Texas Naturally!

The Rise of the Texas Master Naturalist™ Movement

Written and edited by
Texas Master Naturalist
Krin Van Tatenhove

TEXAS NATURALLY!

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Published by the Alamo Area Chapter of the Texas Master Naturalist Program on its 25th Anniversary

Dedicated to every Texas Master Naturalist.
You have contributed to the rise of our movement
as a powerful force in history!

Foreword

Greetings!

I'm honored to introduce this book about the Texas Master Naturalist™ movement, and the Alamo Area Chapter of the Texas Master Naturalist Program in particular, on this, our 25th anniversary.

I first learned about Master Naturalists while living in Northern Virginia, near Washington DC, about 2012. I attended several Master Naturalist presentations at a local nature center. Curious, I investigated the Fairfax County Chapter of the Virginia Master Naturalist Program. They held one class per year for about 20 people. I had already planned to move back to my native Texas on retirement, so I decided not to take up one of their valuable slots. Besides, I wanted to learn about Texas, not Virginia!

Fast forward a few years. I retired to San Antonio and joined the Alamo Area Chapter of the Texas Master Naturalist Program's class of 2015, Class 36. To say the least, it was illuminating. A lifelong nature lover, I was enthralled by almost every session. Forty class hours and several field trips later, I completed my training and started on my path to become a certified Texas Master Naturalist. Since then, I've done all kinds of volunteering—river cleanup, wildlife rescue, teaching fishing, tree pruning and butterfly raising. What a wonderful way to stay involved in the community!

During the pandemic summer of 2021, I met Krin Van Tatenhove at the Wildscape Demonstration Garden at Phil Hardberger Park that is managed by Alamo Area Chapter. But I knew of his photography and writing long before that, because he edits the Alamo Area Chapter monthly newsletter and frequently posts to our Facebook page. We are so fortunate to have him in our chapter.

When he approached our Board of Directors with the idea of writing a book about the Texas Master Naturalist movement, I was blown away by his offer. He envisioned a wide-ranging account of all the ways that Texas Master Naturalists have made a difference. What a monumental effort! But if anyone could do it, Krin was that person. The Board immediately approved the project, and this book is the result.

Thank you, Krin Van Tatenhove, for your foresight and dedication to this effort.

Sincerely,
Emily K. Hawthorn
2022 President, Alamo Area Master Naturalists

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Introduction

Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has. - Margaret Mead

This is the story of a movement a quarter-century in the making, sparked by the Alamo Area Chapter of the Texas Master Naturalist™ Program in 1997, which continues to change our natural resource future through community-level conservation, management, and stewardship. The movement and influence started by our chapter has spread throughout the United States and beyond. It is the history of the Texas Master Naturalist Program,

Meaningful movements respond to the needs of their times and places. Texas had a critical shortage of trained volunteers to assist agencies at local and state levels who protect our natural world and educate others about it. In such a vast state, we needed an equally vast response of concerned citizens. As the Texas Master Naturalist curriculum textbook states in its preface:

> Everything is bigger in Texas! With over 268,000 square miles of territory and an ever-growing population of nearly 27 million residents, there are ample opportunities for those seeking to go outdoors and get involved with the “natural Texas.”

We Texas Master Naturalists have risen to seize our time in history! Fueled by our passion for studying, interpreting, and conserving the natural world, we represent a broad cross-section of our state. Our desire to roll up our sleeves and get actively involved can be an inspiration for volunteers all over the world.

This book's format is simple yet highly illustrative of our movement's richness. The first chapter chronicles its genesis in San Antonio with the **Alamo Area Chapter**, including dates, pioneers, and statistics. Subsequent chapters highlight the projects of dozens of Texas Master Naturalist Chapters, revealing the impact Texas Master Naturalists are having across the Lone Star State. Finally, we include some unique contributions from members of Alamo Area Chapter: a sampling of our *Evergreen Reflections* blog series, an anthology of articles about the Texas Master Naturalist recognition pins, and photos from our talented photographers.

After completing their Texas Master Naturalist initial training, each member faces a key question. What projects and activities will receive the gift of my volunteer hours? This is hard to answer given all the exciting and meaningful opportunities that clamor for our attention. As we consider the brevity of *all* our lives, it's a critical decision. Volunteering for its own sake is admirable; volunteering that is driven by passionate engagement lifts our labor to a higher plateau of fulfillment.

In this book, you will read about people captivated by a variety of issues in our natural world: native plants and wildlife species, water quality, educating youth, rescuing and rehabilitating animals, and restoring land to its original state. Their energy and dedication are contagious!

Personally, I answered the question of "how to volunteer" in two ways.

First, I chose activities that took me into nature and allowed me to rub shoulders with knowledgeable volunteers and experts. Many of them have an intimate, almost encyclopedic grasp of the flora and fauna around us. It amazes me, and I unabashedly pick their brains while we work together.

Second, I assessed my own interests and talents—writing, editing, photography—asking a question that is key for any volunteer. How could I fashion my gifts to serve the wider cause?

At its November 2021 meeting, the Alamo Area Chapter Board of Directors approved this book project to commemorate both the 25th Anniversary of our chapter in 2022 and the subsequent spread of our movement. It humbles me to be its writer and editor, and I acknowledge the dedication, passion, and expertise of so many others who have contributed to these pages.

Trying to capture the diversity and zest of the Texas Master Naturalist movement is like thrusting your hand into the crystal-clear waters of the Comal Springs as they flow outward, a stream that joins the Guadalupe River and ultimately reaches the Gulf of Mexico at San Antonio Bay. As the ancient Greek philosopher Heraclitus famously said, “No one ever steps in the same river twice, for it is not the same river and they are not the same person.”

This certainly applies to the ever-changing landscape of Texas Master Naturalist chapters and their activities, especially during the past two years when pandemic issues affected all of us. Many chapters had to retrofit their programs to go virtual or hybrid, a testament to their resilience in continuing their mission.

By the time this volume sees the light, our movement will have evolved in many ways. I applaud this! My purpose here is to simply honor the epicenter of our history and highlight its diversity of activities at this juncture of 25 years. Hopefully, this will inspire new members to think outside the box when considering how to best serve others and the natural world in their regions.

When we consider the dire effects of climate change, including the sheer number of species that are threatened or near extinction, it would be easy to despair. When I stand on the edge of that abyss, I remember the many efforts of my fellow naturalists and it kindles new hope.

One final introductory note. Beneath the busyness of helping projects sustain their momentum is a more personal reason why so many of us have chosen this path. Quite simply, time spent in nature—absorbing its beauty and diversity—is a tonic to our souls. In one of my contributions to our chapter's *Evergreen Reflections* blog series, I said the following.

> Like so many of you, I am drawn to nature because of its perfect intricacy, its reminder to just BE rather than DO, to humbly experience my place in the web of life. As a friend of mine says, this is what "stitches him into the fabric of the universe."
>
> As a Master Naturalist, I join my fellow volunteers in passing on our knowledge of the natural world. We catalog flora and fauna; we name those forces that shape the landscape and atmosphere. All this science surely deepens an appreciation of the planet. But perhaps the most vital thing we impart is to see our world through the perspective of harmony, a vision that instills a desire to cherish, protect, and nurture the gift of Earth.

May there be many more generations of Texas Master Naturalists who rise to champion the preservation of our natural world!

Dr. Krin Van Tatenhove
San Antonio, Texas
July 2022

Chapter One:

The Beginning

And suddenly you know: It's time to start something new and trust the magic of beginnings. - Meister Eckhart

Recording history can be complicated, even contentious. Consider how historians have analyzed the Texas town of Nacogdoches.

Originally known as Nevantin, a primary village of the Caddo Indian Tribe, it has evidence of settlement dating back 10,000 years. Spain established *Misión Nuestra Señora de Guadalupe* there in 1716, the area's first colonial development. The town has had more flags unfurled in its skies than the entirety of Texas. In addition to the famed Six Flags of Texas, Nacogdoches has flown under the banners of the Magee-Gutierrez Republic, the Long Republic, and the Fredonian Rebellion.

US citizens began populating Nacogdoches in 1820, and Texas's first English-language newspaper appeared there. Sam Houston lived in town for two years, opening a short-lived law practice. In the city's Oak Grove Cemetery, you will find the gravesite of Thomas Jefferson Rusk, General at the Battle of San Jacinto, Secretary of War for the Republic of Texas, and later a Texas Senator. Nearby are the graves of other signers of the Texas Declaration of Independence, additional veterans of the Texas Revolution, as well as slaves and wealthy businesspeople sleeping eternally side-by-side.

Most residents of Nacogdoches will quickly and proudly claim the title "oldest town in Texas."

But is it really? Historians have disputed the matter for years. Three other settlements—Ysleta, St. Augustine, and

more recently, Presidio—present evidence that they should have the bragging rights in Texas.

Thankfully, the origin of the Master Naturalist movement is not as murky. The term “master naturalist” first came to light in Fort Collins, Colorado in 1995. Responding to that city’s urban sprawl, citizens approved a sales tax to preserve natural areas. Part of the money went to creating a volunteer task force to educate citizens about the plants, animals, and ecosystems conserved in these protected spaces. That program still exists, entitled Master Naturalist Assistants. Participants receive eighty hours of initial training, then must volunteer for a total of 50 hours within the first two years following training. They must also attend two qualified continuing education programs per year.

The first formal program that would expand to state-wide proportions is here in Texas, and it became known as the Texas Master Naturalist program, started in San Antonio with the Alamo Area Chapter. From the very beginning, our movement has had rigorous requirements. Texas Master Naturalists receive at least 40 hours of initial training, and our yearly commitment is 40 hours of volunteer service as well as 8 hours of continuing education recognized by the program as advanced training.

No single narrative can do justice to the many people, including co-founders, who made this movement possible. One of them is Judit Green, a 34-year employee of the Texas Parks & Wildlife Department (TPWD). With a Bachelor of Science degree in Wildlife & Fisheries Science from Texas A&M University, she has been an Urban Wildlife Biologist in San Antonio for the past 28 years, where she conducts outreach and offers technical guidance on natural resource projects that benefit wildlife, landscapes, water, and people. She is a contributing author and photographer to the *Texas*

Wildscapes: Gardening for Wildlife book and a contributing author to the original Texas Master Naturalist Handbook.

In the following words, Judit gives a synopsis of how TMNs began, a modified version of an essay that first appeared in the book *Urban Wildlife Management*[1].

> The story of how the Texas Master Naturalist (TMN) program evolved is an amazing example of starting with limited resources! The adage of "work smarter, not harder" was our constant reminder throughout the three-year journey that took us to a destination we never imagined. I liken it to a parent raising a child who matures and then moves on in life. To this day, many of the San Antonio founders of the first TMN class feel like proud parents when they see the wonderful accomplishments this program and its volunteers have contributed to Texas for 25 years!
>
> TMN was born out of a need for volunteers. These volunteers had to have a basic knowledge of the local natural resources in our area. Ideally, we wanted them to understand the value of a project, feel confident in their ability to contribute, and be willing to share their knowledge with others. Essentially, we were looking for an army of people who could expand the efforts that many natural resource professionals were unable to accomplish due to personnel, budget, and time constraints.
>
> I am one member of this army, and I, along with many others, was there at the beginning.
>
> In 1994, Rufus Stephens and I arrived in San Antonio as the two newly hired San Antonio Urban Wildlife Biologists within the Texas Parks & Wildlife Department (TPWD). Shortly afterward, we received an invitation to join a new subcommittee of the local

Audubon Society created by Susan Hughes. Eventually named Natural Initiatives, this group consisted of representatives from various state and city agencies, private businesses, schools, and non-profit groups involved with local natural resource issues.

Our mission statements were similar. We were *all* charged with managing and conserving some aspect of a dwindling resource within our area. Improving urban wildlife habitat within Bexar County and increasing environmental awareness, were our primary purposes. We did this by encouraging residents to adopt the newly created Texas Wildscapes Certification Program (offered by TPWD) for their yards. Our objective was to involve as many environmental and community groups as possible, hoping it would lead to 10,000 sites in the greater San Antonio area certified as “Backyard Wildlife Habitats” by the year 2000. We hoped to create an enthusiastic climate of “conscious caring” for the environment through publicity, public relations, and educational opportunities. The Natural Initiatives eventually became known as a community-based public awareness program, urging every citizen to follow our motto, “Take the initiative to be at home with nature!”

We began offering annual Wildscape Workshops that included yard tours—allowing visitors to see local homeowner examples of gardens beneficial to wildlife. We participated at any event related to nature, landscaping, or water to promote the initiative’s mission. We targeted large events such as the San Antonio Stock Show & Rodeo, Viva Botanica, and home and garden shows with our information

booths. We also created a Speaker's Bureau to respond to public interest on nature-related topics.

By 1996, the success of the initiative made us realize the critical need for more volunteers. It was not uncommon for many of us to solicit family members and friends to assist with events and projects, but this wasn't nearly enough. One of our committee members had been affiliated with the Texas Cooperative Extension Service (now known as Texas A&M AgriLife Extension Service), which supported a volunteer initiative known as the Master Gardener program. Master Gardeners received 40 hours of formal training in horticulture and were then expected to provide 40 hours of volunteer service annually within their communities. The program had gained momentum in the San Antonio area since its inception in 1989.

We decided to talk to the local County Extension Agent to see if we could add natural resource subjects to their existing program. We were only offered a few additional hours, and we felt it wasn't enough to cover the wide array of subjects we wanted volunteers to encounter during their training. After comparing various volunteer programs in existence and looking at their formats, Natural Initiatives decided to adopt a similar approach to the Master Gardener program.

We called it the Master Naturalist Program. Each participant would need to graduate from 40 hours of classroom and field instruction over a 10-week training period. Graduates then had a year to complete 8 hours of advanced training and 40 hours of volunteer service in their community to become officially certified. To maintain their certification,

volunteers would then have to contribute 40 hours of volunteer service and pursue 8 hours of advanced training annually.

In the fall of 1996, Natural Initiatives invited local experts to join forces with them in the writing of a training manual for the first Master Naturalist class slated for the spring of 1997. We hired an editor to mesh the various chapters into a uniform format. Topics included ecology, soil and water, botany, wildlife, archaeology and archaeological ethnobotany, endangered species, educational programs, nature tourism, and best management practices. These were to be taught by the local resource professionals who contributed to the manual. It was an ambitious goal to plan, create, and implement the MN training program within a short 8-month period. As it turned out, the students of that first class anxiously awaited new chapters of their training manual as they arrived hot off the press at the beginning of each session!

The Texas Master Naturalist program created in San Antonio was the first of its kind in the state. It was exciting to see the hard work of Natural Initiative members come to fruition with the graduation of thirty volunteers from the first class in 1997. This new group of volunteers would eventually become part of the Alamo Area Master Naturalist Chapter.

Those first 1997 graduates were part of a program sponsored locally by TPWD, San Antonio Parks and Recreation, and the Texas Forest Service. These sponsors offered financial support, meeting space, and staff that served as advisors. Some of the new graduates immediately joined forces with members of

the initiative to develop an organizational structure for the newly formed Master Naturalist program. They started with the creation of a mission statement*: Master Naturalists are volunteers dedicated to the conservation, preservation and restoration of our natural resources, promoting ecological education for all ages.*

This newly trained group of volunteers proved to be highly ambitious and motivated. They immediately voted on leadership roles: Anton Hajek as President, Thea Platz as Vice-President, Kelly Ann Morales as Secretary, and Louise Lowes as Treasurer. They formed committees to assist with the various tasks that volunteers faced. Monthly meetings were an important tool in keeping them connected to the community, where they often learned about new ventures from invited guests. It also allowed volunteers to create camaraderie and an esprit de corps. During one of our meetings, we had city councilman, Julian Castro, introduce himself and share his interest in our new group.

Master Naturalist volunteers quickly tackled many of the projects started by Natural Initiatives and joined new projects coordinated by local agencies, businesses, and non-profit partners. During the first year, volunteers had to seek-out projects. By the second year, with our program becoming more visible, the number of projects exceeded the number of volunteers.

In addition to joining TMN to work on service projects, volunteers were also seeking like-minded individuals with whom they could create new friendships. We kept things light-hearted and fun. We

were all reminded of this one day after a lengthy board meeting discussion during which the new leaders were trying to determine how to keep track of all the incoming projects. Someone suggested a sixteen-digit code that would indicate the event date, sponsor, location, and project type. Unable to hold his tongue, Bill Woller—a well-loved and respected graduate of Class #1—stood up and gently questioned the group. “Do we really need a 16-digit number to manage our projects,” he said, “when our nation seems to be doing a fine job running things with just a 9-digit social security number?” We laughed heartily and ultimately shortened the project code.

Another important endeavor that brought attention to the new program in San Antonio was our Annual Awards Banquet. We invited highly visible leaders from the community and offered four awards to those doing good things for natural resources. These banquets increased awareness of our program, encouraged others to follow, and helped raise funds. We were excited and motivated when Judge Cyndi Krier and Mayor Howard Peak accepted the role of chairpersons at our first banquet held in March of 1998. This acknowledged that the new program was important to the community and supported by the City of San Antonio.

Various urban wildlife biologists had a great deal to do with spreading the Master Naturalist program throughout Texas. In 1997, at quarterly staff meetings held by the Urban Wildlife Program, updates about the newly formed program in San Antonio created a great deal of interest from other urban biologists due

to the need for volunteers in their own areas. Our Wildlife Diversity Program supervisors, John Herron and Pat Morton, also saw the value of this new program and recognized how quickly other cities were adopting it.

As a result, the Texas Master Naturalist (TMN) program began as a statewide initiative in 1998, jointly sponsored by TPWD and Texas Cooperative Extension Service – now known as Texas A&M AgriLife Extension Service. Since Texas Cooperative Extension Service already managed the Master Gardener program at a statewide level, TPWD decided they would be a perfect partner for the new program. Neal Wilkins, Extension Wildlife Specialist, assisted John Herron with this statewide partnership and they both helped to form the TMN Statewide Steering Committee that same year to oversee operating, curriculum guidelines, and marketing. The steering committee consisted of a variety of TPWD and Extension Service staff members and some certified Master Naturalists from around the state. By the end of 1999, the statewide program had hosted their first annual conference which offered training to local coordinators of existing chapters. They also hired a much-needed full-time statewide program coordinator, Michelle Haggerty, and shortly thereafter hired a full-time assistant statewide program coordinator, Mary Pearl Meuth.

Hiring statewide coordinators propelled the program forward. It established a unified effort across the state, ensuring that all volunteers received in-depth training through a standardized curriculum. Each TMN chapter could then customize the

curriculum to add specific information pertaining to their local ecosystems. Volunteers provided a service within their communities while continuing to pursue advanced training in areas of special interest to them. The statewide program continued to be jointly sponsored by TPWD and AgriLife. However, each TMN chapter had a variety of different local sponsors who served as advisors and provided support.

When the program began, the few TMN chapters created their own governing documents. As the program grew, it was evident that there was a need for all TMN chapters to conform to documents generated by the statewide program as a means of ensuring some uniformity. These included *Master Naturalist Bylaws, Chapter Management and Operations Protocols, and a Chapter Operating Handbook.* Collectively, they provided details about an individual chapter's organization, defined the nomination and duties of officers and board members, outlined committee structure, and raised a code of ethics and standards of conduct to ensure unity among chapters and members. These documents helped maintain consistency across Texas.

At the beginning of 1999, local chapters of TMN volunteers were already operating in four of Texas's major urban areas: San Antonio's Alamo Area Chapter (1997), Dallas' North Texas Chapter (1998), Austin's Capital Area Chapter (1998), and Houston's Gulf Coast Chapter (1998). As of 2022, this statewide movement has grown to 48 chapters, all of them following the same mission statement: *To develop a corps of well-informed volunteers to provide*

education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities for the State of Texas.

News of the success of our program in Texas quickly spread to other states, resulting in most states now offering a similar volunteer program. This is truly a national movement. Mexico, Canada, and Australia have also shown interest in Texas's program. As volunteers earn their hours and the TMN program grows, so does the help being provided, to sustain our natural resources! Together, we are changing the world!

As of 2021, there were about 6,000 active TMNs and 15,000 to date have been trained. These volunteers have contributed more than 5.9 million hours of volunteer labor with an estimated value of $131.53 million. They have obtained 877,664 hours of advanced training, reached more than 6.63 million people with their activities, impacted more than 229,100 acres of Texas land, and developed or maintained over 2,234 miles of trail. Amazing!

As we celebrate the 25th Anniversary of the Alamo Area Chapter of Texas Master Naturalists, I am in awe of how it all came to be. Meeting local partners, brainstorming ideas of how to make a difference in our community, and the willingness of so many to join forces to solve that need—this is what made the TMN program a reality. Countless people have made it possible, and they continue to make it a very important program in our state and nation. This includes our troops of volunteers! They bring awareness and appreciation of natural resources to

our communities and are a critical asset to the environment in the United States!

Look how far we have come! Truly amazing!

Class One of the Alamo Area Master Naturalists
(photo courtesy of the Alamo Area Chapter)

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In the following words, recorded in late 2021 and early 2022, four members of Alamo Area Chapter's Class One recall the challenges and excitement surrounding the novel idea of Master Naturalists.

"I was walking through the exhibits at the San Antonio Rodeo when I found a table where you could sign up for a new program sponsored by Natural Initiatives. I was fascinated with the chance to get outdoors more often, so I filled out the application.

"That first class took place in a garage on the grounds of Friedrich Wilderness Park. I remember that we reminded each other, 'Don't lean against the door.' Every night we got curriculum that was still warm from the copier.

"Finding ways to volunteer after graduation was hard; there just weren't that many opportunities until the program caught on. We first fixed the gate at

Friedrich, cut back some trees from around a building and culled a few junipers from the park. Getting 40 hours was tough, but I did it. I was the first certified Master Naturalist.

"We started monthly meetings, elected officers, and eventually I used some of my expertise as a lawyer to get us incorporated as a 501(c)(3) nonprofit organization. I always tried to encourage people that they knew more than they thought they did; our training had truly equipped them.

"In that first year we also started our newsletter. It was popular, but all of them were sent by mail. Only one member had an email address. By our 10th anniversary *everyone* did. Now, when I'm at a TMN state meeting, I see people using their phones to check the temperature in their backyards. So many changes!

"I'm hoping that we will grow in our diversity in the years to come, maybe even having chapters in other parts of San Antonio that are underrepresented in our ranks." - **Anton Paul Hajek, first chapter President of the Alamo Area Chapter**

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"I think I was born a naturalist, because I can remember even at seven years old paying attention to a little bell-shaped flower. As I looked closer, I could see a tiny seed inside it. This was the mid-1930s, but already I was developing my lifelong love for wildflowers.

"Twenty years later, in the mid-1950s, my husband and I bought our property here in Oakland Estates just northwest of San Antonio. I began to catalogue the wildflowers on our land. I was in my element, you

might say, and my interest in botany grew. I wanted to make 'botanese' my second language. My husband was a nature photographer, so we enjoyed sharing our love of nature.

"When Friedrich Wilderness Park first opened to the public in the early 80s, I started going there and enjoying its beauty. I thought, *I'm getting a chance to relive my childhood!* Eventually, I became one of the guides at the park and it opened me up to so much new learning and growth.

"I decided that if I wanted more credibility with my guided walks that covered native plants, the Master Naturalist training was a perfect fit. I helped that first class develop its presentation on botany. I was also involved with the Alamo Area Chapter River Walk Demonstration Garden in downtown, helping Class 2 with its major project. We gave a program in Leon Valley that highlighted wildflowers. One year, when there were few wildflowers, we featured lichen and ball moss. It was a hit!

"Today, my home doesn't feel as rural as when we originally began building our home. There has been *so much* development. But still, I am surrounded by nature and I continue to enjoy my instruction as a Master Naturalist.

"I'm so glad that our chapter's classes have grown to include such a wide variety of people. There are so many reasons to get out there, explore, discover, and enjoy these gifts!" – **Lottie Millsaps**

Lottie Millsaps and
Alberto Del Rio from Class #1
(photo courtesy of the Alamo Area Chapter)

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Thea Platz served as President of the Alamo Area Chapter for five terms. She was the first TMN in the state to reach 5,000 volunteer hours. Her involvement would lead her to be an advocate for the natural world on many levels. At the time of this writing, she is Outdoor Education Director of the

Northeast ISD in San Antonio and a regional leader for the Texas Children in Nature Network. She sits on the Urban Outreach Advisory Committee for TPWD and the Texas Wildlife Advisory Board. She is also President of the Friends of Guadalupe River State Park/Honey Creek State Natural Area.

