunteers - just not me. Ray Parker, who loved and knew his plants, told Liz VanOrstrand about it quite some time ago. If you knew Ray, you know he would have told a good story!

It has become a pretty tall tale already and I cannot wait to see what else we learn.

## Women in Nature: Ellen Quillin by Meade LeBlanc

As a science major at the University of Michigan in Ann Arbor in the 1910s, Ellen Schultz Quillin was the only woman in her geology and physics classes, and one of the few women who studied mineralogy. Completing a master's degree in 1918, she fulfilled a childhood dream of moving to Texas, furthering her studies at the University of Texas from 1920 to 1922. She found a job teaching botany in the San Antonio schools and, in 1922, wrote and self-published her first book, *500 Wild Flowers*

*of San Antonio and Vicinity*, considered the first book of its kind about Texas plants. The book arose from her desire to teach her students an appreciation of the local flowering plants. Ellen later wrote several other books about Texas wildflowers and cacti, as well as a series of children's nature-science books.

In 1920, a British/Canadian transplant to Texas, Henry Philemon Attwater - for whom the Attwater's Prairie

Chicken is named - wished to sell his natural history collection for \$5,000 and Quillen determined that the bird skins, pecans, silk, wool and such would be a valuable educational resource. She engaged her students to raise funds in various ways, from Tag Day donations to sales of bundles of bluebonnets which they picked. Her students raised the money and in 1923 Attwater's collection was installed in a room at the high school next door to where Ellen taught botany.

Local citizens began donating items and the collection soon outgrew its space. Ellen formed the San Antonio Museum Association and began looking for a larger permanent location, approaching prominent citizens as well as the city of San Antonio for help with funding and land. A large donation from the estate of Alfred Witte provided the needed support; the Witte Museum was built in Breckenridge Park in 1926. Ellen was named the museum's first director and took a salary of \$1 a year. Fortunately, her husband, Roy Quillin, whom she married just after the museum opened, enjoyed ornithology and oology and had a full-time job at Mobil.

Fundraising needs continued and required creativity, especially during the Depression. In addition to tamer activities like dances and lectures, the best seller became the Reptile Garden where people paid ten cents each to listen to lectures and watch non-poisonous snakes and lizards being set loose in a pit in a fenced enclosure.



Photo courtesy of Witte Museum, San Antonio, Texas

The Reptile Garden was home to all kinds of gimmicky events, like rattlesnake fries and turtle races, for the ten years it took until the Museum could make it without this additional source of funds. The snakes were then turned over to the San Antonio Zoo.

Ellen continued to run the museum until 1960, and then served as director emeritus until her death in 1970. She was considered a visionary, who recognized that museums should be places to learn and to get your hands dirty, not just be places to look at things. Just like the children she never had, the museum was truly her baby.

## Jim Duron reaches 25,000 volunteer service hours! by Diane Humes



Photo by Chuck Snyder

Not even a pandemic could keep him down - when you see Jim Duron, please congratulate him. He has surpassed all Texas Master Naturalist expectations by completing over 25,000 hours of volunteer service. The second person in the state of Texas (and our chapter!) to achieve this magnificent feat. Jim joined the chapter (Class of 2008) after retiring from NASA and has worked hard ever since. In addition to working tirelessly to grow prairie plants, Jim worked for many hours tracking the chapter's hours and effecting our smooth transition to the VMS system before committing himself "full-time" to prairie restoration. Jim has propagated, grown, and maintained prairie plants at Armand Bayou Nature Center, Texas City Prairie Preserve, San Jacinto State Park and other locations in our area.

Jim can usually be found in the plant nursery watering or otherwise caring for his "babies", including the Carolina wrens in the greenhouse. Thank you, Jim, for all you do!

(Jim's T-shirt really says it all!)

