



Our volunteers are ready to volunteer!

Our Texas Master Naturalist Volunteers are dedicated to natural resource conservation work. With health and safety restrictions persisting, we're thinking outside of the box for how Texas Master Naturalist volunteers can assist our partner conservation organizations in their communities. At the height of the pandemic, due to extreme circumstances, our members were limited in conducting many of their typical outreach projects technical guidance and community stewardship service projects. Thus, our program transitioned to offer virtual and distanced service projects. This new feature of our program has been so popular, now our volunteers have asked for more similar projects to conduct during the hottest months of the year.

The **TMN Virtual Volunteer Fair (VVF)** is an opportunity for our partner conservation organizations to present service projects that need volunteers from a distance or virtually! After three successful TMN VVF events, our members are asking for more! This time with the intent to provide virtual service during the hottest months of the year when service in the field becomes less desirable and hits a typical lull until cooler months come around.

Registration is now OPEN to attend our **Virtual Volunteer Fair on May 5th, 2022 (9:00am-11:45pm)**! You can attend any or all project proposal presentations – come and go as you please! TMN volunteers will earn Volunteer Service hours for attending all project proposal sessions – please use the “TMN Virtual Volunteer Service Fair” Statewide Project Opportunity for logging service hours.

[Register to receive a WebEx Link for that Day](#)

If you've never used WebEx as a platform at all, the [WebEx 101 Guide](#) link is a great place to start – plus there are live testing sites on the Cisco WebEx page for any day-users to test their equipment and set up.

Virtual Volunteer Fair Agenda

Thursday May 5th, 2022

The following projects are described in the "Catalog of Projects" in the order presented below.

- 9:00 AM - 9:15 AM Introduction
- 9:15 AM - 9:30 AM Edith L Moore Sanctuary Stewards -*Gabriel Durham, Houston Audubon*
- 9:30 AM - 9:45 AM Phenology Observation & Documentation Project -*Dany Millikin, Houston Botanic Garden*
- 9:45 AM - 10:00 AM Urban Bird Collision Monitoring-Downtown Houston -*Gabriel Durham, Houston Audubon*
- 10:00 AM - 10:15 AM Texas Stream Team Statewide Citizen Science Program -*Ally Schlandt, The Meadows Center for Water & the Environment*
- 10:15 AM - 10:30 AM BREAK
- 10:30 AM - 10:45 AM Time to Restore: Connecting People, Plants, and Pollinators -*Erin Posthumus, USA National Phenology Network*
- 10:45 AM - 11:00 AM Trash Free Texas Adopt-a-Spot Litter Clean-ups - *Elena Berg, North Central Texas Council of Governments*
- 11:00 AM - 11:15 AM Ambassadors for the Trash Free Texas Website -*Elena Berg, North Central Texas Council of Governments*
- 11:15 AM - 11:30 AM Armchair Botanist: Community Scientists Transcribing Specimen Labels -*Tiana Rehman, Botanical Research Institute of Texas*
- 11:30 AM – 11:45AM Conclusion & Wrap Up

NOTE: The attached Catalog of Projects list ALL service project details along with the Project Contact and their email address. If you are interested in a particular project, please reach out to the Project Contact directly if you did not get a chance to sign up during the event.

In addition, the projects are noted as statewide or by eco-region in the project description. Keep in mind that some site-based projects may offer aspects of the project that don't require your presence at the site. If they do require your presence to assist, please make sure to consider the project's location compared to your chapter's region and your training as a Master Naturalist. Be sure projects you choose are within ecoregion(s) you are trained for and are pre-approved by your chapter.

CATALOG of PROJECTS

Edith L Moore Sanctuary Stewards

Project Contact: *Gabriel Durham, Houston Audubon*
gdurham@houstonaudubon.org

Houston Audubon is looking to expand its Sanctuary Stewards Weekend Program in our Edith L Moore Nature Sanctuary. We need naturalists to work a Saturday or Sunday shift to help with various tasks. These include: answering visitor questions, walking the trails to keep an eye out for rare birds, and softly directing people to follow sanctuary regulations (like keeping dogs out). Eventually stewards may also be asked to coordinate small workdays with a team to conduct trail work or invasive removal.

This is a fantastic volunteer opportunity for naturalists who would like to do some birding while they volunteer or start their interest in birding! Anyone who would like to spend a few hours each weekend being a point of engagement for Houston Audubon is welcome to reach out. Additionally, the volunteer role is outdoors and singular, making it very safe for "distance based" needs.