> "With that first class and ever since, I think we have attracted people who are looking beyond the normal routines of their work and want to make a difference in a new way. One man came to me after the training and said, 'I found out what I really want to be.' Another woman said, 'It helped me find my passion and focus.' It provides self-fulfillment, but also opens doors to new careers for many people.
>
> "We really had no structure at the start. We did have the requirement to give back hours, but people could pick and choose their own activities without any formal approval. When Anton got his 40 hours, we made a huge deal with a medallion. He then became our informal president to help us move forward and become more self-sustaining.
>
> "I'm a very administrative-minded person so I initiated work on creating the mission statement and committee descriptions, then convened a group to work with me to write the Bylaws, Policies and Procedures. We then fed all that organizational material to the TMN state office when we came under their umbrella.
>
> "I also knew that we had an identity problem. When we used the term Master Naturalist, some people wondered if that was a 'nudist thing,' so I initiated the idea of our annual galas. This helped us brand our

name. It clarified to the public who we were and helped professionals who were looking for volunteers.

"Within the timeline of that first class, there was already an interest in seeing this great idea spread. Susan Battarbee was relocating to the Dallas area, so she went back and helped replicate it in her area. Then, once the state office got involved, there was a momentum we never expected. Remember, this was happening pre-computer. It was word of mouth and print media!

"When something arrives, and its time has come, it is exciting to be a part of it. Natural resource education and resources are *so* important, so universal to the lives of every single person. We are *all* part of this." - **Thea Platz**

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The Alamo Area Chapter designated May 14, 2010, as "Bill Woller Day," a chance to honor one of its pioneer members. Bill's family has deep roots in the San Antonio area, including a ranch in what is now Shavano Park. A pharmacist by profession, Bill applied his scientific curiosity to everything he could learn, causing some of his fellow MNs to dub him a "naturalist's naturalist." Bill covered many topics in the sessions he taught to children at parks, but especially loved highlighting the lost arts of yesteryear such as grinding corn, the workings of windmills, skinning animals, and the difference between horns and antlers.

"Most of us in that first class didn't know each other, but gradually, based on our personalities and attraction to certain subjects, we found commonalities and slowly developed friendships. Some of these connections are still strong.

“The biggest difference in the group was between those raised in the city and those of us who grew up in the country. I remember a group discussion about becoming ‘generalists,’ and I took the opportunity to share information from my background that others were unaware of.

“For instance, we talked about the overpopulation of white-tailed deer, and I shared with them how a government program inadvertently contributed to the problem. Many Texas ranchers found that screwworm flies were attacking the umbilical cords of their calves, often killing them. As a remedy, the government dropped containers of sterile male screwworm flies over ranches that were hardest hit. The sterile males would mate with females that usually breed only once, and this would result in no offspring. We essentially eradicated the problem among Texas cattle. It certainly helped the ranchers save their calves, but it also rescued the fawns of white-tailed deer plagued by the same problem.

“I remember another session on herps. I tried to help the class see the perspective of local farmers and ranchers, especially in raising chickens. Historically, most of them received their chicks in large boxes through the US mail, and they needed to protect them from predators. This included bull snakes and rat snakes. We sometimes used glass eggs, placing them where our hens normally laid. The glass egg would then kill the snake. My purpose wasn’t to create conflict or denigrate any species, but just to help balance their perspectives by including the needs of ranchers and farmers.

"Overall, I enjoyed learning so many different things with the others, even with all those scientific words you could barely pronounce. I am grateful that I have been able to give back through volunteer service these past 25 years." - **Bill Woller**

Historical photo of Bill Woller teaching a class to children and their parents
(photo courtesy of Bill Woller)

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1. Adams, Clark E., and Kieran J. Lindsey. 2015. "Perspective Essay 2.1: The Texas Master Naturalist Program." *Urban Wildlife Management*. 3rd ed. Boca Raton, FL: CRC Taylor and Francis Pres.

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Alamo Area Master Naturalist Class One

Carole A. Abitz
Charles M. Bartlett
Judy D. Buck
Sherry M. Cardenas
Holly D.M. Carp
Catherine L. Crawford
Albert Del Rio
Maria G. Elizalde
Bebe Fenstermaker
Mary R. Fenstermaker
Anton Paul Hajek III
William C. Hendrick
Patrick J. Horn
Michael L. Hymel
Steven P. Knight
Louise Lowes
Fred M. Loxson
Paul B. Martin
Jane F. Nelka
Kelly Ann Robinson Morales
Patti A. Christensen-Kruse
Lottie E. Millsaps
Linda Peacerider
Thea Platz
Pat Seawell
William H. Woller
Mikal V. Young

Officers of the Alamo Area Chapter

1997

President: Anton Paul Hajek III
Vice-President: Thea Platz
Secretary: Kelly Ann Martinez
Treasurer: Louise Lowes

1998-1999

President: Thea Platz
Vice-President (Development): Terry Urbanczyk
Vice-President (Programs): Fred Loxson
Secretary: Silvie Rodgers
Treasurer: Martha Williams

2000

President: Thea Platz
Vice-President: Bruce Bennett
Secretary: Anton Hajek
Treasurer: Martha Williams

2001

President: Sherry Hess
Vice-President: Kelly Heath
Secretary: Lydia Frank
Treasurer: Roy Forsstrom

2002

President: Thea Platz
Vice-President: Les Yarbrough
Secretary: Nicole Colangelo-Lessin
Treasurer: Roy Forsstrom

2003

President: Thea Platz
Vice-President: Les Yarbrough
Secretary: vacant
Treasurer: Anton Hajek

2004

President: Thea Platz
Vice-President: Les Yarbrough
Secretary: J.W. Pieper
Treasurer: Anton Hajek

2005

President: Holly Camero
Vice-President: J.W. Pieper
Secretary: Anton Hajek
Treasurer: Cindy Sims

2006

President: Holly Camero
Vice-President: J. W. Pieper
Secretary: Anton Hajek
Treasurer: Cindy Sims

2007

President: J.W. Pieper
Vice-President: Thea Platz
Secretary: Josie Gonzales
Treasurer: Cindy Sims

2008

President: J.W. Pieper
Vice-President: Thea Platz
Secretary: Susan Blaker
Treasurer: Prem Nored

2009

President: Anton Hajek
Vice-President: Holly Camero
Secretary: Jamie Daily
Treasurer: Prem Nored

2010

President: Liz Robbins
Vice-President: Linda Gindler
Secretary: Jamie Daily
Treasurer: Pete Cowger

2011

President: Liz Robbins
Vice-President: Linda Gindler
Secretary: Barbara Harder
Treasurer: Jamie Daily

2012

President: Liz Robbins
Vice-President: Linda Gindler
Secretary: Barbara Harder
Treasurer: Nancy Thoss

2013

President: Liz Robbins
Vice-President: Aubrey George
Secretary: Barbara Harder
Treasurer: Nancy Thoss

2014

President: Liz Robbins
Vice-President: Aubrey George
Secretary: Camille Gong
Treasurer: Nancy Thoss

2015

President: Liz Robbins
Vice-President: Aubrey George
Secretary: Camille Gong
Treasurer: Nancy Thoss

2016

President: Matt Carley
Vice-President: Aubrey George
Secretary: Ron Tullius
Treasurer: Nancy Thoss

2017

President: Martha Cray
Vice-President: Aubrey George
Secretary: Ron Tullius, then Stan Drezek
Treasurer: Nancy Thoss

2018

President: Martha Cray
Vice-President: Donald Ewers
Secretary: Stan Drezek
Treasurer: Jeanette Geiman

2019

President: Martha Cray
Vice-President: Donald Ewers, then Joedy Yglesias
Secretary: Stan Drezek
Treasurer: Jeanette Geiman

2020

President: Martha Cray
Vice-President: Joedy Yglesias
Secretary: Wanda Huffins
Treasurer: Jeanette Geiman

2021

President: Gary Poole
Vice-President: Peter Joseph Hernandez
Secretary: Wanda Huffins
Treasurer: Jeanette Geiman

2022

President: Emily Hawthorn
Vice-President: Peter Joseph Hernandez
Secretary: Mary Spaid
Treasurer: Jeanette Geiman

Chapter Two:
Go Native!

We have allowed alien plants to replace natives all over the country. Our native animals and plants cannot adapt to this gross and completely unnatural manipulation of their environment in time to negate the consequences. Their only hope for a sustainable future is for us to intervene to right the wrongs that we have perpetrated. - Doug Tallamy

If you want to incite the passion of TMNs, bring up the topic of native plants. It will certainly kindle a flame!

We will point out the suburban sprawl in so many regions of our country—neatly designed neighborhoods that feature the monoculture of lawns. These are plant deserts, we explain, that suck up inordinate amounts of water, require toxic fertilizers, and increase our carbon footprints through gasoline mowers.

We shake our heads as we describe landowners who clear their properties of native vegetation, perhaps leaving a few picturesque oak trees. Ironically, some of these very landowners seek advice on how to bring more native species to their land.

We lament the decline of pollinators across our country and state, insects who require native plants for food, reproduction, and shelter.

We list the invasive species that have nefariously threaded their ways into our natural habitats, alien plants introduced from far flung continents that too often supplant natives in the competition for soil and nutrients.

In short, there are a host of reasons to become passionate about the topic of native plants.

And the stakes are high. As well-known conservationist Doug Tallamy said, “If we humans are capable of turning hundreds of millions of acres of rainforest into depleted grasslands, and extirpating millions of buffalo from the plains and billions of passenger pigeons from the skies and cod from the North Atlantic, we are also capable of returning natives to our gardens.”[1] One of Tallamy’s most innovative efforts has been the promotion of a Homegrown National Park, a collective effort of individual property owners to cultivate native plants and remove invasives. These landowners then register their plot on a national network, linking them all together. It may be the largest cooperative conservation project ever conceived or attempted.

TMN chapters around the state, often in tandem with local chapters of the Native Plant Society of Texas are tireless advocates for planting native. We show how these low maintenance, beautiful species conserve water and provide refuge for wildlife. We have done this in two primary ways: wildscape/pollinator gardens, and the aggressive removal of invasive species**.** Here are some examples of chapters initiatives.

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One of the signature projects of the **Alamo Area Chapter** is a Wildscape Demonstration Garden located at Phil Hardberger Park on San Antonio’s northeast side. This wasn’t the original location of the garden. TMN Patsy Kuentz, involved with the project since its inception, shares the timeline of its development.

> The history of our Wildscape Garden began in 1997 when the Alamo Area Chapter’s Class 2 took on a class project to develop a Wildscape Demonstration

Garden. It was situated along the River Walk on the west bank of the San Antonio River, just north of Cesar Chavez Boulevard. Judit Green, Urban Ecologist with Texas Parks and Wildlife, was the garden's sponsor. The garden flourished and was visited by wildlife of many varieties. It also became quite a destination for people.

In mid-2017, the owner of the property—the San Antonio River Authority—voted to sell the land to a neighboring non-profit organization. With that sale, the River Authority supplied funding to our chapter to re-establish a garden elsewhere.

Since the purpose of the garden is to highlight local plants beneficial to native wildlife, we created a set of criteria for selecting a new location that reflected that purpose. It included a location that is free and open to the public; has high visibility and visitation; has ample parking; and has sun and shade to highlight the different light requirements for the plants. After a search of several months, we decided to locate it at the relatively new Phil Hardberger Park in north central San Antonio on a plot near a restored savanna.

We then selected a landscaping firm for the design, hardscaping, and some tree and perennial installation. After we received sign-off on the design by our chapter, San Antonio Parks and Recreation Department, Phil Hardberger Park management, and the Phil Hardberger Park Conservancy, construction began in August 2018. The contractor turned the garden over to us at the end of November that same year.

The new Wildscape Demonstration Garden has become a popular attraction at Phil Hardberger Park, with children's programs in place as well as wildscaping information in the nearby kiosk. Many visitors come just to sit on our benches, enjoying nature and renewing their spirits.

***

Naturalist E.O. Wilson, who died in 2021, once said, *"On a global basis…the two great destroyers of biodiversity are first, habitat destruction and, second, invasion by exotic species."* Driven by this realization, several individuals who are passionate about removing invasive plant species formed a team of dedicated volunteers. These individuals included members of Alamo Area Chapter.

The group originally formed in 2010 as Balcones Invaders, a satellite of the Invaders of Texas citizen science program. However, while many statewide chapters are concerned primarily with identification, the Salsa Squad focuses on eradication and restoration. They have trained over 100 citizen scientists in the basics of invasive removal, and together have removed more than 200,000 plants such as ligustrum, nandina, chinaberry, and arundo. They have worked in natural areas managed by the City of San Antonio, TPWD, and the National Park Service.

The group uses various tools in their work, including root pullers, loppers, hand saws, reciprocating saws, and girdling tools. Eradication techniques include cut-stem, pulling, girdling, basal bark spray, and foliar spray. They have also branched out into restoration, including an area of prairie land near San Antonio's Mission San Juan. After clearing some mesquite and huisache trees, they planted native seeds

purchased through funds donated by the Alamo Area Chapter, the San Antonio Chapter of the Native Plant Society of Texas, San Antonio Audubon Society, Bexar Audubon Society, and generous individual donors.

You might be wondering how they came up with the name Salsa Squad. TMN Pat McGuire, one of the core members, tells the story with a chuckle.

“One day the group was working on a riverbank and noticed how many chile pequin plants were growing around them. Someone said, ‘There’s enough here to make salsa for the whole squad.’ After that, the name stuck.”

“Camaraderie is so important to the passion and longevity of our team,” says TMN Cheryl Hamilton, one of the group’s founding members. “It binds us together and increases the passion for what we do.”

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Repurposing public buildings and land areas is a refreshing trend around the world. Examples abound: old churches morphed into performance venues, shopping malls transformed into college campuses, grain silos now offering space for rock climbers, abandoned breweries converted to posh hotels.

And, in the case of a project championed by the **Rio Grande Valley Chapter**, a landfill that became an oasis of native plants.

It all started in 1970 when the city of Harlingen, Texas, closed Arroyo Dump and capped it with clay, dubbing it Ramsey Park. Dirt roads allowed public access, but the area fell into deep neglect. People dumped garbage and left detritus from their parties. The few birders who ventured there were hindered by a lack of trails. The plants that grew in the

hard-packed soil were a mix of invasives and natives, and there was no comprehensive plan for development.

By the mid-1990s, a civic leader named James Matz got involved with Ramsey Park. He worked with other groups to develop a caliche road around the park, install new sources of water, and plant a few native garden spots throughout the park's 54 acres. Building on those beginnings, the newly formed Master Naturalist chapter began volunteering at Ramsey Park in 2002, and its involvement since then is nothing less than marvelous. The group has established over two dozen sites known as the Ebony Loop Specialty Gardens. Each garden features native plants of the Rio Grande Valley and northern Mexico. Here are a few examples.

- **The Betty McEnery Garden**, a birding location in honor of an avid birder and Audubon member.
- **Izzy Garden**, a butterfly patch originally developed in partnership with Israel Ramirez for his Eagle Scout project.
- **The Sensory Garden**, also developed with Eagle Scouts, featuring native plants known for attracting pollinators with their sweet fragrance.
- **Hummingbird Trail**, championed by TMN Robert Archer, that includes a host of feeders and a small pond.
- **The Eatin' Garden** highlighting native plants that produce edible fruits for humans, birds, and other animals that pass through the region.

Rio Grande Valley Chapter has also hewn new trails, constructed a bird blind, and developed a comprehensive list of the native plants that are allowed in the park. Today, the Hugh Ramsey Nature Park and its Ebony Loop Specialty Gardens stand as a testament to how a dedicated group of

volunteers can help transform the environment for better ecology and public education.

Robert Gaitan, chapter president for 2022, says, "With 95 to 97 percent of the native habitat of the Rio Grande Valley replaced with farms, houses, parking lots, and businesses, Hugh Ramsey Nature Park, once the city dump, serves as a great example of what Texas Master Naturalists can do to restore and preserve these nature oases for our native plants, our native animals, and ourselves."

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The **Coastal Prairie Chapter** has also found great purpose in transforming a public park. In 1993, the city of Rosenberg, Texas, acquired a section of land that for thousands of years had been a coastal prairie, but later was used for farming that altered its ecology and depleted its soil. In 1994, an Outdoor Recreation Grant from TPWD provided funds to establish some infrastructure, including a small lake, but for 15 subsequent years the 164-acre park languished in neglect.

Enter the Coastal Prairie Chapter. In 2009, they approached the city with the idea of transforming sections of the park into a nature and wetlands preserve called Seabourne Creek Nature Park**.** Since then, thanks to a generous city grant, chapter volunteers have worked to convert the area into a productive habitat for native Texas flora and fauna. It has become a flourishing wildlife environment that allows park visitors to immerse themselves in nature.

Some highlights of the chapter's labor are: creating wetland areas from scratch, restoring prairie land using thousands of plants grown onsite; developing a butterfly

garden, an arboretum of native trees, a bird sanctuary, and a prairie demonstration garden that inspire others to change their gardening habits.

To introduce visitors to the richness of the park, the chapter offers “nature cart” tours on weekends. Curtailed during the pandemic, these tours will resume in 2022, sharing the beauty of this place with all who are interested.

2021 Chapter President Bert Stipelcovich says, “Seabourne represents our chapter’s signature project. It offers many opportunities for our members to provide education, outreach, and service. We also have many other projects and partnerships across Fort Bend, Waller, and Wharton Counties. In addition, we are honored to be the first and only chapter thus far to receive the Texas Master Naturalist Exemplary Service Award. This award represents the highest level of service to the Texas Master Naturalist organization.”

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The **South Texas Border Chapter** takes pleasure in knowing that one of their projects will bring joy to a special population of children.

In 2016, the Vannie E. Cook Jr. Center in McAllen, Texas, approached the chapter about helping them renew their atriums—outdoor spaces clearly visible to patients, families, and staff. The facility serves children of South Texas stricken with cancer and charges no fees. Because of this, they lacked the necessary funds to revamp landscaping that had fallen into disarray over the years.

The chapter accepted the challenge. There was only a layer of plastic and a few bedraggled plants in each atrium, so it meant starting from scratch. Over the next five years, the chapter worked to rehabilitate these areas, joined by various

partners from the community. In addition to native plants that attract pollinators, they installed a rock water feature, multiple hummingbird feeders, picnic tables, and a path that allows people to take a nature break. One of these oases is outside a room where children receive lengthy infusions to combat their cancer. They can gaze upon it to calm their spirits.

When the chapter completed the final phase in 2021, they held a dedication ceremony that included a former and current mayor of McAllen, city commissioners, board members, and a host of volunteers, including the Project Chair, Becky Jones.

Laura Martinez Ilgun, Executive Director of the Vannie E. Cook Jr. Cancer Foundation, is deeply appreciative of the work that has been done.

“I’ve been with Vannie E. Cook for over 20 years,” she says, “and I’ve always wanted to see those areas revamped. But since we operate in a rural area and provide free care, our funds are limited. The Master Naturalists were a perfect fit. Now these atriums are not only a balm for the patients, but also for the staff who need a break from their stressful duties. It has really enhanced the environment of our clinic.

“As kids receive their treatment, they can view native plants, butterflies, a huge stone fountain, and hummingbirds. It’s a way for them to get hold of some serenity while going through an extremely difficult trial.”

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The **Cross Timbers Chapter** of Tarrant and Parker Counties includes an increasingly urbanized stretch through Fort Worth and Arlington. Like so many places in Texas, these 1,812 square miles are in dire need of pollinators for commercial fields, public spaces, and residential vegetable

gardens. The chapter rose to the challenge by renovating and establishing ten pollinator gardens that span the breadth of their region. Most of these projects have been in response to requests, bearing witness to the visibility of their chapter. Each garden has its own history, but most locations were not originally aimed at pollinators. Maintained by other organizations, some had been barren for years but are now revitalized. The first garden started in 1998 and the most recent one in 2020. Here is a list:

- Lake Mineral Wells State Park Pollinator Garden
- White Settlement Monarch Waystation
- Southwest Regional Library Pollinator Garden
- Southwest Sub Courthouse Pollinator Garden
- Molly Hollar Wildscape Pollinator Garden
- OS Gray Natural Area Pollinator Garden
- Fielder House Butterfly Garden
- Knapp Heritage Park Garden
- Randol Mill Park Pollinator Garden
- River Legacy Park Butterfly Garden

Collectively known as *Pollinator Gardens a Cross the Miles*, these plots support the entire life cycle of pollinators through the best practices of native gardening. This means using diverse native plants; collecting seed heads for later planting; and leaving decayed wood, leaves, grasses and bare soil for the nests of over-wintering species. The Cross Timbers Chapter has done everything possible to provide food and shelter, ensuring that these important animals will stay, grow and reproduce.

Just as impressive as the geographical breadth of these projects are the many partnerships that helped make them a reality. These include TPWD, the City of White Settlement, Fort Worth Public Libraries, the Fort Worth

Audubon Society, Tarrant County, the Tarrant County Master Gardener Association, the City of Arlington and its Parks and Recreation Department, the Arlington Historical Society, Arlington Master Composter, Texas A&M AgriLife Extension, and the North Central Chapter of the Native Plant Society of Texas.

From 2016 through 2021, the chapter had logged over 35,000 volunteer hours at these gardens.
The eight years before that were filled with thousands of additional hours and dedication!

The fruit of the Cross Timber Chapter's efforts is evident in many ways. The gardens have seen a rise in both the numbers and varieties of pollinators. There is increased community involvement, including more visitors, and a deeper appreciation for the local use of native plants. The chapter supports this interest through educational programs and periodic plant sales.

As Chapter President Sharon Hamilton, says "If you want to know the Cross Timbers Chapter, you will see us in the gardens, preserving and restoring native plants in public spaces. Not only do we support essential pollinators throughout our area, but we strive to demonstrate to the public that each of us can make a difference by supporting biodiversity in urban and suburban ecosystems, and by planting and maintaining natives in our gardens."

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Another prime example of TMNs partnering with their community to enhance public land is the Acton Nature Center in Granbury, Texas. For 17 years, this has been a standout project of the **Rio Brazos Chapter**.

Following WWII, this 74-acre tract of rich prairie was a site for aviation equipment that helped pilots determine their location. When it was decommissioned, the federal government donated it to Hood County with the stipulation that it become a public park.

In 2005, the Rio Brazos Chapter adopted Acton Nature Center as its major focus. Since then they have partnered with the Hood County Development District 1 and the Friends group (all Board members are chapter members) to realize the nature center's mission statement…*to promote a recreational and educational venue for nature enthusiasts of all ages.*

Acton Nature Center officially opened on October 6, 2007 with great fanfare and celebration. The Rio Brazos Chapter has worked hard to restore the native prairie and develop the property in multiple ways, including a trail system. Features include:

- The handicap accessible Crockett Butterfly Trail, featuring the Elizabeth Crockett Memorial Butterfly and Hummingbird Garden, picnic area, restrooms, a working windmill, and water collection ponds. This is a certified Monarch Waystation.
- The Jim Bowie Bike Trail, which is marked with numbered native stones to aid in orienteering.
- The Travis and Austin Hiking Trails with a wildlife viewing area built by Eagle Scouts and displaying educational signage throughout.
- An Education Center for environmental education and center events.
- An air-conditioned Bird Blind with water feature, feeders, and small classroom.

Getting up close and personal with a monarch butterfly at Acton Nature Center
(photo courtesy of the Rio Brazos Chapter)

Acton Nature Center is a thriving nexus for community involvement on many levels. Both children and adults attend educational programs conducted by chapter members onsite. These include major public events such as monthly bird walks, quarterly lecture series, the Great Backyard Bird Count, Feather Fest, Star Parties, Monarchs, Discover Earth Science, Reptile Days, and Mothing. Public school and homeschool educational programs are offered throughout the year. It is the location for surveys of plants, bees, birds, and reptiles and supports the Lights Out Texas program. This is truly a place for multiple generations of nature lovers!

David Moore and his wife, Wendy, are TMNs with Rio Brazos Chapter who both have exceeded 2,500 hours of volunteer time. They are also members of the Board of Directors of the Friends of Acton Nature Center.

"Our chapter," says David, "was afforded an incredible opportunity to lead the stewardship of this beautiful property. The Hood County Development District has entrusted us with the funds and freedom to protect, restore, and preserve this treasure."

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The concept for Habitat for Monarchs started in Sherman, Texas, in 2018, when members of the **Bluestem Chapter** gave a workshop on monarch waystations. As the class concluded, they asked participants to write down how these oases might extend into other places. A staff member of Grayson County Habitat for Humanity was present, and she had a novel idea. Why not partner with new homeowners to create these pollinator gardens right alongside the building of their houses?