## Compilation of Recycling and Plastic News by the Green Team

*This is a compilation of recycling and plastic news, which has been verified by the team.*

### Double check the source of your vanilla

Plastic bottles have been converted into vanilla flavoring using genetically engineered bacteria, the first time a valuable chemical has been brewed from waste plastic. Upcycling plastic bottles into more lucrative materials could make the recycling process far more attractive and effective.

Researchers previously developed mutant enzymes to break down the polyethylene terephthalate polymer used for drink bottles into its basic units, terephthalic acid (TA). Vanillin is used widely in the food and cosmetics industries and is an important bulk chemical used to make pharmaceuticals, cleaning products and herbicides. Global demand is growing, and in 2018 was 37,000 tons, far exceeding the supply from natural vanilla beans. About 85% of vanillin is currently synthesized from chemicals derived from fossil fuels.

Joanna Sadler, of the University of Edinburgh, who conducted the work, said, "This is the first example of using a biological system to upcycle plastic waste into a valuable industrial chemical, and it has very exciting implications for the circular economy."

*Source: Damian Carrington, The Guardian, June 15, 2021,*  
<https://www.theguardian.com/environment/2021/jun/15/scientists-convert-used-plastic-bottles-into-vanilla-flavouring>

### Plastic debris aids migration of invasives

Japan's 2011 tsunami was catastrophic, killing nearly 16,000 people, destroying homes and infrastructure, and sweeping an estimated 5 million tons of debris out to sea, some of which drifted across the Pacific, reaching the shores of Hawaii, Alaska and California. With it came stowaways.

Nearly 300 non-native species were transported across the ocean in what has been called a "mass rafting" event. The Smithsonian Environmental Research Center in 2017 counted 289 Japanese marine species that were carried to distant shores after the tsunami, including sea snails, sea anemones and isopods.

Plastic rafting poses a great and mostly unknown danger. Invasive species that ride plastic litter to new shores can reduce habitats for native species, carry disease (microalgae is a particular threat), and put further strain on ecosystems already pressured by overfishing and pollution. According to David Barnes, marine benthic ecologist at the British Antarctic Survey, rafting increases

"extinction risk [while] reducing biodiversity, ecosystem function and resilience."

The tsunami also showed something new: many of the organisms survived more than six years adrift, longer than previously thought possible.

Rafting - or oceanic dispersal - is a natural phenomenon. Marine organisms attach themselves to marine litter and travel hundreds of miles. Free-floating clumps of seaweed, such as sargassum, sometimes 3 yards thick, provide a home for certain "rafting species" in the Atlantic, such as pipefishes and seahorses, both of which are poor swimmers.

*Source: Russell Thomas, The Guardian, June 14, 2021,*  
<https://www.theguardian.com/environment/2021/jun/14/plastic-rafting-the-invasive-species-hitching-a-ride-on-ocean-litter>

### South Australia bans SUPs

South Australia has taken a step toward prohibiting single-use plastics (SUPs) by passing the Single-Use and Other Plastic Products (Waste Avoidance) Act 2020. Effective March 1, 2021, single-use plastic straws, cutlery and stirrers will be prohibited from the sale, supply or distribution in South Australia. The prohibition, which includes plastic straws, allows for these items to be replaced with reusable and compostable alternatives. Exemptions to the law include single-use plastic straws for use by people with disabilities and medical needs, and juice boxes with plastic straws attached.

The use of plastic spoons for medical use will be banned starting March 2022, as will polystyrene cups, bowls plates and clamshell containers. Oxo-degradable plastic products also will be prohibited from sale, supply or distribution and manufacture and production in South Australia. Oxo-degradable plastic products have additives which enable the plastic to break down into tiny fragments (microplastics) which do not completely decompose.

*Source: Government of South Australia, Green Industries,*  
<https://www.replacethewaste.sa.gov.au/legislation-explained>

### Microplastics in soil

Scientists report that we are sending tons of tiny plastic particles into our soils each year, potentially affecting crops and our health. When people wash their synthetic threads, microfibers are released and flow into wastewater treatment plants. From there, up to 99 percent of the microfibers wind up in sludge that treatment plants offer to farmers, who spread it on their

fields as fertilizer, researcher Jenna Gavigan has found. Gavigan and fellow researchers conclude that 92 percent of all microfiber emissions on land come from these biosolids.