Distance Based Service Project- Ecoregion Specific Ecoregion: Gulf Prairies

What could a volunteer hope to build/gain from helping your project? Volunteers can expect to build wildlife I.D. skills, history education of the Audubon Society in Houston and our connected sanctuaries, as well as help maintain the biodiversity of the sanctuary. Those who engage visitors more can also expect to gain educational experience.

Beyond the standard Texas Master Naturalist training, is there any specific expertise or experience needed? None. Birding experience is a plus though.

Is there any additional training you'd want the volunteers to complete before they assist your project? Yes, there is additional training that I will set up for those who choose to participate in my project.

If yes, how many hours of AT would need to be completed before being able to carry out the service of the project? One (1) hour given by the Sanctuary Manager on Sanctuary Regulations.

What are your expectations of how and when the service would be carried out? Weekends; Saturday and Sunday, between 7am-7pm. Shifts can be set up between Volunteer and Houston Audubon staff. Regarding how: the work is fairly easy as it is primarily walking around the sanctuary keeping an eye out for birds, or curious visitors with questions.

What is the potential total time commitment (i.e # of hours/week or per month)? Are hours flexible? Is the time period flexible? The days and timeframe are not flexible but volunteers can work any length of shift between 7am and 7pm. For example: 10am - 3pm would be fine. However, we would place preference on opening and closing shifts. Volunteer can earn anywhere from 1 hour to 12 hours per week depending on agreed shifts.

How long do you anticipate the project lasting? As long as a volunteer wants to help!

Why is this project needed, what are the expected outcomes? How is it linked to the mission of the TMN Program? We need this project to keep a strong educational presence in the sanctuary over the weekends when staff are committed to other tasks. Additionally this can build into us being able to offer more weekend service projects once the volunteer is comfortable leading others.

This supports the TMN mission as it not only expands the naturalist educational opportunities for Texans, but also enriches the volunteers skills by giving them hours of access to a rich bird sanctuary. Furthermore, if service projects can be built towards, it will also help maintain the environmental quality of the sanctuary in an accelerated fashion.

Phenology Observation & Documentation Project

Project Contact: *Dany Millikin, Houston Botanic Garden*
Education@hbg.org

Budburst, a project of the Chicago Botanic Garden, brings together community scientists, research scientists, educators, and horticulturists to answer specific, timely, and critical ecological research questions about plants and climate change and plant-animal interactions.

Budburst began in 2007 as Project Budburst in response to requests from people who wanted to make a meaningful contribution to understanding changes in our environment. Since then, 22,000 people from all 50 states have participated.

The Houston Botanic Garden recently joined the Budburst Garden Hub Program and is looking to start conducting related research via phenology observations to better understand how plant species and ecosystems respond to changes in the climate locally, regionally, and nationally.

The Garden is specifically gathering observations for two studies:

Pollinators and Climate

With this project Budburst seeks to understand how plants and their pollinators are responding to a changing climate. We ask participants to document the plant's phenology and then watch for pollinator visits for at least 10 minutes. This project, like Phenology and Climate, can be done on any plant in any location and is consequently very adaptable. This project does require more time, as participants must sit and observe the plant and pollinators for 10 minutes. Participants can observe pollinators at three different levels: Basic, Advanced, and Expert. If a user is less familiar with pollinator identification, they are still able to contribute important data at the Basic or Advanced levels. Brief discussion of phenological stages, training on pollinator visitation observation, and use of the mobile app will help ensure participant success with this project.

Milkweeds and Monarchs

Budburst participants observe milkweed plants and monarch butterflies in an effort to better understand if monarchs preferentially lay eggs on flowering or non-flowering milkweed stems. Initial research suggests that monarchs may lay eggs on non-flowering stems more often, potentially due to decreased levels of predation by insects and spiders. Collecting data about monarch egg laying preferences will help us better understand the ideal monarch habitat to preserve and protect. For this project, participants observe milkweed plant phenology and then examine milkweed leaves for monarch eggs and caterpillars. This project can be done on 12 milkweed species across the US but will be most successful if your Hub is located somewhere that receives frequent visits from monarchs along their migration route. The Milkweeds and Monarchs project is most successfully executed when participants are giving a hands-on training workshop detailing monarch egg and caterpillar stages along with mobile app training.

Phenology Observation & Documentation Project (cont'd)

Distance Based Service Project- Ecoregion Specific

Ecoregion: Gulf Prairies

What could a volunteer hope to build/gain from helping your project? Volunteers will help the Houston Botanic Garden establish its partnership with Budburst to educate people of all ages on plants, plant-animal interactions, ecosystems, science literacy, and much more, through hands-on learning opportunities and place-based climate science education.