Habitat for Monarchs is a partnership between Bluestem Chapter, Habitat for Humanity, and the local Master Gardener chapter. TMN Linn Cates has been involved from the beginning, and she is passionate about the project.

"I think the words *habitat* and *humanity* are so powerful," she says. "They speak of providing respectful places in the community for people to live. Why not do the same for other species? If we can offer affordable housing for humanity, why not reach further into the natural world?"

That is exactly what this collaboration is all about, and it couldn't come at a better time. Grayson County is in the middle of the Monarch Flyway that extends from the eastern and midwestern US through Texas and on to Mexico. However, continued development in this growing county has reduced the habitat monarchs use for food and reproduction. Waystations are critical. According to pollinator expert Doug

Tallamy, even small suburban gardens can have significant impacts on monarch populations if they contain the right mix of native plants.

So far, Habitat for Monarchs has helped five new homeowners establish their plots. More houses are slated for 2022 and beyond. New homeowners not only contribute sweat equity in establishing their garden, they also commit to Garden Buddies, a year's worth of follow-up and education that includes a course through the local chapter of the Native Plant Society of Texas.

"Community building is so much a part of this," says Cates. "We get a lot of one-on-one interaction between people of diverse ages and racial backgrounds. This helps develop a shared sense of environmental awareness.

"I believe our project has great implications, and we hope it catches on not only here in Texas but throughout the US and beyond. Habitat is for *all* of life. We *all* share this responsibility for building the ecosystems around us. The monarch butterfly has become a popular symbol of an endangered species, but what about other threatened or endangered species for whom the creation of habitat is essential?

"This is the power behind what we are trying to do."

Chapter Three:
Our Feathered Friends

Everyone likes birds. What wild creature is more accessible to our eyes and ears, as close to us and everyone in the world, as universal as a bird? - David Attenborough

I never for a day gave up listening to the songs of our birds, or watching their peculiar habits, or delineating them in the best way I could. - John James Audubon

When TMNs share their personal histories, you clearly see how key experiences and people shaped their love for nature. These influences continue to sustain their passion and fuel their volunteerism. In turn, we have the same desire for others. We long for ways to usher them into a new appreciation of our environment and a concomitant desire to protect it in perpetuity.

Transformative gateways to the natural world vary from person to person. For some, it may be a visit to a stunning locale that imprints the majesty surrounding us. For others, it may be a class on the instincts and habits of a species, awakening them to our planet's unique ecosystems. For others, it might simply be watching wildlife in their backyards.

Birding has become an increasingly popular portal to the environment. Millions of people are birdwatchers, and countless clubs and groups exist in different countries. Worldwide, birding is a multi-million-dollar industry and one of the strongest magnets for ecotourism.

Here in North America, birding is one of the fastest growing hobbies. The US Fish and Wildlife Service compiles a *National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* every five years. Their 2016 report estimated that

there were 45.1 million birdwatchers (16 years or older) in the United States, and another 57 million who participate in feeding wild birds in their gardens. Birding is catching on across all generations.[1]

Ecologically speaking, this couldn't come at a better time in history. Birds all over the world, including North America, are under unprecedented stress. Many species are in decline and on the threatened list. In its work to raise consciousness about the plight of birds, the Audubon Society cites global warming, development and drilling, and outdated conservation regulations as the most pressing issues.

In late 2019, Audubon released its climate study called *Survival by Degrees: 389 Bird Species on the Brink*.[2] Scientists used 140 million observations recorded by birders and scientists to describe where 604 North American bird species live today. They then used current models to project how the range of each of these species will shift as climate change and other human impact advances across the continent. They found clear and alarming results. Birds will have to relocate to find favorable homes, and some of them may not survive.

There is also some good news. The same science shows that if we act now we can improve the chances for many species at risk from this catastrophic future.

TMN chapters are striving to raise knowledge about birds and the need to protect their habitats. This section of the book details some of their efforts.

We begin with an overview of birding in the Alamo Area Chapter of the Texas Master Naturalist Program by one of our chapter's most prominent experts, Patsy Inglet. Along with her husband, Tom, Patsy has led countless birding walks, especially at the Mitchell Lake Audubon Center. She is a past president of the Bexar Audubon Society, remains one of their

Directors at Large, and chairs their Education and Engagement Committee. Patsy's column, called *All Things Birds,* is a beloved regular feature of the Alamo Area Chapter's newsletter.

25 years of birding with the Alamo Area Chapter!

Well, not quite. Tom and I were in Class 8 of the chapter, so we weren't around for the earliest days of its history. Not that we didn't try. We arrived in San Antonio in January 1999 and soon saw that the chapter was going to be part of our "retirement." It offered us a way to give back to the community and to learn about our new home. However, the classes for 1999 were already full, so we had to wait until spring of 2000 to enroll.

When we heard that we had to do 40 hours of volunteer work every year, we weren't sure how to manage that. Then this tall, thin guy named Sumner Dana walked into class and told us that if we came out to Mitchell Lake and helped him band birds, we would get up to 6 hours of volunteering each time. That did it! Little did we know that our lives and our relationship to birds would be changed forever.

Getting up at 0-dark-thirty to go out to Mitchell Lake on the other end of town was rewarded by close contact with wild birds. The first time we laid hands on a small bird tangled in a banding net, we realized (1) it was NOT defenseless (it could and did bite), (2) that it was not being harmed by getting its band and its measurements taken, and (3) we had a lot to learn about our feathered friends. From that day on, we were hooked on birds, and many of our Alamo Area

Chapter volunteer activities have been bird-related ever since.

Of course, there was a lot of on-the-job training along the way. We found that people who loved birds and were concerned with their conservation were helpful to newbies willing to assist with projects. Alongside them, we helped measure bird numbers and assess bird habitats, growing in our appreciation of avian ecological importance.

Birding tasks have changed considerably over the years. Helping with bird counts by carrying a clipboard and writing down the species transitioned into keeping an eBird list and submitting it to the Cornell Lab of Ornithology. Identifying birds using books and recorded calls at home was augmented and made easier using iPods and mobile phone apps. A magical app named Merlin came along to help in 2014 and even added bird song/call ID in 2021. BirdNet took that a step further. iNaturalist helped us monitor, identify, and report bird fatalities due to building strikes. Technology made it easier and easier for any Master Naturalist who had an interest in birds to be an effective Citizen Scientist with just a little training and practice.

Eventually, we graduated from being just students of birds and birding to being teachers. We were now walking in the front of birding groups and fielding questions from all levels of birders. Teaching the bird class and leading the bird field trips for the Alamo Area Chapter since 2010 have been such rewarding experiences. We thank all those who have been through those classes for the work they have done on

behalf of birds and for their excellent questions that taught us so much in return.

Birds don't recognize borders. Caring for nature transcends any one region. As the Master Naturalist program grew beyond San Antonio into Texas and other states, the program also served as a model for similar movements abroad. Former Alamo Area Chapter member and birder Freya McGregor (originally from Australia) helped her parents start the Nature Stewards program in the state of Victoria, Australia, and it is training local nature enthusiasts to Learn, Connect, Act. Freya was also instrumental in helping establish "Birdability" for birders with special needs. The Alamo Area Chapter's Junior Master Naturalist program has just been organized to get the younger set involved in service to the community, which of course includes birds.

At this juncture in 2022, the role of chapter volunteers is becoming even more important for the future of birds. Currently, its members are involved in the National Audubon Climate Watch program, monitoring the Lesser Goldfinch as a target bird indicating what will happen to bird species under different climate scenarios. Volunteers have been monitoring building strikes in San Antonio to help influence local policy under the auspices of the Bird City Texas–San Antonio certification. Master Naturalists work on Christmas Bird Counts, Bluebird Box and Heron Rookery monitoring, and Golden-cheeked Warbler population counts. And volunteers are in a great position to educate the public about the importance of native plants for native birds—crucial in our fast-growing city.

In the last 50 years, North America lost 3 billion individual birds—a 29 percent decline.[3] What MN volunteers do now may well make a big positive difference to birds for the next 25 years. And that's what really counts.

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As an early and shining example of conservation, the annual Audubon Christmas Bird Count (CBC) is legendary. It began in 1900 as an alternative to the Christmas Side Hunt, a competition between hunters to see who could bag the biggest pile of feathered prey. Ornithologist Frank M. Chapman, an early officer in the Audubon society, proposed a different holiday tradition. He called it the Christmas Bird Census, a time when citizens concerned about declining bird populations could chronicle their numbers rather than hunt them. The original locations ranged from Toronto, Ontario to Pacific Grove, California, with most counts in or near the population centers of northeastern North America.

This is how CBC began, and it has grown in both its reach and importance since then. Today, from December 14 through January 5 each year, tens of thousands of volunteers throughout the Americas brave the elements and take part in this effort. The data they collect is vital to Audubon and other organizations that use it to assess the health of bird populations and promote conservation.

In 2018, the **Prairie Oaks Chapter** joined the 122nd Christmas Bird Count, the first ever sanctioned count in Erath County, Texas. Using Audubon's standardized methodology, the chapter's count teams walked and drove approximately 198 miles in an area delineated by a 15-mile diameter circle centered on Stephenville. They added their tallies to 1,957 locations in the US and 628 locations in other nations worldwide, becoming part of over 58,000 observers who

participated in the count! This is truly a stellar example of what citizen scientists can contribute to research, education, and the conservation of natural resources.

The Prairie Oaks Chapter has participated each year since, minus 2020, when they took a pandemic break. In 2021, generous local landowners gave permission to conduct counts on their property. This included lakes, tanks, and ponds, giving the chapter a chance to record more waterfowl and shorebirds than ever before. The 2021 count recorded 78 species and over 2,200 birds. They spotted a pair of caracaras near the northernmost extension of their range, a first sighting in their area. For 2022, the chapter will add a feeder watch at the Bosque River Trail Nature Center, a community natural area that the chapter co-manages, allowing more members to volunteer. They are also considering a nocturnal portion of the count to include owls.

TMNs Dayna and Chris Inbody are the organizers for this event.

“Our chapter has been thrilled to contribute to this citizen science project,” says Dayna. “The wonderful part is that you don't have to be an expert birder to participate. There are many assignments, and it appeals to a variety of members who can help us be creative and make the best use of everyone’s time. Our chapter has fun with it, including several good photographers in our membership. It is a great way for everyone to be together in nature for a good cause!”

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For decades, Texas saw alarming declines in its bobwhite and scaled quail populations. By 2014, following years of drought, their numbers were the lowest on record. The Texas A&M AgriLife Extension Service responded by

initiating a statewide Texas Quail Index aimed at monitoring populations and habitat conditions across the state.

The **Rolling Plains Chapter** participated in this effort from the beginning. Its methodology included setting transects, spring call counts, constructing dummy nests, evaluating habitats, surveying predators, monitoring game cameras, making roadside counts, and measuring rainfall. It was a rigorous, hands-on introduction to the complex activities necessary to get an accurate picture of *all* the conditions affecting a species.

Over two dozen chapter members participated, the entirety of their research conducted on the WT Waggoner Ranch Estate in Vernon, Texas, known as the largest ranch in the nation inside one fence. The experience was so enriching that it prompted the chapter to conduct other counts on white tail deer and horned lizards.

By 2021, the AgriLife study showed a welcome resurgence of quail and bobwhites after an abundance of rain. AgriLife concluded its program at that time, but the chapter plans to continue its work independently, providing valuable information on the quail population.

Rolling Plains Chapter President Laura Gillis says, “Our chapter is pleased to have been a part of such an important study. We also enjoyed observing an abundance of other wildlife on the ranch, and we are honored that the landowner has allowed us to continue our field work. This experience has provided us the ability to develop and maintain other opportunities where we can work with landowners throughout our region.”

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In August 2004, a small group of individuals had a lofty goal—to create a place where people of North Texas could

experience birds of prey and understand their importance to the environment. That dream became the Blackland Prairie Raptor Center in Lucas, Texas, organized as a non-profit that same year. Among the founders were TMNs from the **Blackland Prairie Chapter**, and the raptor center has become a primary focus for its members ever since.

The group began by building cages for 8 non-releasable raptors on a board member's property 70 miles northeast of Dallas. They immediately started educational presentations aimed at schools, festivals, camps, and environmental groups, reaching over 5,000 people their inaugural year. Then, in 2007, the raptor center signed a lease with the US Army Corps of Engineers to use the 66-acre Brockdale Park on Lake Lavon in southeast Collin County. This would give rise to a phenomenal complex. They have added:

- Education mews (enclosures) to house raptor ambassadors.
- A Welcome Center open to the public every first and third Saturday.
- Clinic flight enclosures for small birds (screech owls, kestrels, etc.), medium size birds (barn owls, red-shouldered hawks, etc.), and a 7,600 square-foot flight complex for larger raptors (red-tailed hawks, great horned owls, barred owls, and eagles).
- A clinic with a nursery, radiology center, and everything else necessary to care for injured raptors. Since receiving their first patient in 2015, they have helped rehabilitate and release over 1,700 birds.
- An administrative and education office.
- A comprehensive effort, beginning in 2017, to restore the prairie land surrounding the facility to its native state.

A typical day at Blackland Prairie Raptor Center is multifaceted. It can mean feeding, handling, cleaning cages, the intake of new patients, or picking up injured birds in response to rescue calls. It can mean working on prairie restoration through controlled burns, eradicating invasives, or planting new prairie grasses. It may involve presenting one of the many educational programs for the public, all over North Texas and beyond, reaching over 30,000 people a year.

You will find members from the Blackland Prairie Chapter of the Texas Master Naturalist Program at all these activities. As one of them says, “Take a photo at any event, any time of day, and half the people in the picture will most likely be members from our chapter.”

Blackland Prairie Chapter Members at the raptor center
(photo courtesy of the Blackland Prairie Chapter)

TMN Richard Lefebvre, a long-time chapter member, has been part of nearly every aspect of Blackland Prairie Raptor Center’s growth and development. “When I retired from my career in the computer field,” he says, “I wanted to

do something entirely different. Being a Texas Master Naturalist volunteer at the raptor center has fulfilled that need I have assisted with construction, physical exams and treatments of injured birds, educational programs, and helping the center with its technology needs. But the driving factor in *all* of this has been the satisfaction of doing something vital for our environment."

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The greater prairie chicken, a large bird in the grouse family, once numbered in millions across North America's oak savannas and prairies. The male's signature call during courtship—a booming "woo-woo" emitted from its inflated yellow neck patch—was a common sound to early settlers. The strutting of the males inspired traditional powwow dances by the Blackfoot and Plains Cree Indians. However, by 1930 this beautiful bird was nearly extinct due to hunting pressure and loss of habitat. Its "near-threatened" status is now protected by hunting laws and conservation efforts, but its future is fragile.

A subspecies, the Attwater prairie chicken, fared even worse, and is listed as critically endangered. A hundred years ago, you could see this beautiful bird across the Texas Gulf Coast. On mornings during mating season, you'd hear thousands of males calling out for females, a quintessentially Texan soundscape. However, habitat loss, oil drilling, invasive plant species like the Chinese tallow, and major weather events like hurricanes all contributed to its decline. Once numbering a million, by 2016 there were less than 50 left in the wild.[4] Current natural populations exist only on private lands in Goliad County and on the Attwater Prairie Chicken National Wildlife Refuge.

The Refuge, about 60 miles west of Houston, is dedicated to bringing back this endangered species with a constellation of partners, including the Houston Zoo, Caldwell Zoo, and Fossil Rim Wildlife Center, all of whom raise chicks for release into the wild.

Members of the **Gideon Lincecum Chapter** have volunteered in various capacities at the Refuge. They have planted grasses into low-lying stream banks, constructed pens that hold hatchlings before release, and installed predator guards. They have also maintained a native grass and shrub garden outside the visitor center, where people can view native prairie species that are often hard to identify.

TMN Terry Rooney, Gideon Lincecum's project manager for three years, says, "Every day on the refuge is a good day. It's usually sunny, wind gently blowing the native grasses and birds flying everywhere. It's good for the soul. It's such a beautiful place!"

John Magera with the US Fish and Wildlife Service has worked at the Refuge for 14 years, the last four as Refuge Manager.

"We have a mutually beneficial relationship with the Master Naturalists," he says. "We offer them a meaningful place to do their service hours, and in return they share the message about our work in ways that can *truly* interpret what it means. In a sense, they have become our ambassadors and we are grateful for this connection."

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Many of us enjoy bird blinds as we quiet our breathing, focusing our eyes and ears on fluttering wings, chirps and chitters, the trickling of water features. What species will we see? Some of us have cameras poised to capture the beauty of our feathered friends.

There are over a dozen Texas State Parks with bird blinds, many of them co-created with the help of Texas Master Naturalists. This includes the blind at Palo Duro Canyon State Park.

It began in 2007 when TMN Bernice Blasingame, a founding member and past president of the **Panhandle Chapter**, had an inspiration.

“I worked as the park interpreter at Palo Duro,” she says. “One day I was poking around a dilapidated old amphitheater behind the trading post. It already had a water feature, so I thought it would be a perfect place for a bird blind. I approached the park administration with the idea, and they eventually gave us permission to tear out the old structure and get started.”

Two brothers, both birders and members of the Panhandle Chapter, came up with a plan. The chapter president at the time secured a grant to purchase materials, then had to muster additional volunteers outside their small organization. They solved this problem in two ways. First, a local young man was looking for something to fulfill his Eagle Project. He and others from his troop adopted the blind. Second, the chapter sent out an invitation to other Texas Master Naturalist chapters in northwest Texas, offering free camping amid the beauty of Palo Duro in exchange for a day of labor.

The stage was set. On a series of Saturdays, these combined groups tore out the old wooden seats and other vestiges of the amphitheater. Then they constructed the current blind, a simple structure with three sides, rectangular viewing holes, and benches for sitting. The response for workers exceeded the need, so some were reassigned to build benches along an interpretive trail in the park. For the

final touch, the scout troop cleared a path from the trading post to the blind, another hard day of work.

Since then, the blind has become one of the most popular attractions at the park. It includes an observation book to record sightings, and on its interior wall, area photographers regularly mount 8x10 laminated pictures of birds they have seen. It's a living art space that helps people identify the many beautiful species that inhabit or visit Palo Duro Canyon.

"Since we were the ones who led construction of the blind," says Blasingame, "we are committed to keeping it maintained. Every month we have a raffle at our chapter meeting, and we use those funds to buy sunflower seeds, niger seeds, and suet that the birds love."

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Chapter Four:
Protect, Preserve, Restore

In the covered wagon days, if a baby was born in Texarkana while the family was crossing into the Lone Star State, by the time they reached El Paso, the baby would be in the third grade. - Wallace O. Chariton

There's a vastness here and I believe that the people who are born here breathe that vastness into their soul. They dream big dreams and think big thoughts because there is nothing to hem them in. - Conrad Hilton

Anyone who takes a road trip across Texas will marvel at its vastness. Second only to Alaska in sheer size, its seemingly endless horizons beckon travelers in all directions. If they take time to absorb our state's natural sights and sounds, they will recognize the astounding diversity of its ecoregions. From the fragrant Piney Woods to the salt marshes of the Gulf Coast, to the Great Plains with their waving grasses, to the Trans-Pecos with its desert vistas and crystalline nights, this is a territory that defies simple categories.

Yet the fact remains that over 95 percent of this natural beauty is privately owned. For land conservation, this means that stewardship and protection is in the hands of individual Texans. Private land and private property rights are pillars of what it means to be a Texan, but this is a double-edged sword. While your neighbor has every right to turn their property into a strip mall (we won't get into zoning and city jurisdiction), you have every right to put your property under a conservation easement and protect it from development forever. We're fortunate that there is a deep ethic among most Texans for

taking care of the land. We realize that with great power comes great responsibility.

It is imperative that Master Naturalists find ways to work with landowners (both private and public) to stimulate good stewardship practice. We have done so! Here are some examples of Texas Master Naturalist chapters that have creatively engaged the countless possibilities of managing private and public land in ways that enhance its natural beauty and serve the environment.

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The San Antonio River Authority (River Authority) is a conservation organization created in 1937 by the Texas State Legislature to help with flood control and watershed management in Bexar, Wilson, Karnes, and Goliad counties. The River Authority has *always* valued the contributions of Alamo Area Chapter volunteers for helping to preserve safe, clean, and enjoyable creeks and rivers in the San Antonio River Watershed. With other community partners, they provide educational opportunities to the public and life-giving support to urban plants, insects, birds, and other animals. The Alamo Area Chapter has offered volunteer services to the River Authority since 2014, when the Watershed Wise Warrior volunteer program (now called the River Warrior program) was first launched.

The River Authority supports the Alamo Area Chapter by leading water education field trips for initial training classes. This includes topics like water quality, green infrastructure, watershed responsibilities, gardening for wildlife, native plants, and other topics related to the conservation of freshwater resources and riparian management. The River Authority also provides a diverse

range of volunteer opportunities and trainings throughout the year, including:

- Invasive apple snail removal training
- Texas Stream Team water quality monitoring training and equipment support
- Citizen science apps like iNaturalist and Litterati trainings
- Environmental lab tours
- Ecosystem restoration activities like native plantings and invasive removal
- Riverside cleanups
- Beaver dam building for erosion control
- Campaigns to combat trash pollution

This partnership has grown and evolved over the years into a beautiful, mutually beneficial relationship that makes a significant impact in the San Antonio community. The River Authority looks forward each year to welcoming new Alamo Area Chapter volunteers into their extended volunteer family. The passionate and dedicated late Mr. Donald Ewers held the liaison role for the chapter with the River Authority for many years until, on his passing, it was handed over to chapter member, Peter Hernandez. As of 2022, Texas Master Naturalists Peter Hernandez, Cheryl Wallek, and Christopher Fullerton carry the torch of this powerful partnership of community leaders who want to make a positive difference in San Antonio and surrounding areas.

Minna Paul has been the River Authority's Education and Volunteer Engagement Coordinator II for the past 8 years.

"I have had the privilege," she says, "of working alongside brilliant and dedicated Alamo Area Chapter volunteers/leaders like Donald Ewers, Pamela Ball, Lissa Martinez, Rachel Cywinski, Peter Hernandez, and Cheryl

Wallek. It is an honor to train MNs every year, brainstorming with them to find ways to support their ideas and requests. Their drive and talent warm my soul, leave me awestruck, and have made my job more meaningful and fulfilling. They have helped me grow, and together we have built wonderful programs. TMN is an organization of excellence that offers true service to the community and the world at large. I am grateful for the opportunity to serve them as a liaison with a partner organization."

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On a trip to New Mexico, Ellen Weinacht—a TMN with the **Tierra Grande Chapter—**visited the Bosque del Apache Wildlife Refuge. She witnessed firsthand how the government has partnered with local ranchers to restore seasonal wetlands along the Rio Grande River that had dried up due to dams and irrigation ditches. Today, the refuge hosts tens of thousands of migratory birds, including wintering sandhill cranes.

With property and water rights to a spring in the lower Davis Mountains near Balmorhea, Ellen thought, "I can do that! The rest of my family felt I was crazy, but I was determined."

From that seed of an idea grew the Sandia Springs Wetland Project, founded in 2011. Its mission is to convert a private property to a wetland for desert flora, fauna and migrating waterfowl. Using naturally flowing spring water, these 40 acres are now a critical stopover for migratory birds. It is also a water source for Chihuahuan Desert flora and fauna.

Ellen cites the incalculable help of Dave Hedges, a Master Naturalist and expert on shorebirds who helped her

imagine and design the project. She is also proud of the diverse list of partners, both public and private, who are involved in the project: TPWD, the Borderlands Research Institute, the Nature Conservancy, Rio Grande Joint Venture, the Ed Rachel Foundation, Ducks Unlimited, Texas A&M University-Kingsville, and the Reeves County Water Improvement District 1, Saving Birds Through Habitat. The project has been a certified a Texan by Nature project, by Laura Bush Texan by Nature Foundation.

Ellen is a former president of the Tierra Grande Chapter, which has been deeply involved with Sandia Springs. They have created a bird blind, a bat house, a dragonfly pond, a picnic/meeting area, and a training site used for both research and nature tourism.

Open to visitors 24/7 year-round, the Sandia Springs Wetland Project stands as an example of how concerned citizens from the private and public sectors can partner to restore and protect Texas land and wildlife species.

“We have made every mistake known to humanity as we developed this experiment,” says Weinacht with a chuckle, “but we have come such a long way!”

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Turkey Hollow is a 12-acre section of the Selah, Bamberger Ranch Preserve (Bamberger), situated in the beautiful Texas Hill Country. It is surrounded on three sides by a tributary of Miller Creek, which feeds the Pedernales River. In 2017, it was typical of many Hill Country areas—thick juniper undergrowth and a poor watershed.