In addition to synthetic fabrics, soil plastic can come from car tires that degrade on roadways, cosmetics that wash into wastewater and concentrate in sludge, and tools that farmers use on their land, such as plastic mulch, seed coatings, and coverings that keep out weeds and pests.

As much as 300,000 tons of microplastics end up on North American farmlands each year, reported researcher Luca Nizzetto in a 2016 op-ed in Environmental Science and Technology.

*Source: Susan Cosier, NRDC Science Spotlight, Feb. 2, 2021, <https://www.nrdc.org/stories/growing-concern-microplastic-pollution-farm-fields>*

### Microplastics in water

According to Sherri Mason, chemistry professor at Penn State Erie, about 95 percent of microplastics found in our clothes-washing water are filtered out at wastewater treatment plants. That sounds great, Mason says, but the 5 percent that make it through add up. Mason's study of 17 wastewater treatment plants in the U.S. showed that each facility was releasing, on average, more than 4 million microplastic particles into U.S. waterways daily. "And we have about 15,000 plants," she said.

*Source: Caitlin Dow, Nutrition Action, June 4, 2021, <https://www.nutritionaction.com/daily/food-safety/should-you-be-concerned-about-microplastics/>*

### Tired, old controversy

The debate rages as to whether vegetables or ornamental plants should be grown in old tires. Advocates of the practice say it keeps tires out of landfills, protecting the environment from waste, but opponents say the practice is not healthy for the environment or living beings.

Old tires pose three primary environmental risks: chemical, disease and fire. Tires are not just rubber. They are better described as petrol-chemical plastics. As such, they break down over time and can release petroleum chemicals into the soil, along with some heavy metals. While the release is slow, it can build up over time and be absorbed by vegetation, eventually making it onto our dinner plates.

Even with soil in them, tires can be a breeding ground for mosquitoes, with curves and ridges that can hold standing water. The fire issue seems small for a single tire in the landscape or even a small group of tires, but in a wildfire situation, they can still pose a pollution risk to the soil and the air.

*Sources: Kerry Michaels, The Spruce, Oct. 15, 2019, <https://www.thespruce.com/are-tire-gardens-safe-growing-veggies-848043>; Frank Wideman, Extension Foundation, January 2017, <https://ask2.extension.org/kb/faq.php?id=381169>*



### Vegan 'spider silk' a green alternative to SUPs

Researchers have created a plant-based, sustainable, scalable material that could replace single-use plastics in many household consumer products.

Researchers from the University of Cambridge created a polymer film by mimicking the properties of spider silk, one of the strongest materials in nature. The new material is as strong as many common plastics. The energy-efficient method, which uses sustainable ingredients such as soy protein isolate, results in a plastic-like free-standing film, which can be made at industrial scale. The material is home-compostable, whereas other types of bioplastics require industrial composting facilities to degrade.

"Because all proteins are made of polypeptide chains, under the right conditions, we can cause plant proteins to self-assemble just like spider silk," said Professor Tuomas Knowles from Cambridge's Yusuf Hamied Department of Chemistry. The material has a performance equivalent to high-performance engineering plastics, such as low-density polyethylene.

*Source: Sarah Collins, June 10, 2021, University of Cambridge, <https://www.cam.ac.uk/research/news/vegan-spider-silk-provides-sustainable-alternative-to-single-use-plastics>*

### **Bottled-water producers sued over false recycling claims**

California consumers and the Sierra Club have sued the Coca-Cola Company and other companies that sell leading bottled-water brands in San Francisco federal court, accusing them in separate lawsuits of deceiving consumers in the state by claiming their bottles are "100% recyclable" while they are not.