Beyond the standard Texas Master Naturalist training, is there any specific expertise or experience needed? No

Is there any additional training you'd want the volunteers to complete before they assist your project? Yes, there is additional training that I will set up for those who choose to participate in my project.

If yes, how many hours of AT would need to be completed before being able to carry out the service of the project? 1 Hour

What are your expectations of how and when the service would be carried out? We would need a volunteer(s) to come to the Houston Botanic Garden and sit in various outdoor Garden locations to make observations and record what they observe. Volunteers should be able to distance themselves from Garden staff and visitors while conducting research.

What is the potential total time commitment (i.e # of hours/week or per month)? Are hours flexible? Is the time period flexible? Each volunteer would be expected to conduct 500 observations of 10-minutes each, for a total time commitment of 5,000 hours. Volunteers would be able to schedule their visits within the Garden's normal operations, 9 a.m. to 5 p.m. daily.

How long do you anticipate the project lasting? At least through the fall season.

Why is this project needed, what are the expected outcomes? How is it linked to the mission of the TMN Program? The Budburst research projects reflects the many ecological questions and issues raised by the ways humans impact the environment and how plants respond to those changes.

By partnering with public schools, libraries, nature centers, volunteer and community organizations, Budburst will be able to provide extensive, free educational NGSS-aligned materials for prek-12 as well as higher education. Budburst activities will engage families and adult groups, including neighborhood organization, in citizen science initiatives that will benefit their personal well being and the future of their communities.

Urban Bird Collision Monitoring - Downtown Houston

Project Contact: *Gabriel Durham, Houston Audubon*
gdurham@houstonaudubon.org

In a recent peer-reviewed study, Houston ranked #2 among US cities in exposing night migrating birds to the hazards of light pollution, trailing only Chicago at #1. Most migratory birds fly at night, and building lights attract and disorient these migrants, causing collisions or exhausting them and leaving them vulnerable to ground threats. Houston Audubon is partnering with the Cornell Lab of Ornithology, Texan By Nature and other conservation organizations in Texas to create bird collision monitoring programs in order to collect data that will be used to better understand the problem and work towards long-term systemic solutions.

Collision monitoring will take place in the early mornings (around sunrise). Monitors will work in teams of 2-3, patrolling a 2-mile predetermined route around 10 buildings in downtown, collecting data on birds that have been injured or killed by striking buildings.

Volunteers do not need to have expert knowledge about birds - data is entered into the iNaturalist app where others can help identify or confirm the species. Volunteers will receive a detailed training on collision monitoring and data collection, as well as what to do with injured or killed birds that are found in the course of monitoring. All the tools and materials needed to perform the job will be provided, but we need enthusiastic and meticulous monitors to patrol the routes daily.

Collision monitors are community scientists. They share their enthusiasm for conservation by volunteering to collect data on bird collisions in downtown Houston.

Urban Bird Collision Monitoring - Downtown Houston (cont'd)

Distance Based Service Project- Ecoregion Specific

Ecoregion: Gulf Prairies

What could a volunteer hope to build/gain from helping your project? Volunteers can expect to conduct vital citizen science to generate needed data for an established scientific study. Their work will build the science of when, why, and how migratory birds strike buildings. This will inform not only the conservation science of birds, but also building regulations.

Beyond the standard Texas Master Naturalist training, is there any specific expertise or experience needed? none

Is there any additional training you'd want the volunteers to complete before they assist your project? Yes, there is additional training that I will set up for those who choose to participate in my project.

If yes, how many hours of AT would need to be completed before being able to carry out the service of the project? One (1) to watch the training video.

What are your expectations of how and when the service would be carried out? Service will be carried out each morning (around dawn) between May 6-May 15. Volunteers will walk or bike the assigned monitoring route for the assigned morning. If injured or dead birds are found, they will fill out a provided information sheet, bag the birds in a cool box, and return to Houston Audubon staff who then provide the data to Texas A&M researchers. Volunteers can sign up for one or multiple shifts. This is a perfect fit for distance based projects as the activities are outdoors, and can be done in very small teams. We only ask that people bring a buddy so they are not walking downtown alone with low light.

What is the potential total time commitment (i.e # of hours/week or per month)? Are hours flexible? Is the time period flexible? 2-3 hours for each shift, depending on how long it takes the volunteer to complete the 2-mile loop. The start time and dates are not flexible, but a volunteer may take longer or shorter to complete the monitoring loop.

How long do you anticipate the project lasting? This project happens every Fall and Spring. If a volunteer cannot join this year, they can sign up for the coming fall.