Jared Holmes, Director of Education and Zoologist at Bamberger, began work on selectively clearing Turkey Hollow of brush and invasives to enhance native wildlife and habitat

while enabling use of the area for educational classes and primitive camping. It would also include a link between two hiking trails of the Bamberger trail system.

Members of the **Highland Lakes Chapter**, long-time partners of Bamberger, were asked to supply volunteers to assist the effort. Initially, the goal was to remove brush and Ashe juniper that didn't reach the canopy—a massive undertaking! Juniper growth, fallen trees, vines, and the remoteness of the area were just some of the issues. Cutting and removing brush was difficult because the sheer thickness allowed little room for either. Also, greenbrier and Virginia Creeper linked almost all the brush to taller trees.

As work progressed, the trail was lined with cut Ashe juniper trunks and branches. They used the brush to line riparian areas to prevent erosion and provide habitat for wildlife. Ashe juniper was stacked for future use and many of the other tree trunks and limbs were cut for camp firewood or left to rot naturally. Remaining brush was stacked at burn piles and responsibly burned by Bamberger personnel and volunteers. Although a few native trees were planted in clear areas, the area was mostly left alone, allowing it to naturally capture and grow grasses and forbs.

As early as 2018, some of the cleared areas were seeing the growth of little bluestem, side oats grama, and other grasses/forbs. By 2021, the work was complete, and is now used by Bamberger as an educational part of their trail system.

Dr. April Sansom is the Executive Director at Bamberger. "We are fortunate to steward many beautiful and inspirational places throughout our 5,507-acre property," she says. "At the top of the list is Turkey Hollow. It serves as an inviting, peaceful, accessible outdoor classroom for hundreds of central Texas schoolchildren each year. This special spot

exists due to the hard work and dedication of TMN volunteers.

"Stephen and Patty Harrell of the Highland Lakes Chapter spearheaded the efforts to restore Turkey Hollow and maintain the well-designed trails that fit carefully into the landscape. Along with the talented staff of Bamberger Ranch Preserve, they curated the Turkey Hollow area in a manner consistent with our extensive restoration efforts. After completing the hard work, they collaborated with the staff to orchestrate a chili cook-off where everyone enjoyed the camaraderie in the newly restored outdoor classroom!"

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Among Texas Master Naturalists, Jim Stanley is a legend, especially in the Hill Country. His books such as *Hill Country Landowner's Guide* and *A Beginner's Handbook for Rural Texas Landowners: How to Live in the Country Without Spoiling It*, have helped countless private landowners become better stewards of their property.

Stanley grew up in West Texas, then went on to become a Ph.D. chemist, teaching for a while at Louisiana State University before a career with a major chemical company. When he retired to Kerr Country in 2000, he immediately began learning as much as he could about the Hill Country. This included his own research as well as training at Selah, Bamberger Ranch Preserve.

Soon after the **Hill Country Chapter's** formation in 2002, Jim organized an initiative called Land Management Assistance Program (LMAP). It required 36 additional hours of training from experts with TPWD, Natural Resources Conservation Service, and Texas A&M AgriLife Extension

Service. Much of this took place at the Kerr Wildlife Management Area.

"One of the things that quickly became obvious," says Jim, "was that these organizations certainly had a heart for helping landowners, but there were far more requests than they could handle, especially from properties of 30 acres or less. We decided to focus on that latter group."

Since those early years, LMAP has assisted around 500 landowners representing over 45,000 acres. They use a simple but effective process. They first walk the property with the landowner, listening to their concerns and hearing their dreams. They follow this up with a report that identifies both native and invasive species, making recommendations related to grazing, erosion control, and other subjects. They tailor this to the purposes the landowners have in mind.

Billy Guin, who currently oversees LMAP, gives an example of how the program can help transform land management techniques.

"A local church owns 150 acres in Gillespie County which they use for a retreat center. On it, there were several burn piles about 20 feet in diameter. Burning sterilizes the soil and often ruins the area for years. Even when new vegetation returns, it is usually species like cactus or King Ranch bluestem. We recommended that they stop burning and start shredding, adding that mulch to their property to increase nutrients and help with the absorption of rainfall."

Two other Texas chapters have similar programs launched more recently.

The **Hays County Chapter** has what they call Habitat-Enhancing Land Management (HELM) Project. It is overseen by TMN Christine Middleton, who says, "The Texas Hill Country is becoming more and more fragmented. Working

directly with small-acreage landowners, we can have a significant impact!"

Who would start an education program during the COVID pandemic? That's exactly what the Hays County Chapter did. Their first planning meeting was in September 2020 via Zoom. Monthly sessions followed to plan out their program. They did this by pooling their own expertise and learning from experienced employees at TPWD and the Hill Country Alliance.

In the spring of 2021, their team began offering services to the public, primarily focusing on properties from 5 to 30 acres. HELM conducted 21 site visits in 2021; they hope to exceed that number in 2022.

Like the Land Management Assistance Program, the Habitat-Enhancing Land Management has teams of three to four members who walk with landowners on their properties, getting to know them and their vision for their property. Those owners have many practical questions. When should I mow? Should I mow at all? How do I deal with erosion issues? Should I cut back the Ashe juniper or not? Addressing these concerns helps landowners learn how to ask the "right" questions when it comes to conservation. They also get instruction in using iNaturalist as a tool to deepen their knowledge and enjoyment of their unique property.

"It's amazing how much more impactful these discussions of land stewardship are when standing in a place that is near and dear to the owner's heart," says Middleton.

In the **Lindheimer Chapter,** the project is known as the Program to Assist Landowners (PAL). Started in 2017, it follows the same pattern of visitations followed by site assessments. The chapter solicits contacts in many ways, including ads in local newspapers.

Texas Master Naturalist Art Williams has been involved with the PAL project since its inception, and he is hoping it will see renewed interest after a severe dip during the pandemic. Though the landowners they encounter have many concerns, there is one that he hears voiced most often.

"One of the characteristics of the Edwards Plateau is our thin layer of topsoil," he says. "Preventing the erosion of this asset is especially critical to these property owners. A lot of them simply don't know what to do. This gives us a chance to tell them about berms, brush piles, and windrows, helping them direct and slow the water to conserve their property."

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Environmental groups have long alerted us to the damaging tons of human plastic products that end up in our oceans annually, entangling countless marine species. The magnitude of the problem is clearly seen in pictures of the Great Pacific Garbage Patch, a horrific mass now twice the size of Texas.

Faced with such an enormous issue, the **Galveston Bay Area Chapter** decided to act by focusing on monofilament fishing line. Developed for flexibility and shock absorption, this anglers' choice for fishing line is also hard for fish to see. Those very qualities make it a serious threat when discarded into the environment. It is not biodegradable, nor can you recycle it by normal means. Animals become easily entangled in it, and it also ensnares swimmers, divers, and boat propellers.

In 1999, an initiative began in Florida called the Monofilament Recovery and Recycling Program. Then, in 2004—after a school group observed fishing line littering our shorelines—a Texas Sea Grant extension agent and Texas

Master Naturalist chapter advisor for the Cradle of Texas Chapter named John O'Connell helped create the Texas Monofilament Recovery and Recycling Program. By June of 2018, it had positioned 257 recycling tubes at fishing areas across the Lone Star State.

Members of the Galveston Bay Area Chapter became aware that only 14 of these tubes had been officially recorded in the state database for the Galveston County area. While some of the tubes were being managed by local organizations, a lack of local oversight had led to many being abandoned. This is when the Galveston Bay Area Chapter launched what they call *The Great Fishing Line Tube Adventure*.

Project Manager, TMN Rick Becker, remembers when the danger of monofilament line became personal for him.

"I used to lead interpretive walks at Galveston Island State Park. One day we came across a pile of monofilament, maybe 300 yards all wound up. It had entangled such a phenomenal amount of debris that it took four of us to carry it to a park garbage container."

Since 2018, dozens of chapter volunteers have donated thousands of hours to discover, describe, adopt and map over 100 tubes in Galveston County. They have recovered large amounts of line, sending it to the Berkley Conservation Institute which has recycled 9 million miles of line since 1990. Up until the pandemic, the Galveston Bay Area Chapter conducted presentations and educational events at environmental conferences and fishing tournaments. They also worked with the Houston Zoo to prepare for a research project using tubes along Galveston's Texas City Dike, an initiative they hope will resume in 2022. All this work is in partnership with nearly a dozen other private and public organizations—great synergy for a common cause.

“The problem of plastic pollution,” says Becker, “is completely overwhelming for any one individual. Yet many of us want to make a difference. This project allows our members to do something tangible, knowing that this line that is deadly to living organisms is being removed from the environment and recycled responsibly.”

The Great Monofilament Fishing Line Adventure was selected as the 2019 Texas Master Naturalist Project of the Year.

Members of Galveston Bay Area Chapter with new collection tubes ready to deploy
(photo courtesy of the Galveston Bay Area Chapter)

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Located in western Travis County, the Balcones Canyonlands Preserve (BCP) is one of the nation’s largest urban preserves. Unlike Balcones Canyonlands National Wildlife Refuge, a federal property nearby, BCP is a system of 140 individual tracts that cover more than 32,000 acres. Travis County and the City of Austin manage 80 percent of these parcels, with the remaining portion managed by a coalition of public and private partners.

Balcones Canyonlands Preserve was created in 1996 to protect habitat for eight endangered species: two migratory

songbirds—the Golden-Cheeked Warbler and Black-Capped Vireo—and six karst invertebrates found in caves. The preserve is a multi-agency conservation effort that operates with a regional permit issued under the Endangered Species Act by the US Fish and Wildlife Service. The permit requires development of a conservation plan and was recently renewed in January of 2019.

The Hill Country ecosystem has been under tremendous stress due to rapid development; the preserve's goal is to make up for this loss of habitat. The land under its control can never be developed and will continue as a preserve for generations to come. In 2018, the black-capped vireo was removed from the endangered species list, but BCP still provides crucial habitat space for this bird.

For over a decade, both the **Capital Area Master Naturalist Chapter** and the **Balcones Canyonlands Chapter** have been working alongside preserve staff and other volunteers to restore and protect these sites, particularly the Vireo Preserve.

The Balcones Canyonlands Chapter at Concordia University was the first "Collegiate Chapter" in the Texas Master Naturalist Program when it was started in 2013 by Sam Whitehead, Assistant Professor of Environmental Science & Conservation at Concordia University. It is a unique collaboration between community members and students, and students receive academic benefits at Concordia for their membership and participation. Community members also provide the continuity and act as mentors for the college students.

Both these chapters have participated at Balcones Canyonlands Preserve by:

- Helping with reforestation and reintroduction of native plants. Site biologists identified some of these species

by examining historical charts and photographs. Both chapters have assisted in planting hundreds of native trees such as sumac, mimosa borealis, mountain laurel, kidneywood, persimmon, as well as wildflowers and native grasses to improve biodiversity and soil integrity. They are also attempting to reintroduce some rare native plants back into the central Texas ecosystems such as canyon mock orange and big red sage.

- Building berms and bioswales to increase rainwater infiltration, improve soil biology, and aid in erosion control, which is critical in the Hill Country given its penchant for flooding.
- Constructing rain catchment systems throughout the preserve that provide water for new plants and seedlings, especially in hard-to-reach canyon areas. This is critical to ensure their survival in the early stages of planting.
- Assisting with surveys and re-sightings of the golden-cheeked warbler.

Both chapters plan to continue their work at the preserve for many years to come. Capital Area Master Naturalist Chapter President, Lisa Audiffred, has been a regular volunteer at the preserve. She recalls a vivid memory.

“During the nesting season, we sometimes are lucky enough to hear, or even see, the golden-cheeked warblers while we work. One day in 2021, during our morning briefing, some parent birds were flying all around us, trying to stay ahead of fledglings who were begging for food. It was a very exciting moment. It’s always gratifying to see these birds coming back year after year, reminding us to keep up the work of habitat restoration for their continued protection.”

Chapter Five: Survey the Land, the Sea, the Sky

It's an aspect of modern life that we tolerate, even justify—plugging ourselves into gadgets that distract us and absorb our precious time. We wield our smart phones like extra appendages. We binge watch TV series from our favorite streaming sources. We surf internet newsfeeds that tantalize us with clickbait headlines, then dog us with incessant marketing.

There is no doubt. We have a cultural addiction to technology, sometimes barely aware of its consequences. It underscores the reality that so much of Western civilization has separated itself from the environment. We too often view the natural world as a resource to exploit, conforming it to the contours of our unsustainable notions of progress. Even as evidence of climate change escalates catastrophically, we are slow to alter our consumptive ways.

Losing contact with the natural world, substituting screen images for direct experience, exacts a hefty toll. Environmentalist writer, Richard Louv, coined the term "nature deficit disorder." He describes what happens when we disconnect ourselves from nature, especially as children. Over-protective parents, the loss of green spaces in our neighborhoods, and the ubiquitous lure of electronics all contribute to this malaise. Louv believes that we pay a heavy price for this alienation, including a lack of respect for the land, attention deficit disorder, and depression.

Texas Master Naturalists are tireless advocates for getting people outdoors. We not only want them to experience the beauty, but also recognize the needs of the environment. The following examples illustrate both these purposes.

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Imagine immersing yourself in the beauty of a cypress swamp lake *and* discovering Bigfoot at the same time! That's exactly what you can do as part of the annual Earth Day Flotilla conducted by the **Cypress Basin Chapter**.

2022 marks the tenth year of this event, originally sponsored by TPWD and the Caddo Lake Institute. After the chapter got involved, it became so popular among their volunteers that they offered to assume leadership, something they have now done for eight years, growing participation to over 100 paddlers. The event was cancelled only once in 2016 due to flooding. COVID-19 required that they go virtual in 2021, but it still attracted over 70 participants. The 2022 flotilla attracted a record number of 154 paddlers, some from as far away as Michigan!

Caddo Lake is Texas' only natural lake and the Caddo Lake watershed is a maze of slow-moving bayous, wetlands, and backwaters covering nearly 27,000 acres of cypress swamp. The lake's average depth is 8 to 10 feet, and various paddling paths wend through its waterways. The Earth Day Flotilla is designed to help people experience the beauty of this unique Texas setting. Kayakers and canoers register online, then show up at the launch location. They can stay on the water as long as they wish, and the chapter offers food items for breakfast and lunch.

Though the event is not a competition, there is a prize offered for the lucky person who discovers the life-size figure of Bigfoot that the chapter hides among the cypress trees. Whoever takes the first picture on their phone and texts it to event leaders is the winner.

This is the Cypress Basin Chapter's only fundraiser. In addition to the registration fee, they hold a silent auction with

items donated by their members. All proceeds beyond operating expenses go to maintain Caddo Lake's paddle trails. This means removing trash and making sure the "boat road" markers are in good shape. Without them as guides, visitors can quickly get lost in the maze of this cypress swamp.

Stella Barrow, a founding member and past president of the Cypress Basin Chapter, is the current Flotilla Chairperson. "Participants are amazed at the beauty of the lake," she says. "It is so picturesque with its Spanish moss, cypress trees, and many bird species that live here due to its popularity on migration routes. It's an opportunity to get out, enjoy nature, and take some amazing photos. When people get back they often comment about how it 'took their breath away.'"

Paddlers enjoying a day on the water during the Earth Day Flotilla
(photo courtesy of the Cypress Basin Chapter)

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No Texan will forget Winter Storm Uri, February 2021. Nicknamed Snowmageddon, it was a powerful arctic force that crippled the power grid, causing the worst energy infrastructure failure in Texas history. More than 4.5 million homes and businesses were left without electricity for several days. People faced shortages of water, food, and heat. At least 210 people were killed directly or indirectly, with some estimates ranging as high as 702.

Obviously, the effect of these extreme conditions extended to the natural world. Many species of plants and animals suffered. One of the most dramatic examples was the "cold stunning" of green sea turtles along Texas's Gulf Coast. When this happens, turtles float to the surface and drift with the wind. Many don't have the energy to lift their heads and will drown. Those who do ride the waves to shore, bypassing boat propellers, are susceptible to predation by birds, raccoons, and coyotes.

The first hard freeze came to the Gulf Coast on Sunday, February 14 (Valentine's Day), making the roads impassable. Two days later, as conditions improved slightly, a call for rescue volunteers went out via email and social media from the Division of Sea Turtle Science and Recovery at Padre Island National Seashore. Hundreds of volunteers rose to the occasion, a good number of them from the **South Texas Chapter**.

Many of these chapter volunteers have worked with Padre Island National Seashore for years, especially in protecting the endangered Kemp's ridley sea turtle. Some had received training for weather events, but no one was ready for the magnitude of Snowmageddon.

Over the next few days, chapter members worked in a variety of capacities. They combed the shoreline for stranded turtles. They transported turtles from boat ramps to the triage facility in their own vehicles. They worked as dispatchers in the park office and helped with turtle assessment. They staged a mass burial for those turtles that didn't awaken and transported survivors to three rehab facilities: the Amos Rehabilitation Keep in Port Aransas, the Sea Life Center on North Padre Island, and the Texas State Aquarium.

This operation was the largest of its kind in world history. Over 13,000 turtles were cold-stunned, but volunteers rescued over 5,300, and about 4,300 of them survived. South Texas Chapter members contributed hundreds of hours to the effort.

Texas Master Naturalist Michele Connolly worked tirelessly as part of the rescue mission. "I felt fortunate to have both the time and ability to assist," she says. "It was gratifying to be part of an effort that meant life or death for these animals."

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"Every time we were at an event, we complained about the wind—having to hold down posters or handouts with rocks and other weights. Here in West Texas it seems to blow constantly! Then we asked ourselves, 'What if we had a festival that allowed us to celebrate the wind rather than grumble about it?'"

That's how Texas Master Naturalist Jan Carrington, a member of the **Big Country Chapter**, describes the inspiration behind the annual Wings on the Wind Festival, staged at Abilene State Park by the Big Country Chapter and other community partners. The chapter won a display award

at the 2018 TMN Annual Meeting for this creative initiative. Following a hiatus during the pandemic, the festival resumed on Earth Day, April 23, 2022. Centered around the swimming pool and concession building erected by the Civilian Conservation Corps in the early 1930s, the Big Country Chapter presents a host of learning stations that highlight ‘all things that use the wind to survive and thrive’

- Birds and how different types of feathers help them ride the currents. Participants get to use an old-style feather quill pen, as well as view examples of purple martin birdhouses.
- Bats and their own adaptations to flying.
- A scale-model of our solar system, illustrating which planets are the windiest.
- Seeds and pollen that rely on wind for their dispersal.
- Dragonflies and other flying insects, where participants use microscopes to examine species closely.
- Monarch butterflies, challenging families to play a game that simulates migration from Canada to Mexico.
- Clouds and weather patterns, including the construction of wind socks that people can take home as mementos.
- A solar telescope for viewing the sun as part of a lesson about solar winds.
- Wind-borne fun with kites, parachutes, beach balls, and paper airplanes.
- New for 2022 is a bird wingspan banner, where people can compare their outstretched arms to local birds. It will be a unique photo opportunity!

Big Country is a small chapter, so nearly every active member participates in the effort, helping with parking, booths, and a food stand. They join forces with volunteers

from Friends of Abilene State Park. Hundreds of people attend the festival. Hopefully, it will help *all of us* stop complaining about the ubiquitous wind in West Texas, and instead remember the many ways it enhances the beauty of our world!

Big Country Chapter's volunteers
at the 2022 Wings of the Wind Festival
(photo courtesy of the Big Country Chapter)

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"During the pandemic, forced to stay home, I had time to absorb the details of my backyard more clearly. I started noticing a number of flying insects that were unknown to me. I'm a photographer, so I captured images of some of them. What I thought were just wasps and honey-bees turned out to be a dizzying variety of native bees—all in my own backyard!

This is how Susan May, Native Bee Survey Project Leader with the **Llano Estacado Chapter**, describes the genesis of their initiative. Intrigued by the images she had captured, she took a “deep dive” into research about native bees in her relatively isolated region of West Texas. She discovered that these important creatures were sorely undocumented. Further, there were possibly new species to be discovered. She began to wonder, “How could our chapter help?”

The cuckoo bee, which reproduces in the nest of other bees, is an indicator of a healthy ecosystem.
(photo by Susan May, Llano Estacado Chapter)

They started by contacting experts. This included Dr. Shaun McCoshum, a biologist who is cataloguing native bees along the Texas/New Mexico border, sending his data to the USDA and a museum in Albuquerque. The Llano Estacado

Chapter also discovered Ross Winton, a biologist with TPWD who has a Texas A&M grant to study bees in their area. These experts helped the Llano Estacado Chapter develop a program with three objectives.

1. Trapping bees to create pinned collections for distribution to scientific institutions, filling in data gaps.
2. Photographic surveys posted to iNaturalist and Texas Nature Trackers projects such as Bees and Wasps of Texas.
3. Educational outreach to teach others the importance of native bees through public events and publications.

Ross Winton, excited to widen his reach, donated “blue vane traps” for collecting specimens. Members of the chapter, who call themselves “beeples,” set out these traps within an hour of sunrise. Each one is affixed to the base of a mesquite on its southside and is filled with a little soapy water. Bees are attracted to the color and get mired in the solution. Participants collect them two hours before sunset, pin them, then photograph them before submitting the data. They have conducted most of this research at the 22,000- acre Ratliff Ranch in east Ector County.

The chapter has used the information they’ve collected to create a forthcoming brochure. It teaches others about the importance of preserving native bees, including plants that will attract them to their own property.

Already, the Llano Estacado Chapter has had some important findings.

“One of the things we discovered,” says May, “was that after Snowmageddon, bumblebees did not emerge in the spring as usual. Instead, we didn’t find them until late summer. We were worried about a temporary extinction, and this shift in their appearance was scientifically important to note.”

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During the pandemic, the **Tierra Grande Chapter** scheduled a unique training at the McDonald Observatory in the Davis Mountains. An overnight event, it covered all forms of light pollution and their detrimental effects on flora, fauna, and human beings.

"It was a deep, rich, and immersive experience," says Tierra Grande member Laura Gold. "It affected us in *so* many ways. Personally, it heightened my sensitivity to glaring lights *wherever* I see them, helping me realize how I, too, may be adding to light pollution at night."

Light pollution wastes energy and money. It has been linked to negative consequences in human health, and greatly hampers our ability to do astronomy. Even further, artificial light disrupts the mating, migration, and hunting behaviors of many different species, affecting the ecological system. Here are some examples.

- **Alteration of day-night clocks.** Diurnal animals don't get enough sleep resulting in not enough time for their bodies to rest and repair. They fail to reproduce or migrate and end up getting attacked by predators.
- **Habitat loss**. Light attracts some animals like moths, frogs, sea turtles, and hummingbirds, displacing them from their natural habitat and making them vulnerable to predation. It can also have the reverse effect—repelling some organisms from their habitat. Consider hatchling sea turtles. Their survival depends on detection of a bright horizon that guides their journey toward the ocean. Artificial lights on the shoreline disorient that movement and can draw them to destruction.
- **Migratory birds.** Birds rely on natural light (starlight/moonlight) for navigation during migration

and have been severely impacted by light pollution. Artificial light causes them to migrate too early or too late and sometimes leads them into dangerous environments.

"A lot of us," says Gold, "walked away from that training wondering 'what can we do?'"

One of the Tierra Grande Chapter's answers has been to join the observatory's Dark Sky Initiative. This effort successfully sought to establish the Greater Big Bend International Dark Sky Reserve, the largest such reserve in the world, designated as such in April 2022. McDonald Observatory had already been working with surrounding oil companies to reduce their light pollution; now it is expanding its geographical reach to landowners and businesses in a wider area, promoting better nighttime lighting. This is generating critical discussions across communities on what we can *all* do to assist this effort.

For its own part, the chapter has been helping the observatory gather sky quality data. It also hopes to host community town halls, reach out to additional civic groups, and conduct additional trainings.

"As a growing global phenomenon," says Gold, "dark sky initiatives have a solid scientific basis. Solving light pollution is a 'relatively' easy fix. This is why I feel it is vital for Texas Master Naturalists to get involved. If we want to grow and remain relevant in a rapidly changing world, modules on light pollution need to be included in our curriculum. This is not a fad."

Chapter 6: Passing the Torch to New Generations

Passion is lifted from the earth itself by the muddy hands of the young; it travels along grass-stained sleeves to the heart. If we are going to save environmentalism and the environment, we must also save an endangered indicator species: the child in nature. - Richard Louv

The ultimate most holy form of theory is action. Not to look out passively while the spark leaps from generation to generation, but to leap and to burn with it! - Nikos Kazantzakis

There is no doubt that powerful movements for change can arise from the hearts, minds, and souls of our world's young people.