A class-action lawsuit filed June 16 in U.S. District Court for the Northern District of California also accuse BlueTriton Brands Inc. and Niagara Bottling of violating the California Business and Professions Code (CBPC) because U.S. recycling facilities lack the capacity to recycle the types of plastic that make up the main parts of their single-use water bottles labeled as fully recyclable.

The class action complaint claims that the companies deceive consumers because U.S. recycling facilities have the capacity to recycle only about 23 percent of the plastics used to make the bottles and sometimes their caps, namely polyethylene terephthalate (PET) and high-

density polyethylene (HDPE). The remaining is sent to landfills or incinerated, the plaintiffs allege.

The CBPC makes it "unlawful for any person to make any untruthful, deceptive, or misleading environmental marketing claim." Packaging that markets bottles as 100 percent recyclable "falsely informs consumers that they are making an environmentally responsible choice," the class complaint says.

The Sierra Club filed a separate lawsuit making similar allegations on the same day.

Coca-Cola spokesperson Ann Moore said the company does not comment on pending litigation. BlueTriton and Niagara did not immediately respond to requests for comment.

*Source: Sebastian Malo, Reuters, June 17, 2021, <https://www.reuters.com/legal/litigation/calif-consumers-sue-over-plastic-bottles-deceptive-recycling-labels-2021-06-17/>*

## **My Summer Internship** by Alexis Guidroz

Hi, my name is Alexis Guidroz and I am an environmental studies student at the University of Houston Clear Lake! On June 1, I received an email that notified me that I was selected as one of the two interns for the Texas Sea Grant Community Engagement Internship (CEI). I was hoping I was going to experience this wonderful internship through Texas A&M Sea Grant and NOAA considering the internship is for underserved students just like me. This internship will provide field experience for me as an undergraduate student and someone who has suffered tremendously in her academic career.

On the first day of my internship, I met Julie Massey, my mentor, throughout the summer and she has already introduced me to so many projects that Sea Grant has to offer.

By far my most favorite was Sea Turtle Patrolling with Patty Trimmingham. The 6 am sunrise was the most beautiful sunrise I have ever seen in my life. However, when we started our patrol at 6:30 am, I saw so much left behind trash, fishing lines, and unfortunately 6 dead fish washed up along the shoreline. It truly put things into perspective for me.

In addition to the volunteer opportunities I get to participate in, I also have to complete a project component that helps community stakeholders expand

their knowledge to resolve an environmental issue. Through my experiences so far in my internship, this has led me to finally pick my project topic based on Commercial Fishing and Sustainable Fisheries. The reason why I chose this topic was that when I went Sea Turtle Patrolling I saw the unending amount of garbage on our beach.

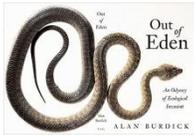


Photo by Patty Trimmingham

I am very excited to continue my journey with the Texas Sea Grant and I cannot wait to see what this internship has to offer. This is only the beginning!

## Heritage Book Study - Review of

### *Out of Eden: An Odyssey of Ecological Invasion* by Madeleine K. Barnes

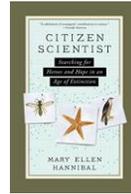


As master naturalists, we are exposed to and educated about invasive species, both in the plant and animal world, that may exist within our local ecosystem. What do we really know about how they came to be here? Do we work to eradicate an alien species if it does become invasive in this new community or does that matter? Just what does the idea of “natural” mean to us, how do we visualize it?

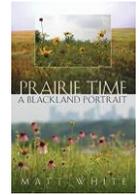
Grappling with these intriguing questions and definitions led to years of exploration and research for the author, Alan Burdick. As described in the subtitle *An Odyssey of Ecological Invasion*, Burdick reported his pursuit in his book. According to *Oxford Languages* an odyssey is defined as “a long and eventful or adventurous journey or adventure.” This certainly qualifies as he wrote this while exploring the issues stemming (pun intended) from alien species, consulting with world class scientists in the field and bringing the science of invasion biology into the light for public awareness and understanding. This is the most comprehensive book that I have read so far about invasive species and covered perspectives and concepts posed from both sides in an objective presentation.