Why is this project needed, what are the expected outcomes? How is it linked to the mission of the TMN Program? This project is needed because robust data on urban bird collisions do not presently exist. This data is needed not only to protect the birds, but also to inform the future design of buildings and urban spaces to be safe for wildlife and biodiversity. This is valuable to TMN 's mission as it is building the citizen science abilities of their volunteers in addition to protecting the natural resources of Texas.

Texas Stream Team Statewide Citizen Science Program

Project Contact: *Ally Schlandt, The Meadows Center for Water and the Environment*
allyschlandt@txstate.edu

Texas Stream Team is a statewide volunteer water quality monitoring program run through the Meadows Center for Water and the Environment's Watershed Services division. The program is partially funded through the Environmental Protection Agency's Clean Water Act Section 319 Program. Texas Stream Team trains volunteer citizen scientists to perform multiple surface water quality tests and the results of those tests are submitted to a statewide database. Data collected by citizen scientists provide invaluable information regarding the health of the state's waterways and encourage the stewardship of our natural resources through diligent monitoring and reporting.

The Standard Core Water Quality Citizen Scientist Training certifies citizen scientists to test core water quality parameters including conductivity, dissolved oxygen, pH, water and air temperature, and recording field observations. The Standard Core Water Quality Citizen Science training takes place in three phases that can be completed in one day. Texas Stream Team offers other specialized water quality trainings for other parameters and conditions; however, those require citizen scientists be Standard Core trained as a prerequisite.

Several Texas Master Naturalist chapters are already established Texas Stream Team partners and are dedicated citizen scientists. However, we are always recruiting eager volunteers to be a part of one of the longest running and biggest citizen scientist programs in the nation! Partners can help grow the citizen scientist network by leading trainings in their communities and monitoring their local waterways to ensure they are clean and safe to enjoy for generations to come.

Texas Stream Team Statewide Citizen Science Program (cont'd)

Distance Based Service Project- Statewide

What could a volunteer hope to build/gain from helping your project? Texas Stream Team citizen scientists will help build upon over 30 years of existing water quality data and be a part of an award-winning environmental citizen science program that has trained 11,000+ citizen scientists to this day.

Beyond the standard Texas Master Naturalist training, is there any specific expertise or experience needed? Volunteers are required to attend a half-day training led by a Texas Stream Team trainer to become certified citizen scientist water quality monitors.

Is there any additional training you'd want the volunteers to complete before they assist your project? Yes, there is additional training that I will set up for those who choose to participate in my project.

If yes, how many hours of AT would need to be completed before being able to carry out the service of the project? 6

What are your expectations of how and when the service would be carried out? After completing training, citizen scientists interested in monitoring can either be assigned an existing monitoring site or establish a new site. We request citizen scientists conduct monitoring at their assigned site once a month for at least one year. However, they can continue to monitor for as long as they wish.

What is the potential total time commitment (i.e # of hours/week or per month)? Are hours flexible? Is the time period flexible? In total, a monitoring event takes one to two hours depending on the distance travelled to the monitoring site. Due to the fluctuation of parameters over a 24-hour period, we encourage that monitoring takes place around the same day and time each month for consistency.

How long do you anticipate the project lasting? As long as a volunteer wants to help!

Why is this project needed, what are the expected outcomes? How is it linked to the mission of the TMN Program? With 191,000 miles of Texas waterways, it is difficult to create a complete picture of the overall health of rivers and streams. By monitoring monthly, citizen scientists fill in professional monitoring gaps and identify areas of concern that might have been missed otherwise. Texas Stream Team citizen scientists become a part of an ever-growing network of individuals, students, researchers, and educators who are passionate about protecting and promoting the health of our environment and have a heart for service and stewardship.

Time to Restore: Connecting People, Plants, and Pollinators

Project Contact: *Erin Posthumus, USA National Phenology
Network/Nature's Notebook
erin@usanpn.org*

Pollinator restoration has many challenges, from selecting which species to plant to provide nectar during critical periods, to knowing how these plant species will respond to changes in climate including more variable weather conditions. Better knowledge about flowering and seed timing for critical nectar plants, and the links between this activity and climate, can inform more resilient restoration plantings.

To better understand the current timing of flowering and seed ripening of nectar plants, and determine how this timing will change under future climate conditions, we need more data!

Help us collect data on flowering and seed timing of nectar plants this year! We are looking for people to collect data through iNaturalist (<https://www.inaturalist.org/>; great for species identification assistance and one-time observations in a place you don't plan to return to) and Nature's Notebook (<https://www.naturesnotebook.org/>; great for repeated observations of the same plants over time).