Think of the young Pakistani Malala Yousafzai. The Taliban tried to silence her advocacy for the educational rights of girls by shooting her three times in 2012. She not only survived, but courageously continued her activism, giving hope to girls on multiple continents who are struggling under repressive regimes. In October 2014, she was a co-recipient of the Nobel Peace Prize, the youngest person to ever receive that honor. "This award is not just for me" she said. "It is for those forgotten children who want education. It is for those frightened children who want peace. It is for those voiceless children who want change."

Another example is the environmental activist Greta Thunberg. She first heard about global warming when she was eight years old, and she couldn't understand why more wasn't being done to address it. She began by challenging her parents to lessen their carbon footprint, then expanded her efforts through climate strikes at school, social media

campaigns, and protests in major European cities. Her blunt style and notoriety garnered international attention, and her speech at the 2018 United Nations Climate Change Conference went viral. In it, she said, “For more than 30 years, the science has been crystal clear. How dare you continue to look away and come here saying that you're doing enough when the politics and solutions needed are still nowhere in sight!”

Across Texas, Master Naturalist chapters are initiating more and more programs to reach children and youth. Many of them have adopted the title Junior Master Naturalist. As of the writing of this book, there are over a dozen initiatives in Texas, a vital way to reach naturalists of the future. Here are some of their stories.

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During its 25th anniversary year, the Alamo Area Chapter launched both its Junior Master Naturalist project and a creative Nature Passport initiative.

Youth Activities Committee chairperson, TMN Keeley Porter, learned about the passport idea through the Aldo Leopold Foundation in Wisconsin. Later, she met TMN Catherine Sobieszczyk while they were volunteering at Phil Hardberger Park. Catherine, a seasoned science educator, had written a curriculum for children to virtually tour the park during the pandemic. This is her passion—to help kids experience the natural world. So, when Keeley shared her vision of developing the passports, Catherine readily agreed to spearhead the project.

The idea is simple but profound. Children receive passports through public libraries, school science teachers, city park employees, or online. Each passport requires visits

to various parks and natural areas around San Antonio, where children have a “nature mission” to record their impressions through words and drawings. In the process, they train their senses to become more aware of nature’s beauty while learning facts about flora, fauna, ecology, and both natural and human history. Each section contains QR codes to trail maps and park specific lists of species on iNaturalist. Citizen scientists continually update the lists. Children become adept at using iNaturalist and its kid-friendly version, Seek!

A parallel goal of the passports is to introduce families to the richness of outdoor venues at their disposal. Many of them are aware of the more popular parks, but the passports lead them to vistas they’ve never experienced.

“I’ve spent a lot of time at these places,” says Catherine, “and whenever I am there I dream about ways I can help kids become more observant.”

Consider one example from the passports: a guided lesson about the savanna restoration area at Hardberger Park. Its nature mission is to “define the biodiversity of an ecotone, the transition between ecoregions (in this case between prairielands and the Edward’s Plateau). Children learn the importance of prairie grasses for holding soil and water and capturing carbon. With only a small percentage of Texas grasslands remaining, restoration projects are vital. Youth learn that historically these grasslands were maintained by roaming bison and natural wildfires. Now, with bison gone, park staff use mowing and occasional prescribed burns. The savanna experience concludes with space for both drawing and journaling.

“Our goal,” says Catherine, “is to help them develop constructs for experiencing nature at their level. The passport design does not ignore their heavy involvement with technology. Instead, we use it to help them become more

engaged as community scientists. We want to join a new love of observing nature with their technological aptitude. We also want to help them internalize good stewardship practices, such as The Seven Principles of Leave No Trace. It means *everything* to get children involved at this age!"

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The **Heartwood Chapter** began its Junior Master Naturalist (JMN) journey several years before implementing the project. The chapter decided that a meeting of minds between chapters would help *everyone* determine the best way forward. They reached out to TMNs across the state during 2020, asking questions about their existing youth strategies. What are the ages of participants? How often do they schedule classes? What is the cost of the project to both the chapter and enrollees? What is their student-to-volunteer ratio? Do they have curriculum resources to share? What kinds of materials do they provide to participants?

They discovered a surprising variety in how chapters are operating; there was little consistency in any of the categories for which they gathered information. Rather than seeing this as an impediment, they saw it as a strength. Due to differing populations of student-aged kids, as well as variations in chapter resources and membership, it is logical, even ideal, that JMN projects are tailored differently.

The Heartwood Chapter took an additional step. They combined their data to create a presentation to guide roundtable discussions at both the 2020 and 2021 Texas Master Naturalist Annual Meetings. Though they celebrated the differences in regional approaches, these discussions uncovered a need for resources such as curriculum and activity ideas to be available statewide.

In the end, the chapter targeted their project at ages 9 to 13, running it only during the school year. For the 2021-2022 class, they have 9 eager and knowledgeable kids enrolled. After completing nine training sessions and six hours of volunteer service, each will receive a green tree frog pin to show off their achievements.

Adrienne Paquette is the Director of Heartwood Chapter's Junior Master Naturalist project. She echoes the sentiments of many others when she says, "We're hoping that the knowledge we have given them will grow and sustain their interest for many years to come. Passing on this information to future generations is *so* vital because they are the ones who will take the reins."

Junior Master Naturalists on an outing
(photo courtesy of the Heartwood Chapter)

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From its inception in 2010, the **Good Water Chapter** has been intentional about reaching out to younger generations. They formed a Youth Development Committee in late 2011, chaired by Mary Ann Melton ever since. Nancy Phillips, Carole Minnix, and Jessica Nunn have also had major roles, and there have always been ample volunteers to make the program work.

“It has been our goal to get children into nature,” she says, “but when that is not feasible, we bring nature to children.”

The Good Water Chapter launched its formal Junior Master Naturalist (JMN) project in the fall of 2012. It offers a three-year course wrapped around the themes of Water Wonders, Earth Wonders, and Wild for Wild Things. Originally designed for elementary-age students, it has grown to include middle school students starting in 2022. It offers a wide range of guest speakers, field trips, and hands-on activities. Kids also participated in a service project each year.

“The Junior Master Naturalist program is the highest level of what we offer,” says Melton. “These kids are there because they want to be, and this affords us the opportunity to go into great depth.”

Knowing that this kind of commitment is the exception, not the rule, the Good Water Chapter finds creative ways to reach youth in other venues. Members have designed mobile learning stations that illustrate topics like aquatic invertebrates, paleontology, and the lifecycle of butterflies. They have taken this show on the road wherever a door opens: libraries, church gatherings, public and private schools, home school groups, summer day camps, parks, neighborhood associations, Girl Scout and Boy Scout

gatherings. At an overnight camp sponsored by the city of Round Rock, they estimate that over 1,000 youth and their parents participated in their activities.

"A really cool thing," says Melton, "is how one of our JMN graduates designed a unique learning exercise for other kids. It is a geologic timeline hung on a fence. Participants receive stickers that correspond to different periods of geologic time. Their task is to find the place on the timeline when that species would have existed, then place it there.

"Our focus has always been to bring a sense of awe and wonder about the amazing things we find in the world around us."

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The **Bois d'Arc** Chapter of the Texas Master Naturalist Program, a small rural chapter in Fannin County on the Oklahoma border, has also devised a way to take nature to children. The idea began with a couple educators in their ranks who wanted to collaborate with the local school district. What resulted is a yearly Earth Day presentation at Bonham ISD's only elementary school, Finley-Oates.

Chapter members choose favorite topics to present, then develop learning stations to illustrate them. They have covered the importance and properties of water, amphibians, nocturnal animals, seeds and plants, butterflies, composting with worms, and stages of the food chain. Each station is hands-on and interactive.

The week before the event, teachers prep their students with supplemental nature learning to heighten the anticipation. Then, on the big day, over a half-dozen second grade classes rotate through the booths. At each one, they are given a memento such as seeds to plant or gummy worms to remember the lessons on composting.

Christine Miller, president of the chapter, says, “The students absolutely love the program and get so excited. I believe we have to start young to instill a love for nature, and this is a great way to do it.”

She also remembers an unexpected learning opportunity. She was called outside for a “frog emergency.” It had been raining and a huge bullfrog had stationed himself on the playground. He was surrounded by children and was puffing up his size because of the perceived threats. Some kids wanted to poke him; others were “grossed out.” Christine got a container, captured the handsome specimen, and made sure he was relocated.

“After that,” she says with a laugh, “I was known as the frog lady.”

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Life’s better outside! That’s the motto of TPWD and the impetus behind a program it started at Inks Lake Park to teach young children the joys of spending time in nature. Called the Great Outdoor Program, it began in 1995. By the mid-2000s, volunteers from the **Highland Lakes Chapter** had gotten so involved that they essentially took over management of the event.

The Great Outdoor Program has a simple and effective format that reaches hundreds of children annually, resuming in 2022 following a pandemic hiatus. It takes place in April, when the weather at Inks Lake is usually splendid. First graders from the Marble Falls, Burnet, and Llano ISDs—along with others from private and home schools—travel to the park for a morning of nature immersion. The program runs for two consecutive weeks on Tuesdays, Wednesdays, and Thursdays.

Texas Master Naturalist Cathy Hill, also a member of the Friends of Inks Lake State Park, is the Program Coordinator.

"As soon as the children get off their buses," she says, "we generate excitement by having them recite the TPWD motto—life's better outside! Then, after telling them our guidelines and rules for the day, we let them rotate through five interactive learning stations."

1. At the Birding Station, children use binoculars to focus on area birds and identify them.
2. At the Butterfly Station, the presenter has done things like wearing monarch wings and having the children move from one area to another as she explains migration.
3. At the Vertebrate Station, children learn about the different classes of vertebrates and have a chance to handle bones and hides.
4. At the Aquatic Station, children seine minnows from the lake and put them in an aquarium. Nearby, in a metal tank, are bass and catfish brought by park employees. Volunteers make sure to get some splashing for the "squeal effect."
5. At the Tree Station, children learn about common Texas trees, including our state tree, the Pecan, and make leaf prints.

"At the very end," says Cathy, "we tell them that one of the nicknames for nature lovers is 'tree-huggers.' We gather them in a circle and together we hug one of the largest trees at the lake. Everyone who participates in the Great Outdoor Program absolutely loves the experience! It is a great way to reach young, impressionable minds with the beauty of our natural world."

***

Texas Master Naturalist Ruby Lewis, a member of the **Cradle of Texas Chapter**, has a daughter who is Head Librarian at the Angleton Branch of the Brazoria County Libraries along the Gulf Coast. She mentioned to her mom that it would be fun to sponsor some summer programs for local children. Ruby could highlight the animals she keeps at home, including an iguana and corn snakes. The idea was to conduct some simple, low-key, hands-on experiences.

Little did Ruby and her daughter envision what would happen next! After a couple years, Ruby retired from her career and got certified as a Texas Master Naturalist. Once she enlisted the help of other TMN volunteers, the initiative exploded! The chapter's Summer Library Program has now been running for 10 years, reaching thousands of children. It started with one library and 40 kids; it now includes all 12 libraries in the county.

The program is a series of educational and interpretive classes about the environment offered from June through August. Cradle of Texas Chapter volunteers develop the materials and make the presentations under Ruby's leadership. They highlight the flora, fauna, geology and geography of Brazoria County. Some examples are *Mini-Coastal Expo*, *Reptiles,* and *Wild in the City* (featuring opossums, raccoons, and coyotes.) There have been modules about the beach, the lifecycle of snails, and pollinators. Each module offers a variety of hands-on activities for different age groups, including a chance to feed live butterflies from sugar water on your finger. Though these presentations are primarily aimed at children, many adults also attend because of the fascinating subject material.

As for Ruby, she still loves to share about reptiles, including a hognose snake.

"I call him the Great Pretender," she says with a chuckle. "He can mimic a rattlesnake or a cobra, and if that fails to ward off a predator, he can play dead."

. When the pandemic hit, the program adjusted admirably. In one of the libraries is a community room, and even with the facility closed, they allowed the Cradle of Texas Chapter to present virtual courses utilizing its computer network.

"The growth of this program is amazing," says Ruby. "We reached over 3,000 children in 2019 just before the pandemic. In 2022, we are planning 35 to 40 presentations. Our chapter has wholeheartedly embraced every aspect of this program and at least half of our members have been involved in some capacity. It's gratifying to see and hear how our work enriches the lives of both children and their parents."

***

The **Guadalupe Chapter,** founded in 2014, has always been intentional about youth outreach. Soon after its formation, it organized a Nature Education Committee to develop materials and strategies. Texas Master Naturalist Nancy Masterson led a team that designed modules about the environment. The chapter then approached the Parks and Recreation Department in Seguin, Texas, to present to the public what they call their Discovery Series.

As TMN Kimberley Lewis says, "Children and their families can turn on National Geographic and learn about exotic creatures in far-flung places. We want to connect them with nature in their own locale!"

Each module is designed to be interactive and experiential rather than didactic. Some titles are:

- *Discover What's Flying*
- *Discover Buzzing & Blooming*
- *Discover What's Swimming*
- *Discover Clues and Traces*
- *Discover the Forest*
- *Discover Early Texans*
- *Discover a Bug's World*
- *Discover Rocks*
- *Discover Dinosaurs*
- *Discover Horns and Thorns*
- *Discover Nature Journaling*

Originally intended to operate in local parks, the Guadalupe Chapter then approached a public library and another city's Parks Department to host and publicize these free family nature programs. In the one-hour sessions, children fully utilize a Master Naturalist's best tools, their five senses. Each module encourages the entire family to take its learnings and methods home, weaving them into additional activities and outings.

The chapter has also been eager to learn from children about their interests. They question them and their volunteers at each event and revise the modules accordingly.

"We moved away from just adults telling kids what we thought they should know," says Mark De Kiewiet, Guadalupe Chapter President. "We started tailoring our work around the questions important to them. What did *they* want to learn? We found that there was a huge increase in the amount of knowledge they retained when we started with their natural curiosity."

In just a few short years, the Discovery Series has grown in both its breadth and depth.

- Three modules debuted in the inaugural year; there are now eleven.
- By 2018, the program expanded from Seguin into an additional partnership with the City of Schertz at Crescent Bend Nature Park. This park was once a residential area that was devastated by flooding in 1997 and 1998, making it unsuitable for housing. Bexar County and the City of Schertz now manage the land in a partnership. The park has multiple habitats that support a diversity of wildlife, and since its opening, people have sighted over 250 species.
- The Guadalupe Chapter has presented Discovery programs at YMCA summer camps, a state park, local Boy Scout and Girl Scout troops, an outdoor learning center, and at one of H-E-B's family retreats.
- In 2020, the program received a statewide award for "best outdoor learning program in nature for kids."

Since 2015, Discovery programs have involved nearly 5,000 children and 1,500 adults, staffed by around 200 Guadalupe Chapter volunteers. It is truly a testament to the creativity and longevity of their focus on youth.

"The preservation of our environment," says De Kiewiet, "and hence our very own existence, is going to depend on today's youth. It is our heritage as adults to nurture and guide them."

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The **Heart of Texas Chapter** and the **Central Texas Chapter** have found creative ways to collaborate. As of 2021,

they began combining their initial training, using a blend of professors from Baylor University and other experts in their fields. They have also joined forces in helping care for and interpret the Lake Waco Wetlands, especially working with children from the local community.

In 2000, the Waco City Council voted to increase the level of Lake Waco by seven feet. The EPA required a mitigation project to compensate for the loss of habitat, which gave birth to the Wetlands, one of the only habitats of its kind in Central Texas. This 174-acre ecosystem along the shores of the North Bosque River gives visitors a chance to experience nature up close and personal. From wetland marshes to groves of hardwoods and cedars, it provides habitat for many animal species, aids in flood control, and improves overall water quality. It is an immensely popular destination for birders, who have spotted over 185 species.

Texas Master Naturalist Nora Schell, President of Heart of Texas Chapter, has also been the Wetlands Program Coordinator since 2004. She is a living testament to the Texas Master Naturalist Program's mission. Schell sees this value firsthand.

Volunteers from both chapters work at the Wetlands' Research and Education Center hosting field trips for children throughout the academic year. After the children arrive by bus, they rotate through several learning stations staffed by TMNs. All the lessons are water related and include:

- A quality assessment of the water's pH, dissolved oxygen, turbidity, and temperature
- Dip netting in which they learn about macroinvertebrates
- Water safety practices
- Aquatic plants
- Fishing

- Runoff and wastewater
- Information on the wide variety of birds, animals, insects that inhabit the Wetlands

Afterward, the children return to the Visitor's Center for a recap and, sometimes, a chance to make their own presentations to the larger group. Before the pandemic, approximately 4,000 students participated yearly in these events, and this year Schell expects those numbers to rise once again.

"Because I am a staff of one," she says, "the Texas Master Naturalist Volunteers are invaluable. Since they are already trained in a wide variety of topics, they can put our education stations in context. It's not unusual for me to hear a TMN interpreting the whole environment, not just their station. They are so well-rounded, yet they are not afraid to ask the questions. Plus, I have a lot fewer headaches in my work. I can send out an SOS and people usually show up willing to help."

Chapter 7:
Challenges for the Future

Progress and growth are impossible if you always do things the way you've always done things. - Wayne Dyer

This book clearly illustrates how the Texas Master Naturalist movement has grown in its influence across the Lone Star State for 25 years. What will happen in the next quarter century?

Any organization, especially as it ages, runs the risk of becoming insular and ossified. The old joke about "we've always done it this way" applies to TMN chapters just like any other group. The research conducted for this book shows numerous challenges and questions that need addressing in the coming years. Leaving them unanswered is not an option.

One of our greatest challenges is how to become more racially and class inclusive. The majority of TMN chapters are predominantly white, mostly older, and possess a higher educational level than the population at large. This is both a strength and a weakness. It allows our chapters to tackle their many projects with a strong sense of dedication and purpose. It also, sometimes unconsciously, puts up barriers to reaching new generations and demographics with the message of serving our natural world.

Our culture—especially through social movements like Black Lives Matter—has shown how both privilege and racism can permeate our lives and organizations without us being fully aware of the barriers they create. To its credit, our state office, under the direction of Michelle Haggerty and Mary Pearl Meuth, initiated an online webinar series in 2021 entitled "Be The Change." Its stated purpose is to explore "diversity, equity and inclusion opportunities in our natural resource and conservation community. Just as the natural world thrives with

biodiversity, our Texas Master Naturalist Program is dedicated to engaging all audiences in conservation, education and stewardship."

One of the first presentations the state office provided through its Be The Change webinar series covered accessibility. The presentation generated a list of questions for chapters and other conservation organizations to consider. Ideally, they can be used as reminders for *all* of us at every phase of a program's planning and implementation. They include:

- Are the programs and events you're involved with intentionally designed to be accessible and inclusive? Considering what you know now, do you think they are as inclusive as they could be?
- At events you are part of, look around at the participants. Who isn't here? What can you do ahead of time for future events to make sure those folks know they are invited and welcome?
- Do all your events include accessibility information in the write-ups?
- For any paid events or equipment, is there a way the financial barriers can be reduced or removed? (Grants or sponsorships might help?)
- Is there a way to adapt or modify your programs so that multiple senses can receive the information you're sharing? Maybe adding captions to Zoom meetings so people who are deaf or hard of hearing can be included…or adding a tactile component to a native plant walk so someone who is totally blind can feel different plants?
- Are your chapter meetings, new training classes, and other events (when they're held in person) held in locations that comply with the ADA Standards? If not, what

can you do to make the location as physically accessible as possible?

Out of these conversations, the state office has built a strategic guide or 'playbook' for TMN Chapters to use for years to come as they build diversity, equity, inclusion and accessibility programming into their chapters' activities.

At a keynote presentation entitled "Coloring the Conservation Conversation," Dr. J. Drew Lanham issued a timely challenge to all of us.

"I see Master Naturalists as more than folks who are taking a school group out on a hike and pointing to different species of plants. Or leading a bird walk on some trail to identify the difference between ruby-crowned and golden-crowned kinglets. You are *so much* more than the name Master Naturalist would indicate. I want you to think of yourselves not only as those people informed to talk about nature and the connections, but as facilitators of thoughts and ideas. You are indeed educators and teachers, but you are also researchers, investigators, questioners, noticers, magicians, nature's nurturers, purveyors of passion. And, you are also hopers!"

He asked Texas Master Naturalists to wrap their "Texas-sized arms" around everyone in an embrace of inclusivity, to treasure diversity not only in butterflies, birds, and plants, but in every human being we encounter. As he says, appreciate diversity "from north to south, east to west, high to low, rural to urban, black to white to brown to red and all other hues, to he and her and them. By doing so, we conserve not only nature, but ourselves."

At the juncture of this book, here are three ways that chapters within our state are attempting to address the issues of greater inclusion

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To expand its engagement and welcome new energy and diversity, the **Sabine-Neches Chapter** launched an initiative for 2022 called *Beyond the Choir*. This many-faceted outreach seeks to widen the boundaries of the chapter's impact. Its goals are lofty.

- Generate public awareness of the Texas Master Naturalist program and its mission.
- Stimulate an appreciation of natural resources in the Sabine-Neches region, hopefully leading to an interest in conservation. This has many ramifications since the chapter lies at the convergence of several habitats: gulf beach, marshes, swamps, the Big Thicket biosphere, and forests.
- Engage people of diverse ages, gender, ethnicity, and socio-economic status.
- Expand and update the chapter's social media presence.
- Collaborate with chapter partners in all these endeavors.

The chapter has devised a wide range of activities to accomplish these goals. Some are traditional in nature, such as staffing display tables at events or offering classes. The activities will specifically connect with places like the YMCA that serves minority children, or civic groups like the Rotary Club that normally have no eco-consciousness as a part of their climate.

One effort will be an experimental adventure. The chapter will rent the Ivory Bill, a 45-foot pontoon boat owned by the Big Thicket Association. Chapter members will crew the vessel, leading two-hour ecotours of the Big Thicket

cypress-tupelo swamp. They plan to invite a student group from Lamar University whose membership and purpose focuses on the needs of minority and under-represented students.

Another initiative has the potential to reach a huge audience. The chapter has reserved a large area of the Exhibit Hall at the South Texas State Fair. It includes a stage and 18 tables for display. They will invite area partners and other conservation groups to participate during the event which could host 100,000 people over a weekend!

Texas Master Naturalist Nancy Angell, who spearheads the project, says, “Our biggest challenge is to think like ‘normal’ Americans who don't care much about conservation. How do we appeal to them, especially in our area where the oil and gas industry employs many folks? In the past we have only interacted with eco-friendly organizations, so it's a stretch, for sure!”

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In January 2020, the **North Texas Chapter** formed a Diversity and Inclusion Task Force charged with “researching, creating, and establishing guiding principles related to diversity, equity, and inclusion.” They immediately produced a document that charted their future, and it is being revised on a regular basis. The April 2022 document states:

> “Nature teaches us that biodiversity ensures the stability, productivity, and progression of an ecosystem and what affects one element in nature will in turn affect the entire ecosystem. At present, we have a diverse community, but we do not presently have a diverse organization.

"We recognize we must do more to increase diversity, provide equity, and promote inclusion in our North Texas Master Naturalist membership, programming, and activities. Our pledge to our fellow Master Naturalists from BIPOC, LGBTQIA+ and other underrepresented groups and communities, is to speak openly about injustices and create a more welcoming, supportive environment for all who want to enjoy and preserve nature. We pledge to critically examine our own complacency and biases to effectively make substantial and long-lasting changes. We pledge that the Diversity and Inclusion Task Force will provide actionable, strategic steps in making these vows a reality, all the while remaining fully transparent.

"We seek open dialogue and input from all our members. While we may stumble along the way, we will not let that deter us from the crucial work of moving this chapter toward fully realizing the values implicit in our mission which we hold so dear.

"We are committing to all our members and the North Texas community to improve and enhance who we are as an organization. The work required to achieve this will not be easy, nor will it be comfortable. It is a long trail to hike and a tall mountain to climb. However, together with our chapter members, partners, stakeholders, and our community members, we will create and cultivate a diverse and thriving ecosystem."