This is an important issue as it relates directly to the work that we do in the conservation and protection of our natural resources. Burdick states: “It sometimes seems that how we talk about nature is irrelevant to how we deal with it, but with ecological invaders - nonindigenous species, if you will - it makes all the difference.” Historically there have been both natural and unnatural invasions on our earth, both on land and the sea. Burdick demonstrates how we, as humans, have contributed to the speed and increased number of these invasions, the far-reaching impacts from invaders, and our hard choices in dealing with them due to their adaptability or their “nature.”

I hope that this very brief synopsis has provoked your interest in reading this one as I do recommend it. Burdick writes in an informal, non-technical and personable writing style, not exactly what I would have expected as an editor on the science desk of The New York Times and a former staff writer and senior editor at The New Yorker. This was his first book and it garnered awards as a National Book Award finalist and won the Overseas Press Club award for environmental reporting. Even though this book was first published in 2005, the facts and science remain sound and our level of understanding is more important now than ever.



Our next Zoom meeting will be on August 2, to begin our discussion of *Citizen Scientist: Searching for Heroes and Hope in an Age of Extinction* by Mary Ellen Hannibal which will be a three-months reading. We will discuss the first third of the book, pages 1-129 on August 2. Due to the Labor Day Holiday on September 6, we will meet on Monday, September 13 to discuss the second third of the book, pages 130-260. 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. Our next reading selection will be *Prairie Time: A Blackland Portrait* by Matt White for November and December.



We welcome your participation each month for two hours on the first Monday of the month starting at 10am for these AT meetings. 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 Deadline* for the next issue

**August 30**

### *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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*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).

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Diane Humes, Editor

Madeleine K. Barnes	Lana Berkowitz
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Rebekah Gano	Meade LeBlanc
Carolyn Miles	Chuck Snyder

## August and September Activities

### ADVANCED TRAINING OPPORTUNITIES

**Chapter Meeting** - Aug. 5; Urban Heat Island/C 40 Cities  
Presenter - Jaime Gonzalez; The Nature Conservancy  
6pm Social, 6:30pm Meeting, 7pm Speaker  
At the Extension Office and via Zoom; 1 AT hour

### Wildlife Management at NASA

Thursday Aug. 26. 2-3pm via Zoom; 1 AT hour  
Presenter: Matt Strausser

### Ongoing

#### Heritage Book Study Group

First Monday of every month via Zoom  
10am-noon; 2 hours AT  
Contact: Madeleine Barnes 281-474-9406  
See Pg. 11 for meeting dates and books.

### STEWARDSHIP OPPORTUNITIES

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

### EDUCATION - OUTREACH OPPORTUNITIES

For a complete list of education - outreach activities see our chapter website, <https://txmn.org/gbmn/what-we-do/>.

**Partner and Associate Programs** - Many organizations sponsor guided walks and education programs or need volunteers to staff their nature center. Go to <http://txmn.org/gbmn/partners/> for the list, then click on the link to the organization's website.

### CHAPTER INFORMATION AND RESOURCES

**Calendar** - <https://txmn.org/gbmn/events/month/> Includes meetings, AT and volunteer activities

**Board** - <https://txmn.org/gbmn/board-of-directors/>  
Contact information for the Board of Directors. **Board Meetings** - usually first Tuesday of each month (via Zoom), verify on the calendar

**Committees** - <https://txmn.org/gbmn/board-of-directors/>  
Contact information for the Committee Chairs

**Volunteer Service** - <https://txmn.org/gbmn/volunteer-service/> Volunteer Opportunities

**Advanced Training** - <https://txmn.org/gbmn/advanced-training/>

**Midden Archives** - <https://txmn.org/gbmn/> Go to The Midden on the top menu.

**Facebook** - <https://www.facebook.com/gbactmn>



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Turn of the last century postcard showing cape jasmine (gardenia) farm near Houston - possibly the one in Alvin.