We are interested in observations of flowering and seed timing for these priority species:

- wild bergamot (*Monarda fistulosa*)
- cardinal flower (*Lobelia cardinalis*)
- buttonbush (*Cephalanthus occidentalis*)
- eastern purple coneflower (*Echinacea purpurea*)
- common sunflower (*Helianthus annuus*)
- showy milkweed (*Asclepias speciosa*)
- green antelopehorn (*Asclepias viridis*)
- tall blazing star (*Liatris aspera*)

This project is organized by a team of collaborators from the Bosque Ecosystem Monitoring Program, the Tribal Alliance for Pollinators, the Gulf Coast Phenology Trail, and the USA National Phenology Network, supported by a grant from the South Central Climate Adaptation Science Center.

Learn more at <https://www.usanpn.org/TimeToRestore>

Time to Restore: Connecting People, Plants, & Pollinators (cont'd)

Distance Based Service Project- Statewide

What could a volunteer hope to build/gain from helping your project? Volunteers will follow flowering and seed timing of one or more nectar plants throughout the year and become experts at understanding the life cycle changes of the species they track. Volunteers will be directly supporting data collection that will help conserve plants and pollinators.

Beyond the standard Texas Master Naturalist training, is there any specific expertise or experience needed? Volunteers should be able to identify the wildflower species they track.

Is there any additional training you'd want the volunteers to complete before they assist your project? If participating in Nature's Notebook, we recommend completing at least the first Module of the Observer Certification Course (estimated at 45 min)

If yes, how many hours of AT would need to be completed before being able to carry out the service of the project? 1 hour

What are your expectations of how and when the service would be carried out? Volunteers will work independently to track flowering and seed timing of nectar plants at locations of their choosing.

Volunteers can elect to either use iNaturalist or Nature's Notebook.

<https://www.inaturalist.org/>

<https://www.naturesnotebook.org/>

We suggest checking plants 2-3 times per week during periods of activity to capture the start, peak, and end of flowering and seeding.

Volunteers can also participate as a group, either by creating a project in iNaturalist:

<https://www.inaturalist.org/projects>

Or creating a Local Phenology Program in Nature's Notebook:

<https://www.usanpn.org/nn/groups/local-phenology-programs>

What is the potential total time commitment (i.e # of hours/week or per month)? Are hours flexible? Is the time period flexible? The time commitment is flexible. Options range from spending a few minutes each week tracking flowering or seeds of wildflowers in iNaturalist, or establishing a Nature's Notebook site in one's own backyard or another nearby locations to track the flowering and seed status of one or more plants multiple times per week.

This project will last through the end of 2023, with the potential to continue in additional years.

How long do you anticipate the project lasting? As long as a volunteer wants to help!

Why is this project needed, what are the expected outcomes? How is it linked to the mission of the TMN Program? Your data collected as part of this project on nectar plant flowering and seed timing will help us understand bloom times and when to harvest seeds for important pollinator plants.

Your data will also help researchers understand the relationship between climate variables like temperature and precipitation and flowering and seed timing. They will use this knowledge to understand how future climate changes will impact flowering and seed timing of these plants. These changes will then be used to create climate-informed guidance for those working on pollinator restoration.

Trash Free Texas Adopt-a-Spot Litter Clean-ups

Project Contact: *Elena Berg, North Central Texas Council of Governments*
eberg@nctcog.org

The Trash Free Texas website (www.trashfreetexas.org) hosts a webmap, the Trash Free Texas Adopt-a-Spot Map, that displays adoptable litter cleanup locations in Texas. Clicking on a site on the map will reveal more detail about the location, including the site coordinator, the person who added the site to the map and coordinates its clean-up. By displaying the sites for all to see, the map helps connect volunteers with communities needing help with clean-up and reduces the coordination time for both parties. Communities, non-profit organizations, schools, or any other land-owning entity in Texas can have litter cleanup sites on the map.

The Trash Free Texas Adopt-a-Spot Litter Clean-ups project seeks volunteers to reach out to the site coordinators on the map and adopt sites for clean-up. Texas Master Naturalist volunteers can coordinate the details of the adoption, such as the length of time for the adoption and the frequency of clean-ups, with the site coordinators.

Most of the sites on the Trash Free Texas Adopt-a-Spot Map are located in the Dallas-Fort Worth region because initial work to create the map and add sites started in that area, with the City of Fort Worth as a major leader. At this time, the North Central Texas Council of Governments (NCTCOG), the Houston-Galveston Area Council (NCTCOG's counterpart in the Houston region), and The Meadows Center for Water and the Environment at Texas State University are working to encourage more communities and other entities in Texas to add their litter clean-up sites to the map as part of a 3-year project funded by the U.S. Environmental Protection Agency.