These are grand designs, but some organizations never get beyond verbiage. They substitute posturing for real work in the trenches, or their customary inertia settles once again

like a fog. Not the North Texas Chapter. Since casting that early vision, they have:

- Joined forces with a partnering chapter committee focused on Latinx and Hispanic residents in Dallas. This committee, already present within the chapter, provided the framework and inspiration for the Diversity and Inclusion Task Force. The Latinx committee has a five-year plan that includes the production of bilingual training materials, outreach to a local Hispanic cultural center, and focused activities during significant cultural holidays.
- Reexamined their existing partnerships and built new relationships with an eye for greater equity and inclusion. One of these is the Trinity River Audubon Center located in a predominantly Black and Brown community on the south side of Dallas.
- Initiated participation in MLK Day of Service, a National event that promotes service activities and takes place annually on Martin Luther King Jr. Day to honor Dr. King's legacy. The chapter also saw this as an opportunity to renew and affirm their commitment to better serve the communities of North Texas through active participation and relationship building. Their plan is to highlight a different project in a different community each year. Campo Santo de Cemento Grande was selected as the site for the 2022 inaugural MLK Jr. Workday. Campo Santo de Cemento Grande is a historical cemetery that represents the significant contributions of the earliest Mexican immigrants to the city of Dallas. Yet it has been forgotten by the City of Dallas. The work day success was due to the time and attention given to relationship building, listening to the leadership of the West Dallas Hispanic community and

descendants of Campo Santo de Grande. The work day included a “clean up” and “privet removal.” This work day was just the beginning of the chapter’s commitment, Campo Santo de Cemento Grande was also submitted as a New Class Project and the class of 2022 students are currently working on a Monarch Way station at the cemetery as well as community engagement.

- Continued with the education of their chapter about racism and inclusivity, including a workshop by David Buggs, Chief Diversity and Inclusion Officer for TPWD and facilitated conversations with Project Unity. Additionally, North Texas now has a Diversity, Equity, and Inclusion Director on its board, someone who will permanently bring these issues before its membership.

Ginger Greatens is the current Director of North Texas Chapter’s Task Force.

“This is not easy work,” she says. “It has given rise to issues requiring patience, growth, and learning from all of us. Relationship building is *always* the key to finding the balance we need. Whatever we try, no matter how imperfect we are, it is far better than doing nothing.”

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From 2017-19, the **Heartwood Chapter** and **Piney Wood Lakes Chapter** received honors for their part in a unique initiative that continues strongly until this day.

It began when TMN Scott Ball, still in his initial training period, attended a class given by Heartwood Chapter. It detailed the horticulture preservation efforts at Lake Livingston, Texas’s second largest lake and the primary water source for Houston. The Piney Wood Lakes and Heartwood

Chapters are partners in a coalition called Friends of Lake Livingston (FoLL). Their primary focus is to grow and plant American water willows (*Justicia americana*), a non-invasive species that is highly beneficial to the lake's ecosystem. They serve as filters for silt and toxins, provide habitat for fish and birds, aid in erosion control, and help revitalize a lake's shoreline.

Ball got so involved in Friends of Lake Livingston that he eventually became its Managing Director. He discovered that it is not cheap to buy and propagate these plants. As the project struggled to meet both its budget and volunteer needs, Ball heard that Lee College of Baytown, Texas, had been teaching horticulture classes at the Ellis Unit of the Huntsville State Prison for over 30 years. He was invited to visit and see their work firsthand.

That initial visit opened the doors to a remarkable partnership. Not only did the inmates get involved with growing water willows for the organization; they also began asking questions about the Texas Master Naturalist program and how they, too, might get involved.

It was a learning curve for everyone involved.

"Some of us were nervous when we first entered the prison environment," says Ball. "This is a maximum-security unit, and we were with men who had committed *all* types of serious offenses. However, over that first year we saw how the rewards for us as instructors outweighed the benefits to the students. The warden reminded us that these inmates would eventually be released and return to society. If we helped change the life of even one of them, it could make a huge difference."

As interest rose among the prisoners about the TMN program, the challenge was to develop a training process

amid such unusual circumstances. This needed approval by both the prison and the state TMN office.

With hard work and flexibility, all these obstacles were surmounted. Since 2017, 125 inmates have graduated from TMN training while inside the Ellis Unit. The instructors are 80 percent TMN volunteers from both the Heartwood and Piney Wood Lakes chapters.

The effect on the inmates has been remarkable, illustrated in numerous ways.

- They have developed new planting and fertilization methods.
- They produced the videos that won honors for three consecutive years at the annual state TMN Annual Meeting.
- One inmate wrote a rap song about the TMN program, including these words: “The day we witnessed hope was the day we started planting seeds.”
- Another inmate is a gifted artist whose drawing of a dragonfly, painstakingly crafted in a cell using toothbrush bristles and paint, won first place in the TMN annual photo and art contest in 2017. It now hangs proudly on the wall of Mary Pearl Meuth, Assistant Program Coordinator at the state office, who has also attended Ellis Unit graduations.

One inmate describes his involvement like this. “The Master Naturalist program has helped me develop a mindset to care about the environment and to give back to its protection.” Another says, “This program is the best thing that has happened to me in 28 years. To know that I am protecting an environment that also affects humans is an honor.” Another says, “It has taught me to appreciate life from the

smallest to the greatest. If I can care this much about a plant, I can *much more* for humanity in general."

Today, the Ellis Unit remains a key component of FoLL's work to protect the lake. Ball continues to champion the effort in whatever way he can, and it has given rise to a personal motto he calls "Unexpected Consequences."

He says, "From the beginnings of my journey as a TMN intern, new conservation projects have now flourished both at Lake Livingston and even inside a maximum-security prison. Unbelievable!"

A training class at the Ellis Unit
(photo courtesy of the Heartwood Chapter)

List of Existing Texas Master Naturalist Chapters as of 2021

Alamo Area - San Antonio
Balcones Canyonlands - Concordia University
Big Country - Abilene
Blackland Prairie - Plano
Bluestem - Sherman
Bois d'Arc - Fannin
Brazos Valley - Bryan/College Station
Brush Country - Laredo
Capital Area - Travis County
Central Texas - Belton
Coastal Prairie - Rosenberg
Cradle of Texas - Angleton
Cross Timbers - Fort Worth
Cypress Basin - Jefferson
East Texas - Tyler
El Camino Real - Cameron
Elm Fork - Denton
Galveston Bay - Galveston
Gideon Lincecum - Brenham
Good Water - Georgetown
Guadalupe - Seguin
Gulf Coast - Houston
Hays County - San Marcos
Heart of Texas - Waco
Heartwood - Conroe
Highland Lakes - Burnet
Hill Country - Kerrville
Indian Trail - Waxahachie
Lindheimer - New Braunfels

Llano Estacado - Midland, Odessa, Big Spring
Longleaf Ridge - Jasper
Lost Pines - Bastrop
Lower Trinity Basin - Liberty
Mid-Coast - Victoria
North Texas - Dallas
Panhandle - Amarillo
Piney Wood Lakes - Livingston
Prairie Oaks - Tarleton State University
Red River - Clarksville
Rio Brazos - Cleburne
Rio Grande Valley - San Benito
Rolling Plains - Wichita Falls
Sabine/Neches - Orange
South Plains - Lubbock
South Texas - Corpus Christi
South Texas Border - Mission
Tierra Grande - Alpine
Trans-Pecos - El Paso

Evergreen Reflections

(*Note: this blog series, initiated in 2021, has given members of the Alamo Area Chapter a chance to plumb the feelings and motivations that draw them ever deeper into the natural world. It is a balance to all the scientific knowledge imparted to us. Interspersed with these articles are some photos from the Alamo Area chapter.*)

The Heart of the Matter
By Texas Master Naturalist Krin Van Tatenhove, Alamo Area Chapter Class 45

An icy wind strafes the South Texas desert as we grab our backpacks and walking sticks. Our guide, Kelly Timmons, has just briefed us on the steepness of our descent to see the White Shaman Mural, a famous example of prehistoric rock art. Kelly volunteers with San Antonio's Witte Museum, which now oversees the White Shaman Preserve, and her sense of responsibility for all of us is palpable.

As we turn to go, she notices two service pins on my jacket.

"You're a Master Naturalist?" she asks.

"Yes," I reply. "I completed my training last year."

"I've done the training also," she says. "I just need to finish my volunteer hours. It will be great having you on this hike. I don't know as much as I should. I'm sure you'll be able to point out a lot of features to us."

I smile, but inwardly I wince. Unlike many other Master Naturalists, I am not a walking encyclopedia of taxonomy. I often rely on others to help me identify animals and plants. My specialty is to offer a strong back at work parties, as well as

my writing and editing skills for our newsletter. I'm learning but I often feel inadequate.

As we begin the decline into the canyon, two things are clear. One, Kelly is at home in the desert, walking with a lively, athletic stride. Two, she is modest about her knowledge. Though she apologizes for not knowing the names of a few species, her other observations enrich our hike. She shows us resurrection plants brought to life by recent rain, as well as leatherstem, also called *sangre de drago* (dragon's blood) because of its red sap. She describes the many uses of the agave lechuguilla by Native peoples. She points out clear imprints of rudist and turritella fossils.

"It's amazing," I say, "that we are standing on what was once the ocean floor."

She nods, scans the vista, takes a deep breath. A huge smile comes to her face.

Down we go, then up a ladder-like set of steps to the cliffside alcove sheltering the mural. It is stunning! Only its original creators know the fullness of its meaning, but Kelly and her co-guide, Lacy Finley, describe the prevailing theories—part origin myth, part solar and lunar calendar. What I find fascinating is that the celebrated central figure is most likely the Lunar Goddess, decapitated and adorned with snakes. The Aztecs had a similar violent myth that described the triumph of the sun over the moon. Lacy recounts how archaeologists climbed down to the mural on the winter solstice. Exactly at sunset, a shadow fell across the neckline of that goddess. It gives me shivers to imagine it!

Just prior to our return, we have a few moments to examine the mural more closely, taking turns photographing and marveling. I walk to the edge of the alcove and scan the panorama. In the distance, beyond beautiful cliffs, is the

Pecos High Bridge—a monumental trestle above the Pecos River near its intersection with the Rio Grande.

Kelly joins me.

"It's breathtaking, isn't it?" she says.

Then she sighs contentedly.

"This is my happy place," she says, and the depth of her love for this desert environment—its plants and animals, its human and geologic history—is nothing short of contagious.

I believe this is the heart of the matter. Master Naturalists can share copious head knowledge about the natural world. That's important. The science is not only fascinating; it is key to understanding ecosystems and their preservation.

But on a deeper level, what we impart is our joy of immersion in nature. We communicate our gratitude for its rejuvenating power. As pioneer environmentalist Rachel Carson once said, "It is a wholesome and necessary thing for us to turn again to the earth and in the contemplation of her beauties to know the sense of wonder and humility."

Back in the parking lot before departing, Kelly and I bump elbows (COVID-style) rather than shake hands. I thank her for the excellent tour, but later I regret not praising her for conveying that deeper love at the heart of the matter.

Thank you, Kelly!

***Nature Connects*, by Texas Master Naturalist Evelyn Penrod, Alamo Area Chapter Class 27**

Bythewood. That is the last name of my best friend since childhood. I am from East Texas, and she did live *by the woods*. I spent so much time at her house that her mother

called me her “fourth daughter.” I loved that place. We played in the woods of the tall pine trees, watched fireflies at night, rescued birds with broken wings. The canal was another favorite of ours; we walked the edge, watching the water for fish and turtles.

Nature connects. It connects us to a deeper part of ourselves and forms a connection for lifelong friendships.

My grandmother loved nature. Her family were early East Texas farmers, “planters” as they say in the south. I am convinced that I share her love of plants through our shared DNA. She had a beautiful yard with a giant pecan tree that I would sit under when I went to visit. She had a green thumb and loved flowers; her yard was a mass of them. I never see a peony without thinking of my grandmother, or her mother also for that matter; they are pass-along plants.

Nature connects. It joins us to our ancestors.

Early in our marriage, my husband and I knew that we did not want to live in a usual subdivision, so we looked for land where we could build our home with nature surrounding us. We did that 31 years ago. When we have “first time” visitors the common remark is “wow, you live in a park!” There is a lot of truth to that. We are surrounded by an abundance of trees and native shrubs. There is a creek at the bottom of the property that is fed by springs during wet years. Critters come calling at night, birds build nests all around us, deer and fox grow up here, have babies here, and the cycle continues. It is my happy place.

Nature connects. In it we find rhythms of time and being. There is nowhere I would rather be.

Golden-cheeked warbler (Setophaga chrysoparia),
(photo by Derrick Mims, Alamo Area Chapter Class 46)

The Gift Geology Has Given Me,
by Texas Master Naturalist Gary Poole,
Alamo Area Chapter Class 38

As a boy, I, like many people in their childhoods, collected rocks. Or so I called it. Mostly it involved picking up unusual specimens, applying some fantastic origin story to the rock, and then putting it in an increasingly heavy box. Hematite nodules became meteorites, banded chert became fossilized wood, and strangely eroded pieces of limestone became dinosaur bones.

At some point, my folks took me to see the original movie version of the book, *Journey to the Center of the Earth* (I realize I'm dating myself!), and I became enamored with the idea of caving, with the sense of adventure inherent in the act. Later in my adult life, I became an avid spelunker, caving in Texas, New Mexico, and Mexico primarily. Being within the matrix of living rock only enhanced my fascination with the origins and nature of this material, whether it was limestone, marble, gypsum, or basalt. To satisfy this curiosity I read books, took college geology classes and continued my improvised field reconnaissance. That's right, "picking up unusual specimens, applying some fantastic origin story to the rock, and putting it in an increasingly heavy box."

As I fed my love affair with geology and caving, I began to do nature multitasking. While driving from cave to cave in Mexico with friends in my Volkswagen camper, there would always be a copy of *Birds of Mexico and Central America* between the front seats along with a pair of binoculars. Or, when visiting ranchers in the limestone hills of Uvalde County looking for caves, I'd carry *Roadside Flowers of Texas* by Wills and Irwin, my first plant book. Those field

excursions often took forever because every splash of color on the roadside necessitated a stop and examination!

Over the years, I have tried to grow my knowledge of all facets of nature and the relationships among them. But through it all, my love for geology has remained. And this is not just because it is the foundation upon which so much of the natural world is built upon or derived (e.g., soil), but because the rock is a chronicle of events that have shaped the evolution of the planet and its life. It is a calendar, time capsule, and snapshot if we have the skill to read it.

When I come to a creek or a river, I love to stand on the bedrock of that channel, connecting myself to the bones of the Earth in that spot, like I've wrapped my arms around a *Sequoia sempervirens* but immeasurably older. I look for the story of the planet at that point in time and in that place. The sauropod dinosaur footprints in the Glen Rose Limestone of the Blanco River tell me that this place was an intertidal, marshy landscape 105 or so million years ago when giant herbivores fed on the margins of a shallow sea. Walking in the shallows of the Llano River on a bedrock of twisted gneiss and schist, I hear the faint echo of a billion-year-old tectonic plate collision, raising a mountain range and suturing a continent together.

The geology of a place tells us what was happening there on the stage where life was playing out—evolving, adapting to new conditions, indefatigable. However extreme the conditions or the change, whether single-celled or multicellular, life was building a path to us and our current co-habitants of the planet. And building past us as well. The deep time of this resiliency—its patience—has long been a comfort to me. It is a part of my genome as well as my consciousness. And it reminds me that my heritage has almost nothing to do

with my national origin or the accidents of birth and everything to do with this magnificently old story told by the rocks.

Geology is like comfort food for my soul. It reminds me that whatever the catastrophe—giant asteroid strike, massive volcanic flood basalts, humanity—life will go on, creating wonderful new forms within the constraints given. I find this certainty calming and hopeful.

For me, nature is not some narrow experience, balancing on the knife edge of time, beautiful and miraculous but oblivious to all that has gone before. Nature is a network, woven of the past and the present, which holds me close to everything that is and has been. And expectant for those things to come. This is the gift geology has given me.

Journey to the Center of the Earth, by Texas Master Naturalist Krin Van Tatenhove, Alamo Area Chapter Class 45

A massive sinkhole opens beneath the La Brea Tar Pits in Los Angeles. Buildings, freeways, and screaming people plummet through a time portal. They land 10,000 years in the past, where saber-toothed cats, dire wolves, and giant ground sloths are just a few of the surprises (and dangers!) they face.

Such is the premise of a recent NBC drama called *La Brea*. I thought of it as I stood with others on the rim above Canyon Lake Gorge, a geologic wonder of Texas carved out by flooding along the Guadalupe River in 2002. Thirty-four inches of rain fell in two days, setting off a torrent that sliced open the ground below the spillway, exposing limestone and fossils over 100 million years old.

Our guide points out some dinosaur tracks. An acrocanthosaurus, one of the largest predators to ever stalk

our planet, once stood on this spot, perhaps scanning the terrain for prey.

Then we begin our descent, first to Area 51, a landscape strewn with square boulders that seem hewn from extinct quarries. Robert Rodriguez used this setting for his production of the *Predators* movie.

“Bend down and gather a handful of sand,” says our guide. “Tell me what you see.”

I do so. Instead of sand, I find scores of tiny shells nestled in my palm!

“Those are remnants of an organism called Orbitolina Texana,” she says with a smile. “You are standing on an ancient cretaceous seabed.”

Amazing, and it only gets better! We continue downward to see exposed fault lines of the Edwards Plateau, remnants of collapsed caves, a waterfall, even a lagoon. In one area, we examine scores of fossilized shellfish, including ancient sea urchins. It truly feels like a journey to the center of the earth (thank you, H.G. Wells, for the phrase!).

Then it strikes me that my fellow Master Naturalists are *always* penetrating deeper into the world, revealing its beauty and intricacy. On countless occasions, they have schooled me about the flora, fauna, and geology that surround us. I store their numbers on my phone. When I see an unfamiliar plant, insect, reptile, or bird, I capture an image or sound and text it to my peers. Their responses often include not only common and scientific names, but amazing facts about that species’ place in the ecosystem.

I recently cowrote a book about the influence of Christian camps and conference centers, including their role as portals to nature. At Camp Gilmont in Northeast Texas, I spoke to Marie Nelson, Director of their Outdoor School for children. She reminisced about a naturalist and educator

named Sarah Monk, one of their long-term volunteers. “Walks with Sarah” were a privilege, and when Sarah died, Marie wrote a tribute which I excerpt here. It stands as a tribute to *all* naturalist teachers.

Wake me early to see the dew on the spider web
before it disappears.
Take me quietly down a trail into the woods and introduce
me to the wonder.
Sit with me as a gentle breeze cascades through the forest
like a waterfall.
Draw my attention to the flowers clothed in all their radiance.
Take me by the lake to watch turtles bob
to the surface for air.
Hold a dragonfly nymph as I study its special adaptations
for survival.
Quiet me as a red-tailed hawk goes swooping overhead
looking for its prey.
Show me the view to the west as the sun sets in vibrant
purple, orange, and pink.
Then watch me as the veil of darkness
blankets the earth.
Listen as the sounds of night surround us.
Open the classroom of nature all around me
and teach me how to study the gift of Creation.

Back to that day in the Canyon Lake Gorge. One of the attendees turns to me and says, “This is one of the most beautiful places in Texas!”

I smile and nod, even as my mind flashes to other exquisite environs: the lush heart of the Big Thicket; Palo Duro Canyon; Spicewood Springs and Gorman Falls at Colorado Bend State Park; crystalline depths at Aquarena Springs, headwaters of the San Marcos River; shorebirds cavorting in

the wetlands of Matagorda Bay; scenic gems like the Chisos and Santa Elena Canyon at Big Bend; ancient rock art of the White Shaman Preserve, perched above the confluence of the Pecos and Rio Grande Rivers.

So many breathtaking wonders in this state I love! So many places where we can journey to the center of the earth!

***Never Give Up on Your Passions*, By Texas Master Naturalist Vanessa Velazquez, Alamo Area Chapter Class 45**

Sanctuary: a place that provides safety or protection...

When I first arrived at the Wildlife Rescue and Rehabilitation Sanctuary (WRRS) in Kendalia, Texas, a feeling of calm came over me. I entered the main gate and immediately saw wildlife everywhere. A volunteer drove past with her cart full of hay, farm animals running after her, excited to be fed. It brought a big smile to my face and filled me with joy!

I was there as a volunteer for the first time, so I didn't know what to expect. But one thing was certain: I was thrilled to be able to play a part in keeping these creatures safe and protected.

Some of my earliest memories are from my grandparents' backyard—catching toads, anoles, and whatever else caught my eye. I would try to touch any animal that crossed my path. This did not go over well with my family. My mother and brother were (and still are) afraid of most animals except dogs, but even that's questionable. I couldn't bring the creatures I caught to them, since they'd freak out and send me back outside.

I never let their fears deter me. I felt a deep connection with these animals, and I wanted to learn everything about

them. My family now laughs, smiles, and recounts the times when I saved animals from harm or captured them just to see them up close and personal. This is something I still do today.

Although I knew about the WRRS before I became a Texas Master Naturalist, I never thought I would one day be an official volunteer. The Alamo Area Chapter of the Texas Master Naturalist Program gave me this opportunity. I had always helped creatures in need, so when the WRRS set up their information table at class and told me about volunteering and helping wildlife, there was no doubt in my mind. I immediately signed up.

Back to my first day at the sanctuary. I washed food bowls and baby bottles, then folded bedding that would be used at changing time. My favorite moment that day was being greeted by a flock of geese that eventually attacked my shoelaces. Those geese became my new best friends. During my second volunteering experience, they assigned me the role of food preparation for different types of wildlife. Eventually, the most gratifying part of my time at the sanctuary was going into the field and feeding the deer. I was in heaven and living the dream!

Even during the pandemic, I was able to help with transferring animals from the Sherman Animal Care Complex in San Antonio to the sanctuary. I felt like a wildlife ambulance as I transported opossums, doves, lizards, a beautiful baby owl, even a coyote. I loved every minute of it!

Moral of the story? Never give up on your passions in life! You're never too old to make your dreams come true!

Blue dasher dragonfly,
(photo by Kim Clendenen, Alamo Area Chapter Class 36)

Nature Under Your Nose,
By Texas Master Naturalist Drake White,
Alamo Area Chapter Class 36

Every day is a new adventure. This is why nature is such an important part of my life. Not just from a business or educational perspective, but as an opportunity to explore what's literally right under my nose. Becoming a Texas Master Naturalist couldn't have fit into my life any better. I took the class in Spring 2015, graduating with Class 36.

I started my journey in nature with butterflies and, over the years, I continue to learn that even though I plant for pollinators, a whole ecosystem moves in. Birds of all kinds, even birds of prey, along with varieties of insects and other wildlife. It teaches me how important everything is. That dead stem from winter has possible life in it, something we don't often think about. The adventure is learning something daily. Our day-to-day schedules can be so busy with hustle and bustle. But nature teaches me to slow down and observe, to allow a sense of wonder to take over and guide me into new areas of investigation.

This past week I learned just how hardy our Texas natives are. We had record-breaking low temperatures for a week, and I was looking forward to seeing what held up. To my surprise, even seeds that had just sprouted were fine. Some things were frostbitten, but a good 90 percent survived. With my phone camera in hand, I snapped photos of many plants and some critters that made it.

I have some chrysalids overwintering and I checked on those. So far so good. They are alive. I know this because they are pliable. Isn't nature amazing? We think of these things as being so delicate, yet they can survive a week-long freeze. How do they do it?

This is where your wonder comes in, where you get intrigued and start to look for information on how and why. I'm always searching for new information. This keeps me on track with my lifelong education. It keeps me grounded and focused on the nature right under my nose.

Our journeys in nature can mean so many different things. Find what piques your interest. Go out hiking, meditate deep in a pastoral setting, swim in a natural spring. Just sit, be still, close your eyes, observe with your ears, feel the breeze caress your body, let the sun kiss your face, and take deep slow breaths. And, as funny as you may find it, hug a tree, show it gratitude and thank it for all that it provides. You'll be amazed at how wonderful you will feel afterward.

***Sal and the Kemps*,**
By Texas Master Naturalist Sal Scibetta,
Alamo Area Chapter Class 45

From my earliest memories, turtles have always been there. I *do* remember when the Kemp's Ridley Sea Turtle first came into my life: Science Club, Wells Middle School, Houston, Texas, 1985. I already liked catching turtles in the local bayous of northwest Houston and had a couple of pet turtles at the time. That day a speaker came to talk to our club about Help Endangered Animals, Ridley Turtles (HEART). I knew I had to get involved, and I was able to convince my parents to take me to the "HEART Hotel," the Head Start facility in Galveston.

Over the next few years, I became as regular a volunteer as a kid could be. I distributed "Wanted" posters around Galveston and helped in the lab with the baby turtles when I could. I even made a Sea Turtle Survival Game for

other kids to play at the open house held around Valentine's Day.

Sadly, after high school graduation, my life took a different turn, and I enrolled in a military school in New Mexico. Life with sea turtles was a memory, at least for a while. The military took me around the world, but in my mind, turtles were still there. I still had that pet turtle I had when I first learned about sea turtles. He was my connection and bridge.

I made the decision to end my active-duty career and return to my roots. I went to college and got a degree in biology. This led me back to Texas with a job as a reptile zookeeper. I was just a short drive from the Padre Island National Seashore, and this brought me back to my old friend, the Kemp's Ridley Sea Turtle. The turtles I helped when I was young in Galveston were now grown up and starting to nest on the island. The seashore needed volunteers to help look for nesting turtles. As soon as I could, I signed up for training.

On my first patrol, I was teamed with an experienced technician who used to be a volunteer as well. Sadly, I was told that my chances of seeing a turtle were slim. He had volunteered for five years without encountering one. I was a little disheartened, and six hours later, our patrol was ending with no sign of turtles. I turned back to the headquarters and paused. Fifty feet in front of my patrol buggy, I saw a piece of sand slide up the beach. It stopped and blinked. A nesting turtle! Needless to say, the experienced technician was dismayed that I found one on my first patrol!

Because it was so close to headquarters, the staff came to pick up the turtle and attach a satellite transmitter to track her after she laid her eggs. On that first patrol, I found a turtle, watched her nest, helped attach a transmitter, then released her back to the Gulf. Not a bad day!

That first season, I found three other nesting turtles. Over the next six years, I returned to Padre Island every spring to help find nesting turtles, collect eggs, release hatchlings and, sadly, recover stranded turtles. The excitement of finding a nesting turtle is always tempered by the fact there is real science that needs to be done. I tried to get as many pictures as possible, but there is a lot that needs to be done in the less than 45 minutes you have with a turtle.

I was fortunate to be able to assist with attaching satellite transmitters to several turtles. I remember lying in the back of an SUV with a sea turtle and her newly affixed transmitter thinking that 12-year-old me would be pretty impressed. There I was with the most endangered species of sea turtle in the world, and we were going to release her back into the ocean to learn her secrets!

I've been a volunteer for many wildlife projects over the years, but none as important to me and the survival of an entire species as the work the volunteers do with the Kemp's Ridley Sea Turtle.

Where's Walden?
By Texas Master Naturalist Krin Van Tatenhove, Alamo Area Chapter Class 45

After having it on my booklist for decades, I finally slogged my way through *Walden*. Thoreau can be obtuse, but the gems buried in his prose are worth the effort. Like this one.

"You must live in the present, launch yourself on every wave, find your eternity in each moment. Fools stand on their island of opportunities and look toward another land. There is no other land; there is no other life but this."

It's an essential piece of wisdom that echoes through the centuries. Ancient Roman poet, Horace, exhorted us

to *carpe diem*, “seize the day.” Thich Nhat Hahn said, “Life is available only in the present moment.” Wayne Dyer said, “Stop acting as if life is a rehearsal. Live this day as if it were your last.” Baba Ram Dass simplified it in the popular phrase, “Be here now.”

The rub, of course, is learning to be mindful in our daily lives. This was central to Thoreau’s purpose when he built his small home on Walden Pond. The site wasn’t especially remote. Regional train tracks, the local village, even his mother’s house were all nearby. Still, the setting afforded him a chance to take his own advice, to immerse himself in the here and now.

Practicing mindfulness has skyrocketed in popularity. I celebrate this trend, but frankly, I find that most prescribed methods of meditation are exceedingly difficult for me. Sitting quietly for long periods is contrary to my high metabolism and learning style. A wise counselor helped me with some practical advice. He knew my love of exploring nature, so he said: “Make sure you schedule time to hike alone in the outdoors. It will be a portal to serenity for your soul.”

Being a Texas Master Naturalist has magnified my knowledge of flora, fauna, geology, weather, and hydrology. I am grateful to all the teachers who enrich my life with their expertise! Still, beyond the scientific data is that profound experience of the present that I find most alluring in nature. These experiences help me break the seal into deeper awareness.

Like a recent moment while hiking the Curry Creek Overlook Trail, part of the Bauer Unit at Guadalupe River State Park.

It was early morning as I started my stroll. Except for one couple I greeted in the parking area, I didn’t encounter another soul. I reveled in the solitude. Plenty of birds were

singing, and I used my phone to record a few so that my Merlin app could help me identify them.

The Curry Creek Trail curves at its farthest reach, the oaks and junipers covered with green moss. Jutting rocks display lichen in a variety of colors.

I stopped and stood as still as I could, calming my breathing, tuning my awareness. Suddenly, out of the coolness came the distinct, rhythmic call of a barred owl.

It was just me, the owl, the trees with a slight breeze in their branches, one of those moments when I felt my individual consciousness dissolve into my surroundings, no longer any distance between observer and object. Just oneness.

Where's Walden? It appears when we break the seal of our preoccupations and enter the beauty of the world around us. Sure, we can do this *anywhere*, *anytime*, but it sure helps to be surrounded by nature!

***My Backyard and Beyond*,**
by Texas Master Naturalist Haeley Giambalvo,
Alamo Area Chapter Class 45

My love for nature started in my backyard. Seven years ago, we traded a downtown Chicago condo for a suburban home in San Antonio. It was my first home with a yard in 15 years. Our new home backed up to a greenbelt, making it feel like the edge of the forest. I started seeing deer passing by and birds visiting the bird bath in our backyard. I dreamed up plans for growing flowers in the new-to-me Texas climate. I have always loved flower gardening and even had a container garden on our rooftop in Chicago. However, my sole criteria for picking flowers was how pretty they looked! I knew very little about the actual flowers I used.

While I have always loved being in nature, I now realize that I wasn't fully experiencing it. I took for granted what I saw in front me—*Oh, that's a pretty little bird* or *I love those red flowers blooming in my neighbor's yard*. I knew nature at a superficial level. Having my own backyard started to change that. I owe it to the birds! First was the pocket guide of Central Texas birds that I picked up at HEB on a whim. Next came a pair of binoculars. There was a new marking made in the guide every time I successfully identified a bird visiting our bird bath. The floodgates had been opened, and I yearned to learn more!

We started visiting as many state and national parks as we could with our daughters (ages 9 and 11)—adding Big Bend, Grand Canyon, Saguaro, Yosemite and more to our list in the last few years. I found myself checking out nature books at the library for the first time—with titles ranging from *The Genius of Birds* to *Forest Bathing*. When I saw a listing for the Alamo Area Master Naturalist Training Class 45, I thought it must be fate! I couldn't believe I could go back to "school" just to learn about nature. I soaked up every topic and realized there was no going back. I was going to be spending the rest of my life learning.

Of all the topics we covered as part of the Master Naturalist training, I was especially drawn to native plants. This was a concept that was foreign to me previously. The thought that I could garden not just for fun but to help the environment (and especially the birds!) felt so empowering. Since then I have been on a mission to transform our yard with native plants. Countless nandina and a ligustrum tree have been replaced with natives. A native wildflower garden is going in along the greenbelt, and I have plans to replace a big swath of grass with more plants this year. During the week

you can find me tending to native plants at the Headwaters Sanctuary or Phil Hardberger Park Demonstration Garden.

I've even started a website called *Native Backyards* to help spread the word about the power of native plants to other newbies like me. The birds are already starting to take notice of my efforts. My backyard has become a popular meeting spot for feathered friends. Last Sunday morning as I sat out on our patio with my husband and daughters, we counted no fewer than 15 cedar waxwings, 3 American robins, 3 Carolina wrens, 2 black crested titmice, 2 Carolina chickadees, 2 northern cardinals and 1 lesser goldfinch. At least I think it was a lesser goldfinch… I'm still learning after all!

***Opening My Eyes*,**
By Texas Master Naturalist Jim Baker,
Alamo Area Chapter Class 41

A sudden gust of wind rocks the camper just as I sit down on the sofa to relax after my morning hike along the trails of Kerrville Schreiner Park. It doesn't surprise me. I had been racing to beat the impending storm for the last half hour. WeatherBug had warned me of late morning showers the night before, and I had set an earlier alarm to try and get my hike in before they came.

Now, I was anxious to review the photos of living things I had taken while hiking. That involved removing the SD card from the camera, popping it into the card reader on my laptop, and scrolling through hundreds of images to find the ones worth keeping. Most of them would disappoint me and be instantly deleted. That was the nature of the game. The good ones, mostly of birds, would be posted to my blog so that I could see them over again and share them with others.

I have always taken pictures of my camping adventures. For the first few years, most of them were images of trailheads or scenic vistas that caught my eye. When I look at them now, I am shocked by how much those early photos seem to completely ignore nature. They are like photos of libraries without any books.

I graduated from the Alamo Area Master Naturalist training program on November 11, 2017. That day just happened to be my 59th birthday. Earlier that year, I had retired from a 36-year career in public education. My very first goal after retirement had been to become a Master Naturalist after meeting some of them while touring Honey Creek State Natural Area. Little did I know how doing so would completely change the way I look at our world.

You see, it wasn't until I learned more about the nature I was seeing around me that I started really seeing it. I guess the best example I can give is birds. Before Master Naturalist training, I could give you a textbook definition of birds. I could point them out when I saw them. But I never actually saw or understood the amazing differences between the different species until Patsy and Tom Inglet opened my eyes during training. Now, I don't just see a bird. I see a specific bird. Even if I don't know what kind of bird it is, I am drawn to learn more about it. I study the details I can see and hear, then, as soon as possible, do some research to learn all about it. You have no doubt heard the term "football widow." My wife probably feels like a "birding widow," as I can sit in the backyard for hours doing nothing but watching the birds in the trees and taking hundreds of pictures of them.

This new way of really seeing nature involves more than just birds. Now, I don't just see a plant, I see a specific plant. Not only do I see a specific plant, I look at it and try to

determine whether it's a native or an invasive. That whole idea was totally new to me.

I find myself doing the same thing for insects. I don't think I ever really looked at a honeybee before learning more about them from the Master Naturalists. I avoided them because I knew they could sting me. Now, they absolutely fascinate me. I even spent hours with my camera learning how to catch pictures of them in flight.

The old adage—*stop and smell the roses*—comes to mind. I never understood what it was saying. Now that I do, I wish I could have a do-over. I wish I had the opportunity to share my new way of seeing the world with children. I know I can still do it with my own grandchildren, if I get some. But what a gift that would've been to have shared with the thousands of children whose lives I touched during my career.

Ahh, here it is—the gentle tapping on the trailer roof. The rain has finally come to wash the trails. It will clean the dusty leaves and subtly change the colors in the woods along the trails. I know that when the rain stops, I will grab my camera and head out on another adventure to really *see* the nature of the park.

***Exploring a New Trail is Heaven on Earth*, by Texas Master Naturalist Peter Joseph, Alamo Area Chapter Class 40**

My parents were transplants from West Texas who moved to San Antonio due to the consolidation of Air Force Bases in the 1950's. I was the third child, but the first born in San Antonio. I recall my parents having barbecue picnics at Concepcion Park along the San Antonio River with relatives who were also transplants also. It was the best of times, when

parents would get busy talking about West Texas news and life in the big city.

For my younger city cousins and me, it was time to get out and play. That normally took us beyond the park boundaries, playing hide-and-seek or just exploring the pecan grove next to the park. It was the place that my big cousin Junior called “the woods.” It had dirt trails that were unmanaged and seemed to have endless places to hide and explore. When we were done running, it was time to cool off and attempt to catch minnows down by the river. Back then, the river was ankle to knee deep most of the time. Our plan to catch the little fishes was to create a dam across a narrow section using river rocks, then channel them into a small pool. We would then attack them like a wild bear after salmon as seen on the TV show Mutual *of Omaha Wild Kingdom*. Needless to say, the minnows usually got away.

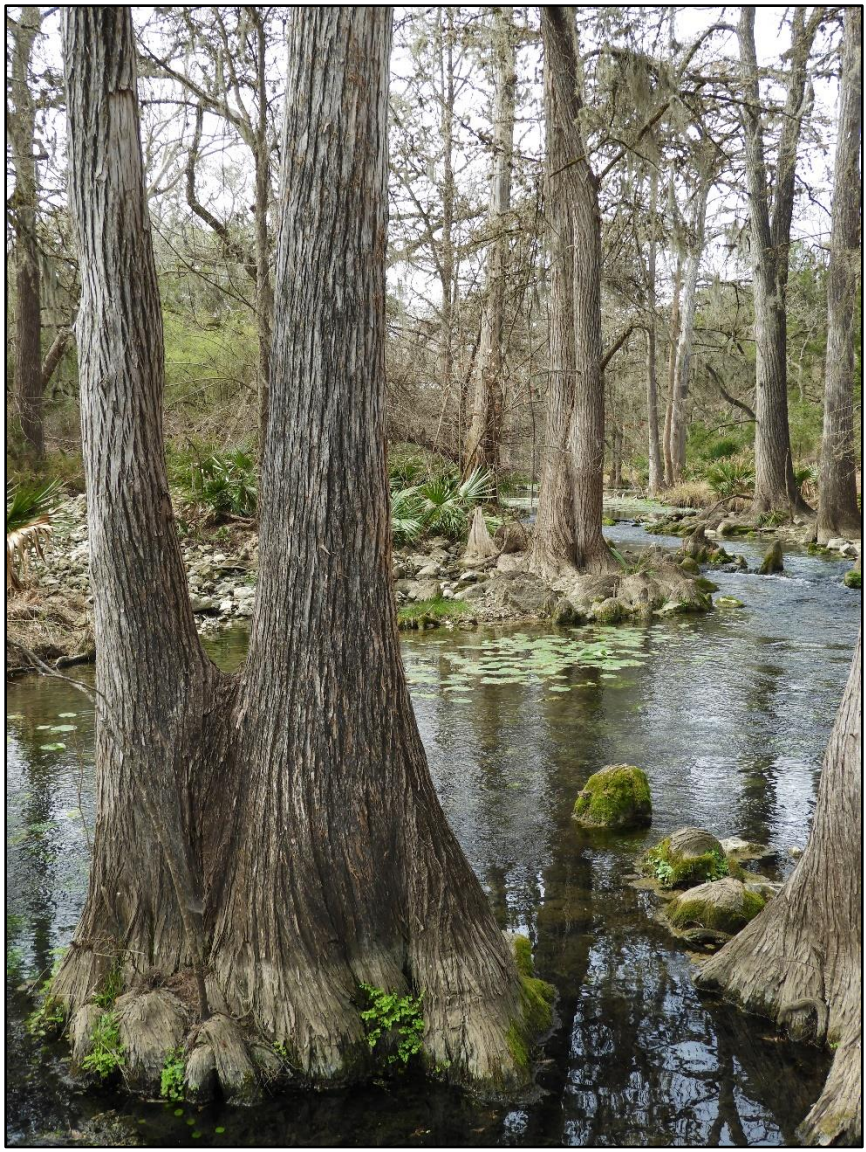
Summers would be spent visiting family either on Mom’s side in Marfa or Dad’s family outside of Big Bend Park. Either place that the family would go was heaven to me. While Mom and Dad spent time catching up with family, I would join my country cousins and explore unsupervised. In Marfa, one of my favorite spots was exploring the dry creek of Alamito for those cool looking rocks or for Texas horned lizards—hoping for a summer shower to swell the creek and expose more rocks. The rain always brought something you never got in the city, that “clean laundry” aroma of *guama* (aka creosote bush) in the desert air.

The other parts of the summer were spent at Dad’s family farm that ran down to the Rio Grande River, where I would look for arrowheads or other interesting artifacts. At times, I would follow the fast-flowing Rio Grande with tall mountains on the other side that not even a mountain goat could get through. I knew then that the river marked my

boundaries in more ways than one. I was okay with that, because the Big Bend Mountains in the background seemed to be endless and full of enchantment. No matter where I was—in San Antonio or in far West Texas—exploring trails was heaven on earth.

Fast forward to the busy lifestyle of my current adult years. I still find time to explore nature trails. I need my frequent doses of nature to reconnect and stay grounded, occasionally stopping along the way to take it all in and be mindful. At times, I remind myself that it's not only seeing the beauty of the tallest tree on the path or listening to a bird song, but to be aware of the smallest decomposer working its magic down below at ground level. Taking a deep breath to absorb it all, and then exhaling, releases all my anxieties and leaves me with a sense of calm.

Exploring trails is still heaven on earth!



Honey Creek State Natural Area,
(photo by Krin Van Tatenhove Alamo Area Chapter Class 45)

21 Years of Service Pins

(Upon completing a minimum of 40 hours of initial training, 8 hours of Advanced Training and 40 hours of service, TMN volunteers receive a certificate and a specific dragonfly pin recognizing them as a Certified Texas Master Naturalist volunteer. Thereafter, they receive an annual recertification pin upon completing another 40 hours of service and 8 hours of Advanced Training each calendar year. Milestone awards are given when individuals reach 250, 500, 1,000, 2,500, 4,000, 5,000, and 10,000 hours of volunteer service. In addition, a Presidential Volunteer Service Award is given when a volunteer reaches 4,000 hours of service. A special handmade plaque is awarded when volunteers reache the 10,000 and 15,000 hours of service. The following articles about the annual service pins first appeared in the Alamo Area Chapter monthly newsletter, written by Texas Master Naturalist Ian Townsend, Alamo Area Chapter Class 45.)

Texas Master Naturalists have a fun way to award the volunteer hours we contribute: the annual service pin. Each one is unique to its calendar year, a “once in a lifetime” recognition to earn, own, and display. This tradition started in 2002 to recognize those Master Naturalists who completed 40 service hours and 8 hours of advanced training in that year. These pins have their own symbolism beyond the hours accrued for service. They represent inhabitants and habitats from around the ecological regions of Texas.

As of 2022, six species of plants and fourteen animal species have been featured as pins. Many of these are Texas legislature ratified state symbols such as our Texas state flower, plant, grass, fish, reptile, mammal (one of the two so

designated), flying mammal (this one should be easy to guess), and sea turtle (yes, we have one of these!). However, there are many more symbols that deserve to be selected in years ahead, honoring the diverse flora and fauna across the State of Texas.

Here are the pins from 2002 – 2022.

The Post Oak 2002 Service Pin

In the PBS show *BBQ with Franklin,* Aaron Franklin states, “Generally, with barbeque you typically use whatever’s around. Here in Central Texas, I’ve got a lot of post oak and that’s what I like to use.” Being a primary fuel for the perfect smelling smoke and tasty briskets is just one of the many qualities of post oak (*Quercus stellata*), the inaugural TMN service pin issued in 2002.

A member of the beech family, post oak is the most common oak of over fifty different species in Texas; however, it is not the Texas state tree. That honor goes to the pecan tree. Post oaks *do* have the honor of being so common that they have an entire ecoregion named after them—the Post Oak Savanna—which runs through Central Texas between the Pineywoods region of East Texas and the Blackland Prairies region.

Post oak leaves are dark green and shiny on the upper surface, and lighter green with star (*stellata*) shaped hairs beneath. They are simple, alternate, four-to-six inches long, typically five-lobed, and often form a cross shape, hence one of its alternate names—cross oak. Acorn production begins when the tree is about twenty-five years old and once dropped take an entire season to mature.

A true Texas native, the post oak is one tough hombre. Found in dry, rocky, or sandy soil, it still grows up to fifty feet tall, with some living to be more than four centuries old. Post oak can survive scorching summers, bitter cold fronts, and drought. The wood is heavy, hard, and strong, giving it another moniker of iron oak, and it is primarily used for fence posts, hence the post oak name. Its bark, irregular arching crown, and dense foliage give this long-lived tree a distinct and dignified character.

The Lindheimer Daisy 2003 Service Pin

The Lindheimer daisy (*Lindheimera texana*) is a pretty little member of the Asteraceae family. The common name, Texas yellow star, or just Texas star is derived from the yellow flowers that have five petals corresponding to the five points of the Texas Lone Star emblem.

In 2003, the Lindheimer daisy was selected as our service pin to honor the Father of Texas Botany, Ferdinand Jacob Lindheimer, for whom the genus is named. Lindheimer is credited with the discovery of several hundred plant species and subspecies; forty-eight of those carry his name.

A reseeding, native wildflower, this daisy is found throughout all of Texas, north into Oklahoma, east to Arkansas and Louisiana, and south into Mexico. As a winter annual that requires full sun, little water, and prefers well-drained sandy loam or limestone soils, the Lindheimer daisy has a 6 inch to 2-foot-tall single stem with long, bright-green leaves crowded along it. The time to plant this daisy is in the fall. Appearing in late winter, it will initially grow slowly. However, once February arrives, it will be one of the first

wildflowers to cover the countryside! It blooms by March and continues throughout April and May.

Once established, this beautiful wildflower will reseed freely. For this reason, this species is easily cultivated and does well in garden settings as a good bedding and border plant. It is also a great xeriscape, wild-scape, or rock garden plant that attracts bees and butterflies.

The Green Tree Frog 2004 Service Pin

Imagine that you're on a wonderful nature walk as dusk approaches. The flora and fauna of a riparian area in the Texas coastal plain envelopes you—the beautiful sights, the smell of the warm moist air, and a curious sound of nature. It's a very distinct *reeenk reeenk reeenk*, or maybe *quank, quank.* It almost sounds like ducks or geese calling to you as your ears try to make sense. However, it's not a bird you're hearing. It's the distinctive sound of one of the most beautiful tree frogs in North America—the green tree frog (*Hyla cinera*). This medium-sized frog, found across the eastern third of Texas, is so important to our environment that it was selected as the TMN service pin for 2004.

Green tree frogs spend most of their lives in trees near lakes, marshes, or streams. As insectivores, they are also frequently encountered in backyards since home lighting attracts an abundance of prey. They have long legs, sticky toe pads, and smooth skin. They use a variety of calls to communicate—a specific mating call, an alarm call to notify of predators, and a rain call to announce an approaching shower, hence their nickname of *rain frog*.

Although green tree frog populations in North America are relatively large and stable at this time, they are reliant on aquatic habitats frequently destroyed by human activities and are subject to predation by snakes, birds, and large fish.

The green tree frog is the state amphibian of Louisiana and Georgia, but not Texas…we chose the Texas toad instead.

The Belted Kingfisher 2005 Service Pin

Hovering high above the water to spot a fish, then plunging headfirst in a swift direct line to catch it, the belted kingfisher demonstrates its unique style of hunting. As a sit-and-wait piscivore predator, these medium- sized birds often perch conspicuously on branches with a clear view over their feeding territories. They are easily distinguished by their large heads, blue-and-white plumage, and long, stout bill. While we might not think of them as such because they are beautiful little birds, belted kingfishers are top predators in both the marine and freshwater aquatic food webs.

Announcing its presence with a loud, staccato rattling cry that allows it to be heard before it is seen, the belted kingfisher (*Ceryle alcyon*), was our 2005 service pin. Its name describes the belt of blue-gray feathers across its white breast. This is one of the few bird species in which the female is more colorful than the male. She has a chestnut strip extending across her belly and under her wings, while the male displays a plain white underbelly.

Texas has three species of kingfishers. Sometimes mistaken for a blue jay, the belted kingfisher is the most widespread of the three. The distribution and abundance of these birds is determined by the availability of suitable nesting

and fishing sites. Interestingly, due to their plumage or their call, a group of kingfishers is called a "crown" or a "rattle." Although you won't find many together at one time, it is one of North America's most widespread and abundant land birds, and the global population is estimated at 1.7 million individuals. We are very fortunate that this remarkable bird is a part of our beautiful Texas natural landscape.

The Texas Prickly Pear Cactus 2006 Service Pin

"Rugged, versatile, and uniquely beautiful, the prickly pear cactus has made numerous contributions to the landscape, cuisine, and character of the Lone Star State, and thus it is singularly qualified to represent the indomitable and proud Texas spirit…."

So begins the 1995 Texas House resolution that named this special shrub as our Texas state plant. Eleven years later, in 2006, the Texas prickly pear cactus (*Opuntia engelmanni var lindheimeri)* was honored as the TMN service pin. Its scientific name is a tribute to the man who first documented this species, Ferdinand Jacob Lindheimer, the Father of Texas botany.

The adaptable prickly derives its name from its numerous leaves that harden into sharp spines as they age. It can survive under many different environmental conditions, and can easily be propagated from seeds and cuttings, making it a popular choice for low-water, rock, or rustic-style gardens.