Trash Free Texas Adopt-a-Spot Litter Clean-ups (cont'd)

Distance Based Service Project- Statewide

What could a volunteer hope to build/gain from helping your project? Help beautify communities and reduce pollution by cleaning-up litter, which is unsightly, pollutes the environment through the leaching of chemicals on the litter, harms wildlife, and causes economic burdens to local governments.

Beyond the standard Texas Master Naturalist training, is there any specific expertise or experience needed? No

Is there any additional training you'd want the volunteers to complete before they assist your project? No, there is no additional training needed!

What are your expectations of how and when the service would be carried out? This service is flexible and based on the schedule of the Texas Master Naturalist volunteer. The frequency of clean-ups and timing of clean-ups are determined in consultation with the cleanup site coordinator. All entities with sites on the map have different requirements for adoption. Some only require one clean-up and some require more.

What is the potential total time commitment (i.e # of hours/week or per month)? Are hours flexible? Is the time period flexible? The total time commitment for this project is flexible and based on the number of sites the Texas Master Naturalist volunteer adopts and the frequency of clean-ups that is determined with the cleanup site coordinator(s). The time period is also flexible and is determined with the site coordinator. All entities with sites on the map have different requirements for adoption. Some only require one clean-up and some require more.

How long do you anticipate the project lasting? There is no standard cleanup frequency and adoption period so the Texas Master Naturalist volunteer(s) would need to coordinate directly with the Trash Free Texas Adopt-a-Spot site coordinator.

Why is this project needed, what are the expected outcomes? How is it linked to the mission of the TMN Program? This project is aligned with the mission of the Texas Master Naturalist program in that its overall goal is to take care of our environment and reduce the impacts of litter in Texas. Litter in Texas is not only unsightly, but also harms our land and water environment. The chemicals in litter can and often do leach into the soil as the litter breaks down, and therefore, result in pollution. Or, wildlife mistakenly ingest litter or become entangled in it. And, the pollution caused by litter impacts our water environments too. Approximately 80% of the trash in our waterways is derived from land-based sources. This waterway litter also harms aquatic wildlife and causes water pollution, but it also creates ecological and economic damage to the Gulf of Mexico and its coastline because all waterways in Texas lead to the Gulf of Mexico. Another problem with litter is that man-made chemicals in our environment readily bond, and therefore, accumulate on plastic litter fragments, one of the most common types of litter in the environment and the Gulf of Mexico and its coastline. Furthermore, many communities in the North Central Texas region are grappling with capturing litter that is entering stormwater systems and creating issues with flows.

Litter is also an economic burden for our communities. A study completed by Burns and McDonnell for Texans for Clean Water in 2017, examined nine cities in Texas that represent 25% of the State's population. The study concluded that these cities spend more than \$50 million dollars a year on litter abatement, education and outreach, and enforcement. This amount is for direct costs by municipalities only and does not include costs for clean-up by the private sector or any type of valuation of volunteer time. Volunteer participation is the most cost-effective means a community can rely on for removing litter.

Ambassadors for the Trash Free Texas Website

Project Contact: *Elena Berg, North Central Texas Council of Governments*

eberg@nctcog.org

The Trash Free Texas website (www.trashfreetexas.org) was deployed in 2018 by the United States Environmental Protection Agency and other partners. The website hosts a webmap, the Trash Free Texas Adopt-a-Spot Map, that displays adoptable litter cleanup locations in Texas. Clicking on a site on the map will reveal more detail about the location, including the site coordinator, the person who added the site to the map and coordinates its clean-up. By displaying the sites for all to see, the map helps connect volunteers with communities needing help with clean-up and reduces the coordination time for both parties. Communities, non-profit organizations, schools, or any other land-owning entity in Texas can have litter cleanup sites on the map.

After the debut of the Trash Free Texas website and its Adopt-a-Spot Map, resources were limited, unfortunately, and so the use of the website and its map declined. In the fall of 2020, the North Central Texas Council of Governments (NCTCOG), the Houston-Galveston Area Council (NCTCOG's counterpart in the Houston region), and The Meadows Center for Water and the Environment at Texas State University (The Meadows Center), received a grant from the U.S. Environmental Protection Agency to enhance the website as part of a 3-year project. Three goals of the project are to: 1) Encourage communities, non-profit organizations, or any other entity in Texas to add their litter cleanup sites to the Adopt-a-Spot Map; 2) Educate volunteers about the website and encourage them to use it to find sites to clean-up, and 3) Develop and add litter cleanup resources to post to the Trash Free Texas website. Since project initiation, 22 entities have added over 700 litter cleanup sites to the map and two litter cleanup toolkits were created and posted to the Trash Free Texas website with two more under development. Graphics were also created and posted on the Trash Free Texas Partner page (www.trashfreetexas.org/partner) for organizations who add their logo to the Trash Free Texas website and/or add litter cleanup sites to the map, so these entities can proudly display their partnership with the Trash Free Texas website on their own materials.