Interestingly, although it is nearly 90 percent water by weight, every part of the prickly pear is edible. People eat it, bees go wild for the pollen, and it provides cattle and other livestock a reliable food source during the late summer heat

when many other plants are struggling. Tunas, the reddish-purple fruit, ripen from July to September. They contain a sweet juice and are eaten raw or processed into preserves, syrups, and fermented juice, often compared to watermelon. Nopales—the branches or pads of the plant—are eaten as a vegetable with a taste like green beans or okra when cooked. Put simply, this unique Texas plant offers value for its nutrition and visual splendor across our vast and beautiful Hill Country landscape.

The Grass Shrimp 2007 Service Pin

Residing in the muddy/sandy bottoms of saltwater marshes and inshore shallows of the Gulf Coast, the grass shrimp is an omnivore, feeding on algae and seagrasses. It is also a vital decomposer as it consumes dead organic matter. A common species, it is not currently listed as threatened or endangered. It is important in its ecosystem, serving as a vital link for energy transfer between trophic levels in the coastal food web. Due to its importance to the Texas Gulf Coast, the grass shrimp (*Palaemonetes vulgaris*), was selected as the 2007 TMN service pin.

Also known as the American prawn or marsh shrimp, this species has no commercial or recreational importance as food for humans. However, commercially important fishes and forage species such as the spotted sea trout, red drum, and crabs consume them in large quantities. The grass shrimp burrows in the mud during the day and moves up to the surface to feed at night. In addition to its vulnerability to fish predators, the loss of habitat due to human activity such as dredging and bulkheading (building retaining walls), has caused a noticeable decrease in its abundance.

Adult grass shrimp grow to less than two inches long and are generally transparent, which may help camouflage them. Using well-developed sense organs, they can easily maneuver and swim in the water, but they are most frequently found crawling along the bottom. They grow by molting, shedding their exoskeletons, and forming new, larger coverings. The grass shrimp breeds year-round in Texas where water temperatures are warmer. Mating occurs within seven hours of molting, and their eggs are fertilized externally, hatching around 60 days later.

The Texas Purple Sage 2008 Service Pin

"Whereas, like the bluebonnet and the pecan tree, Texas purple sage (*Leucophyllum frutescens*) is indigenous to the Lone Star State and a treasured part of the Texas landscape…." So begins the Texas state legislature's 2005 designation declaring the Texas purple sage as our official native shrub

Also known as cenizo, Texas silverleaf, barometer bush (because after a good rain it explodes with hundreds of small purple flowers), and Texas ranger, this plant grows naturally on the Edwards Plateau, in the Southwest Texas Plains, and westward in the Trans-Pecos. This beautiful plant was chosen as the TMN service pin in 2008.

As a native, evergreen, medium-sized shrub, Texas purple sage provides forage for cattle and a nesting place for songbirds, including our state bird, the mockingbird. It also provides essential stabilization to desert soils as it grows along hill slopes. It is often a common sight along highways and in municipal landscapes as a hedge or windbreak. Commonly growing to about five feet tall, it can mature to eight

feet in height and spread just as far horizontally. While the grayish-green woolly leaves are not terribly spectacular, this sage produces copious amounts of beautiful lavender flowers.

Texas purple sage is truly a native landscaper's plant of choice. For gardeners, this tough-as-nails plant is full-sun, drought tolerant, deer and pest resistant, has few disease issues, and does not need fertilizing. It is also considered to be one of the best plants for attracting butterflies. Although watering in dry summer months will make it grow faster, overwatering or poor drainage will quickly kill it. This shrub is a perfect choice for xeriscape gardens. In a land that waits for the rain, we are rewarded afterward with the surprising, magnificent blooms of the Texas purple sage!

The Texas Salamander 2009 Service Pin

Hunting its prey by sensing water pressure waves created by tiny snails and shrimp in the calm underground waters where it lives, the Texas salamander (*Eurycea neotenes)* is an important species to our state and Bexar County. It is entirely aquatic, lungless, and special because it is endemic to central Texas rivers, streams, and caves in Bexar and Kendall Counties. A distinctive, indigenous Central Texas amphibian, it was an easy selection as the 2009 TMN service pin.

Most internet searches for Texas salamander will lead you to the Texas blind salamander (*Eurycea rathbuni*). This is not the same species that earned the right to be our service pin! To make our jobs as Texas Master Naturalists and amateur herpetologists more challenging, there are several different species of salamanders in the Central Texas area including, but not limited to: the Austin blind salamander

(*Eurycea waterlooensis*), the San Marcos salamander (*Eurycea nana*), the Barton Springs salamander, (*Eurycea sosorum*), the Georgetown salamander (*Eurycea naufragia*), and the Salado salamander (*Eurycea chisholmensis*). Most of these are listed as threatened or endangered, and the Texas salamander is a state threatened species.

Although considered medium-sized as far as salamanders go, the Texas salamander is very small at just two-to-four inches long. It is brown in color, with light-yellow spotting down its back and it is neotenic, meaning it retains traits from early life stages, such as gills, throughout its entire life cycle.

The Wood Duck 2010 Service Pin

The genus *Aix* or "perching ducks," unlike most ducks that nest on the ground, build their nests high in trees and often over water. This duck that many Texans love is the wood duck (*Aix sponsa*), which earned the honor of being our 2010 service pin.

Aix sponsa, meaning "betrothed duck," features the boldly patterned, brightly colored males with their green heads, red eyes, purple breasts, and white throats. Many people consider it the most beautiful of all waterfowl. It is clearly a favorite of hunters, constituting more than 10 percent of the annual waterfowl harvest in North America, second only to the common mallard duck.

As an omnivore that enjoys seeds, fruits, and insects, the wood duck nests in riparian habitats. Its preference for elevated nest sites has the advantage of protecting young ducks from predators. The ducklings use their sharp claws and a special tooth on their beak—two unusual traits among

ducks—to climb out of the nest cavity and jump to the ground. Some fall hundreds of feet without injury!

The wood duck was abundant in North America in the 1700s. The population declined seriously during the late 1800s because of our overharvesting of timber, drainage of marshes, and excessive exploitation by humans for its meat and feathers. The Migratory Bird Treaty Act of 1918 protected it from harvest until 1941, and a series of game restrictions enhances that protection today. Legislation, extensive habitat restoration across its range, and the erection of thousands of nest boxes to replace lost natural cavities in wetland habitats helped the population make a remarkable comeback. The recovery of the wood duck to healthy numbers is a dramatic success story in the history of American wildlife management.

The Texas Horned Lizard 2011 Service Pin

A sad opening line in Texas Monthly once stated, “They’re on our license plates. They’re our school mascots. They’re our state reptile. But when was the last time you saw a horny toad in the wild?” As Texas Master Naturalists we’ve heard of the Texas horned lizard, but sadly most of us, including me, cannot say we’ve ever seen one in the wild. This is another clear reason why part of our vocation is conservation.

In 1993, the Texas horned lizard (*Phyrnosoma cornutum*) was designated the official state reptile, and in 2011 was named the TMN service pin. Horned lizards are often called horny toads or horned frogs, although they are not amphibians. They are reptiles with scales, and they produce their young on land.

As mentioned, conservation is very important for our horned lizard because they are at risk throughout their normal range due to habitat loss, illegal collection, and the imported fire ant, which kill their hatchlings and out-compete their food sources. A 1967 law bans the collection, export, and sale of horned lizards. The Horned Lizard Conservation Society now partners with ranchers and landowners to protect them.

At about 3½ to 5 inches long, horned lizards are found in arid habitats with sparse plant cover. Because they dig for hibernation and nesting, they are commonly found in loose soils. They feed primarily on harvester ants by quickly snapping them up with a flick of the tongue.

Preyed upon by various birds, reptiles, and mammals Texas horned lizards have some amazing defenses. They most effectively avoid predators by simply holding still, letting its coloration help blend into sparse vegetation. It is also renowned for its ability to shoot a stream of blood from its eye (its eyelid) potentially confusing a predator and allowing it to escape. Don't mess with Texas horned lizards!

The Mexican Free-Tailed Bat 2012 Service Pin

Master Naturalists all agree that nature is amazing! Consider this astounding fact. Our Texas state "flying mammal" can eat its entire body weight in one feeding and still fly back to its roost. They must have very strong wings!

The 2012 service pin honors the Mexican free-tailed bat (*Tadarida brasiliensis*). This insectivorous mammal leaves its roost in caves or bridges near water around sunset to forage for flying insects, which they catch in flight using echolocation. It is estimated that a typical colony of bats, can

consume 250 tons of insects every night, saving farmers millions of dollars without the use of pesticides. These bats form very large colonies, including the Bracken Cave population near San Antonio, which is the largest congregation of wild mammals in the world.

The Mexican free-tailed is the most common species of bat in the southwest. Living as long as 18 years, they are highly migratory, spending fall and winter in Mexico and returning to the southern United States in spring. Mating prior to the northward migration, females typically produce one pup each year, most often in the month of June.

Mexican free-tailed bats have some notable physical characteristics, weighing in at about half an ounce with a wingspan around one foot. These beautiful animals are the fastest mammals on earth, clocking in at 99 mph in level flight. Mexican free-tailed bats are the jets of the bat world!

So why are they called “free-tailed”? Their tails extend more than one third beyond the tail membranes (the rear “wing-like part” between their hind legs), while most other bats have tails that are completely enclosed within the tail membranes.

Bats are intelligent, unique mammals facing threats of ignorance, roost destruction, and over-exploitation.

The Monarch Butterfly 2013 Service Pin

When the name monarch is mentioned, who doesn’t have a picture in their mind of the beautiful pattern of orange wings laced with black lines and bordered with white dots? These distinctive markings are really a natural warning to predators that monarchs are foul-tasting and poisonous. In 1995, this

iconic insect, *Danaus plexippus* (Greek for “sleepy transformation” or chrysalis) was named the Texas state insect and later honored as our 2013 service pin.

Right now, monarchs need our help! Over the last 30 years, the population of these important insects has fallen dramatically and prompted a petition to the US government to add it to the Endangered Species Act. A contributor to the decline of the monarch is the loss of habitat, including the loss of milkweed across northern regions of the monarch’s migration flyway. One thing we can all do is that plant nectar sources in our yard are critical as “monarch waystations” to provide them needed energy during their long migrations. More importantly though, planting milkweed in your yard or garden will help increase their numbers as both a place for females to lay their eggs each as well as a food source for the caterpillars which often eat up to 200 times their weight in leaves!

In 2015, San Antonio became the first “Monarch Champion” city by signing the National Wildlife Federation Mayor’s Monarch Butterfly Pledge. The city provides migratory support through gardens and nesting areas such as the work being done by the Hardberger Park Conservancy and at the San Antonio River Authority’s King William Reach pollinator garden.

The Nine-Banded Armadillo 2014 Service Pin

As Texans, Master Naturalists possess many remarkable and unique traits such as a deep respect and need for our land, as well as the ability to change and adapt. The 1995 legislative resolution declaring the official state small mammal, shows that these

traits are shared by the nine-banded armadillo (*Dasypus novemcinctus)*. An important part of Texas's natural heritage, it's no surprise that this armadillo, or "little armored one" in Spanish—the only species of twenty armadillos worldwide that lives in the United States—was chosen as the 2014 service pin. Polyembryony, the process through which multiple embryos develop from a single fertilized egg, allows the armadillo to give birth to identical quadruplets every time! After being weaned from their mother at three to four months, the armadillo typically lives between seven and twenty years.

Nocturnal and mostly solitary, armadillos live in forested or grassland habitats. A soft soil is important to help them make their five-foot-deep burrows. Each armadillo may have up to ten burrows within its home range that varies from one to twenty-two acres. To cross a river in their range, they swim after increasing their buoyancy by swallowing air, or just sink and walk across the bottom while holding their breath for up to six minutes!

They forage by smell in a slow wandering pattern and are easy for us to sneak up on. Armadillos are known to eat over 500 different foods, but most of their diet consists of invertebrates such as beetles, ants, and grubs.

Their bony body covering plates, called scutes, help protect them from predatory mountain lions and bears. An additional defense is leaping vertically before quickly running away. This tendency to jump when startled often leads to their demise on highways. Although many are killed each year, there is a large population of armadillos in our state, and they are not endangered. So, be proud Texans, and make your own plan to go find, observe, and enjoy our official state small mammal!

The Bluebonnet 2015 Service Pin

"Bluebonnets, so gorgeous and stately/In your mantle of blue and of green/In the spring when you're in your full glory/You're the loveliest sight ever seen."—lyrics of *Bluebonnets*, a song by Julia Booth and Lora Crockett.

You know our state flower is beloved when it has its own song! In 1901, the Texas bluebonnet (*Lupinus texensis*) became the Texas state flower. The bluebonnet was also our 2015 service pin, offered in celebration of this beautiful wildflower that blooms from late March to early May.

Subsequently, in 1971, the Texas Legislature declared that any similar species of *Lupinus* are also state flowers, so officially there are currently six state flowers in Texas. Meanwhile, thanks to Lady Bird Johnson, Texas became the first state to beautify our highways by planting flowers.

Bluebonnets are a drought-tolerant plant that need at least 8-10 hours of direct sunlight. September and October are the months for planting so they can develop a strong root system during winter. The white buds on the tip of some stems gave it the nickname of El Conejo (the rabbit) because it looks like a bunny tail. Did you know this white spot contains patterns that are invisible to us, but reflect an ultraviolet light to signal to bees that it's ready to be pollinated? Nature is amazing!

Bees are friendly pollinators, but the bluebonnet also has enemies. The rapistrum weed seriously threatens our Texas state flower. One defense that bluebonnets do have toward animals is toxicity. Deer do not like their taste and will avoid them. If ingested, bluebonnets are poisonous to

humans, so be very careful to keep them out of the reach of small children when you're out taking your springtime photos.

The Guadalupe Bass 2016 Service Pin

Fast flowing water in small tributaries and rivers such as the San Antonio, Guadalupe, and Llano are exactly what our Texas state fish needs. Designated with this title in 1989, the Guadalupe bass (*Micropterus treculii),* found exclusively on the Edwards Plateau, is a beautiful fish that was honored as our 2016 service pin.

Guadalupe bass are one of a group of nine fish collectively known as black bass. Interestingly, black bass, including large and smallmouth bass, are not actually true bass; they are sunfish. Guadalupe bass, which only a few decades ago were officially recognized as a separate species from the smallmouth, is the smallest of the black bass, topping out at about three-and-half pounds. What the Guadalupe Bass lacks in size they more than make up for in spunk, making them particularly popular among fly fishers.

Living around large rocks and cypress roots, its primary diet consists of small fish and insect larvae. The male builds the nest, then once he has successfully attracted a female, she will lay between 400 and 9,000 eggs. After chasing her away, he guards the incubating eggs.

The Texas Parks and Wildlife Department designates Guadalupe Bass as an imperiled species, thought to have their purity most threatened through cross-breeding with smallmouth bass. As a protected game fish, Guadalupe Bass can be caught only with pole and line.

Starting in 1992, TPWD began stocking pure-strain Guadalupe Bass in our local rivers. The Texas Guadalupe Bass Restoration Initiative now works directly with landowners to increase these efforts. Further conservation includes the San Antonio River Authority's reintroduction of over 60,000 Guadalupe Bass into the San Antonio River in 2015.

The Kemp's Ridley Sea Turtle 2017 Service Pin

Are you a Master Naturalist who loves herps? If so, then you probably know that Texas has two state reptiles. That's right! In 2013, the Kemp's Ridley sea turtle (*Lepidochelys kempii*) was designated as the official state sea turtle, the second reptile after the horned lizard to become an official symbol of Texas. We have the only US coastline where they nest, therefore every Kemp's Ridley that nests in the US is a native Texan!

Named after Florida fisherman Richard Kemp who discovered them in 1906, these beautiful reptiles only reach just 30 inches long and 100 pounds, making them the smallest of the six marine turtle species on earth. They build two to three nests each season, laying an average of 110 eggs. Although a small amount consistently nests at Padre Island National Seashore, a much larger group, nearly 95 percent of the species, gathers near Tampico, Mexico to conduct a mysterious mass synchronized nesting called arribadas (Spanish for "arrival") when the moon is either in its first or last quarter. Biologists conclude that weaker tides during a quarter moon phase mean fewer eggs being exposed for predators such as vultures. During these special evenings, over 40 million eggs are laid! Once hatched, the baby turtles return to

the sea to spend their 50 years of life in the deep Gulf waters feeding on crabs, fish and plants.

In 1970, the Kemp's Ridley was placed on the international endangered species list because of so many becoming bycatch (accidental capture in fishing nets). The Texas A&M University Galveston Gulf Center for Sea Turtle Research, with partners such as TPWD and The Division of Sea Turtle Science at Padre Island National Seashore, promotes collaboration among sea turtle biologists.

The Ocelot 2018 Service Pin

People use statistics in news and advertising to generate some type of action. This statistic might simply interest you, should shock you, but hopefully will lead to action. There were 200 percent more Texas Master Naturalist service pins earned by Alamo Area Master Naturalists in 2018 than there are wild ocelots alive in Texas! (154 pins earned by Alamo Area Chapter Members and just 50 ocelots)

The ocelot (*Leopardus pardalis)* is an elusive, solitary, non-migrating species and one of only five wild cats that call Texas home. Nicknamed the phantom cat of the chaparral for placing its den in the densest part of a thorny thicket, the ocelot is similar to the bobcat. However, it is distinctively different with its unique "chain rosette" spotted coat, long ringed tail, and slightly rounded ears.

As nocturnal hunters, ocelots prey on small vertebrates found in their one to eighteen square kilometer home range. Breeding in late summer, they normally raise litters of just two to three kittens. Healthy ocelots can live from eight to eleven years.

Endangered within the US since 1982, historical records indicate their previous habitat extended from the Edwards Plateau to the Gulf Plains. Decline is primarily due to habitat loss and being prized for its pelt. Ironically, throughout the remainder of its range in Latin America, it is often the predominant predator and is considered abundant. The real hope for saving the ocelot in Texas lies with private landowners and one public location, the Laguna Atascosa National Wildlife Refuge near Brownsville, which proudly hosts one of only two breeding populations left in the United States.

The Golden-Cheeked Warbler 2019 Service Pin

Have you ever seen one in the wild? A golden-cheeked warbler that is. If you have, count yourself lucky. For many birders, it is on their bucket list. What is so special about these little Texans that became our 2019 service pin?

The golden-cheeked warbler (*Setophaga chrysoparia*) is a small, brightly-colored songbird with a big reputation. To warble is to sing. In appearance, they are approximately four to five inches in length and best known for their brilliant yellow face with a black stripe through the eye. As they migrate to Texas near mid-March from their winter homes in Central America and Mexico, birdwatchers from around the world travel to our Hill Country for a mere glimpse of this rare songbird. Every one of them is truly a native Texan; it is the only bird species of nearly 360 that find their mate here that breed *exclusively* in Texas. The abundance of Ashe juniper (cedar) spread across thirty-six counties of the Edwards

Plateau and Balcones Escarpment is the specific tree that hosts their nests in the foliage.

In 1990, they were placed on the endangered species list due to the destruction of its breeding range by suburban development. It is estimated that only 27,000 survive today, a decline of about 25 percent in the last thirty years. Some local areas set aside to help protect them include Balcones Canyonlands, the Bull Creek Nature Preserve, Cibolo Bluffs Preserve, and the backcountry of Government Canyon State Natural Area.

The golden-cheeked warbler is one of nature's most beautiful animals and a vital asset to both local ecology and our heritage. Hopefully, someday we will *all* get the chance to see them in the wild.

The American Bumblebee 2020 Service Pin

Since we've all seen, and maybe even run away from, bumblebees, some of us might ask, "Why is the bumblebee the 2020 service pin?" More specifically, if you are an amateur entomologist, you might ask, "Why is the American bumblebee, *Bombus pensylvanicus* the 2020 service pin?"

Well, these large fluffy insects provide a substantial ecological contribution as preeminent pollinators. The Department of Agriculture even places the estimated value of native bee pollination on America's farms at three billion dollars annually! However, saving Americans money isn't the reason why they pollinate. The bumblebee gathers pollen to feed its young, while the spreading from flower to flower is ancillary.

In Texas, we have nine different bumblebee species, and the American bumblebee is native to Texas. It can be identified by the single yellow moon-shaped marking on its thorax, the center of the three sections of the bee.

Like most bees, American bumblebees are highly social, living in colonies with a social caste where everyone has a specific task. The caste consists of the queen, female workers, and males. The queen is solely responsible for laying eggs. The female workers take on the tasks of foraging, brood care, nest maintenance, and defense. The males have no other task than to mate. A well-nourished bumblebee colony can reach a population size of 300 to 600 workers. In comparison to honeybees this is quite small; honeybee hives contain thousands of bees.

Unfortunately, the American bumblebee was designated as one of thirteen hundred Species of Greatest Conservation Need in the Texas Conservation Action Plan (2012). The recent decline in bumblebees is creating renewed interest in their purpose, well-being, and future. If you love bees, or you'd just like to help this species, Bumble Bee Watch is a collaborative community science project to track and conserve North America's bumblebees.

Sideoats grama 2021 Service Pin

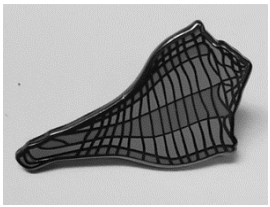
Nature advocate Senator John James Ingalls stated, "Next in importance to the divine profusion of water, light, and air, those three great physical facts which render existence possible, may be reckoned the universal beneficence of grass. Grass is the forgiveness of nature—her constant benediction....Forests decay, harvests perish, flowers vanish, but grass is immortal."

Grasses are often taken for granted, but they are the most important plant group. From pasture grasses for animal consumption, to food crops such as oat and barley for human consumption, grasses make up the world's most significant food source. Grasses occupy all parts of the earth and exceed any other plant. There are more than 10,000 varieties worldwide and nearly 1,400 in the United States. Grasses make up about 26 percent of earth's plant life.

In 2021, the grass plant Sideoats grama (*Bouteloua curtipendula*) became our service pin. It is a native, bunchy grass, designated by legislative proclamation in 1971 as the official state grass of Texas. Taking its name sideoats from the oat-like dried seed spikelets found on one side of the stem or stalk where the flowers were, and the Latin *grama* for grass, sideoats grama is a perennial warm season grass that photosynthesizes most efficiently during hot summer days.

It is found throughout Texas, especially in the Blackland Prairies, Edwards Plateau, and the High Plains. On the rangelands of West Texas, sideoats grama is the backbone of the ranching industry, producing a nutritious forage relished by all classes of livestock and wildlife. Sideoats grama is used extensively across Texas to reseed depleted grasslands for conservation purposes. If you are looking for a great grass to add to your landscape or a prairie, think of sideoats grama.

Lightning Whelk 2022 Service Pin



The lightning whelk (*Busycon perversum pulleyi*) is a marine gastropod (stomach footed) univalve (single shell) mollusk. Put more simply, it is a sea-dwelling snail, slug—or identified

correctly—a whelk. With one of the largest shells in the Gulf of Mexico, the lightning whelk's unique shape makes it easily recognized among most other shells. Unlike most gastropods, which have a right-handed (dextral) whorl, the lightning whelk has a left-handed (sinistral) whorl, meaning the shell opens to the right when the shell spire is pointing up. This left-handed characteristic is reflected in its scientific name *perversum*, from the Latin word meaning, turned the wrong way. *Busycon*, from the Greek word meaning large fig, describes the general shape of the shell. The subspecies name, *pulleyi*, honors Dr. T. E. Pulley, a well-known Texas naturalist and teacher. Its common name, lightning whelk, is derived from patterns of chestnut brown stripes with a zigzag pattern reminiscent of lightning bolts that radiate along the sides of its shell.

Lightning whelks spend most of their lives buried within bay bottoms and tidal channels of high salinities and offshore. Primarily a carnivore of bivalves (invertebrates with two shells, especially oysters, clams, and scallops) the lightning whelk is a highly skilled killer. It has a combination taste/smell organ that can locate food at a considerable distance. After it detects the prey, moves to it, and makes contact, it employs its large, muscular foot to pry open the bivalve's shell. It then uses the flaring lip of its own shell to wedge the bivalve shell open while it inserts its radula, or toothed tongue, to loosen and remove the soft tissue inside.

Lightning whelks are widely distributed along the Atlantic Coast south to Padre Island National Seashore. Texas has laws prohibiting the collection of lightning whelks and other saltwater and freshwater mollusks; however, permits are not required for collecting lightning whelk *shells* in Texas.

The lightning whelk was designated as the official Texas state shell in 1987 by the 70th Texas Legislature as a

fitting emblem of the exceptional beauty of the Texas Gulf Coast region. It truly symbolizes the rich diversity of Texas natural resources.

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All pictures, unless their creators are listed, were provided freely by chapter representatives with permission to use on their behalf.

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