Another significant addition to the Trash Free Texas Adopt-a-Spot Map since project initiation is a link, found in the bottom right-hand corner, to Keep Texas Beautiful's Texas Litter Database, which launched in July 2021. The Texas Litter Database organizes and stores the trash data collected in Texas in a central location and can be accessed by anyone, after setting up an account, through any smart device or computer at www.txlitter.org. All clean-up volunteers in Texas are now encouraged to use the database to enter their trash data. The power of this database is that all trash data collected in Texas can now be viewed in one location, instead of being siloed within each community or clean-up event organizer. Including this link on the map means that the Trash Free Texas website is a "one-stop shop" for litter cleanup volunteers in Texas because they can find sites, contacts, and resources, complete the clean-up, and then return afterwards to enter their trash data.

NCTCOG, the Houston-Galveston Area Council, and The Meadows Center's effort is in need of Texas Master Naturalist volunteers to act as ambassadors that can raise awareness about the Trash Free Texas website and its Adopt-a-Spot Map with other volunteers, volunteer organizations (such as girl and boy scout troops, school groups, Keep Texas Beautiful affiliates, community groups, etc.), and communities in Texas. Specifically, the project needs Texas Master Naturalist volunteers to encourage the adoption of sites on the map, encourage communities to add their litter cleanup sites to the map, and assist communities, as needed, with the data entry required to add their litter cleanup sites to the map. Texas Master Naturalist volunteers are also asked to make volunteers and site coordinators aware of the link to the Texas Litter Database on the map and the importance of entering trash data to the Texas Litter Database after cleanup events.

To assist with the Ambassadors for the Trash Free Texas Website project, Trash Free Texas outreach resources are already posted to the Trash Free Texas website and are available to Texas Master Naturalist volunteers. These resources are: PowerPoint presentation template; Promotional video; Brochure; 4-minute "How-to" video explaining how to submit sites to the map. Frequently-Asked-Questions documents for volunteers and site coordinators, the Trash Free Texas logo, and graphics.

Initially, Texas Master Naturalist volunteers would need to spend time exploring the Trash Free Texas website to learn what is available on the website, how to adopt sites, how entities add sites, and how the Texas Litter Database works. After reviewing this information, Texas Master Naturalist volunteers will likely be knowledgeable enough to answer questions they receive about the website, but they can always email the Trash Free Texas website coordinators (or direct others to do so as well) at contact@trashfreetexas.org. This email account is checked regularly, and a response will be received rather quickly. Help with the Texas Litter Database can be found in the User's Guide, which is found at the upper righthand corner at txlitter.org. For any issues with the database, email txlitter@ktb.org.

After exploring the Trash Free Texas website, the next steps for the Texas Master Naturalist volunteer who works on this project would be to discern which communities or organizations to contact for outreach, finding the contact information for reaching out through phone calls or emails, and perhaps even making and giving presentations using the Trash Free Texas PowerPoint template (found at www.trashfreetexas.org/partner). Depending on the recipient of the information, this outreach could include information about the Trash Free Texas website, how to add a site, how to adopt a site, and a reminder to enter trash data to the Texas Litter Database after the cleanup takes place.

Any help that can be provided to this outreach effort is greatly appreciated!

Virtual Service Project

What could a volunteer hope to build/gain from helping your project? Contacts and relationship-building with other like-minded organizations and people within your community or area; helping populate the Trash Free Texas Adopt-a-Spot map; helping collect trash removal data across Texas; and helping communities with limited resources with their clean-up efforts.

Beyond the standard Texas Master Naturalist training, is there any specific expertise or experience needed? No

Is there any additional training you'd want the volunteers to complete before they assist your project? No, there is no additional training needed!

What are your expectations of how and when the service would be carried out? This service is entirely flexible and based on the schedule of the Texas Master Naturalist volunteer. It can be completed at home or, if meetings or presentations are scheduled, based on the Texas Master Naturalist volunteer's availability for travel elsewhere. Also, this service can be carried out year-round.

What is the potential total time commitment (i.e # of hours/week or per month)? Are hours flexible? Is the time period flexible? The total time commitment for this project is entirely flexible and based on the needs of the TMN volunteer. Many or a few hours can be spent on this project in any given week. The time period is also completely flexible. The service can be carried out year round.

How long do you anticipate the project lasting? As long as a volunteer wants to help!

Why is this project needed, what are the expected outcomes? How is it linked to the mission of the TMN Program? The Ambassadors for the Trash Free Texas Website project encourages the removal of litter in Texas and helps build a network of volunteers that communities can rely on to remove litter in a cost-effective way. By empowering volunteers with information and providing connections to community contacts, this project seeks to reduce the impacts of litter in Texas while also building community resilience.

Litter in Texas is not only unsightly, but also harms our land and water environment. The chemicals in litter can and often do leach into the soil as the litter breaks down, and therefore, result in pollution. Or, wildlife mistakenly ingest litter or become entangled in it. And, the pollution caused by litter impacts our water environments too. Approximately 80% of the trash in our waterways is derived from land-based sources. This waterway litter also harms aquatic wildlife and causes water pollution through the leaching of chemicals, but it also creates ecological and economic damage to the Gulf of Mexico and its coastline because all waterways in Texas lead to the Gulf of Mexico. Another problem with litter is that man-made chemicals in our environment readily bond, and therefore, accumulate on plastic litter fragments, one of the most common types of litter in the environment and the Gulf of Mexico and its coastline. Furthermore, many communities in the North Central Texas region are grappling with capturing litter that is entering stormwater systems and creating issues with flows.

In addition, litter is an economic burden for our communities. A study completed by Burns and McDonnell for Texans for Clean Water in 2017, examined nine cities in Texas that represent 25% of the State's population. The study concluded that these cities spend more than \$50 million dollars a year on litter abatement, education and outreach, and enforcement. This amount is for direct costs by municipalities only and does not include costs for clean-up by the private sector or any type of valuation of volunteer time. Volunteer participation is the most cost-effective means a community can rely on for removing litter.

This project is aligned with the mission of the Texas Master Naturalist program in that its overall goal is to take care of our environment and work to engrain that sentiment at the local level throughout Texas.

Armchair Botanist: Community Scientists Transcribing Specimen Labels

Project Contact: *Tiana Rehman, Botanical Research Institute of Texas*
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While more than 3 million botanical specimens exist in Texas herbaria, only a small fraction of these are digitally accessible for observation or inclusion in scientific studies. Producing images of these specimens is the first step in liberating these data for research and education. The second step requires identifying and extracting pertinent information about the collection from associated specimen labels. These label data are crucial to then map (or geo-reference: apply geocoordinates to textual locality descriptions) these specimens. We are at step 2 of our project and would welcome your time and expertise in transcribing information from images of Texas-collected botanical (herbarium) specimens that go back nearly 200 years. This activity can be done on your own schedule, with an internet-ready computer (possibly a tablet) and requires no set time-commitment. Weekly Zoom sessions are free to attend. Initial training in herbarium practices and botanical nomenclature is recommended (and provided), and a familiarity with these and Texas geographies and habitats is a bonus!

Virtual Service Project

What could a volunteer hope to build/gain from helping your project? Project volunteers would gain an understanding of the scientific process of botanists, and a familiarity with the Texas flora and a historical perspective of the botanical exploration of our state. Individuals would be exposed to online and physical resources to expand their botanical knowledge.

Beyond the standard Texas Master Naturalist training, is there any specific expertise or experience needed? No.

Is there any additional training you'd want the volunteers to complete before they assist your project? Yes, there is additional training that I will set up for those who choose to participate in my project.

If yes, how many hours of AT would need to be completed before being able to carry out the service of the project? 1 hour

What are your expectations of how and when the service would be carried out? This activity is available online and can be accessed at any time. A computer (possibly a tablet) with an internet connection is required.

What is the potential total time commitment (i.e # of hours/week or per month)? Are hours flexible? Is the time period flexible? A volunteer can contribute as much or as little time as they wish, on their schedule. Typically the submission of a single record requires 3-5 minutes.

How long do you anticipate the project lasting? Over a year.

Why is this project needed, what are the expected outcomes? How is it linked to the mission of the TMN Program? Texas (and Oklahoma) sits at an ecological and biological crossroads, with extreme ecological gradients and exceptional plant diversity. Digitizing herbarium specimens from this region will enable these primary data sources to contribute to data to answer such questions as those related to uncovering patterns of species richness and phylogenetic diversity, and their relationships with respect to climate and spatial gradients, as well as investigate vegetation responses to climate change, and to improve the performance of species distribution models. Access to these data will better inform land management practices and contribute to our understanding of the Texas (and world) flora.