Photo by Alan Wilde

Galveston Bay Area Chapter - Texas Master Naturalists October 2014

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Climate Change - Just the Facts, Ma'am

By

Dr. Allan Treiman
Lunar and Planetary Institute

At Carbide Park

President's Corner by Maureen Nolan-Wilde, President 2014

It has been a very busy summer for our community. Even though temperatures were soaring, we continued our work in preservation and education, while also taking part in some incredible Advanced Training sessions. Fall is almost here; before you know it, we will be celebrating our accomplishments at our year-end celebration in December. Speaking of the year-end celebration, the Treasures of the Bay nomination process starts soon. These awards are extended to individuals and teams from our chapter and outside organizations that further our mission of education and stewardship of the Galveston Bay environment. We will also be looking for individual(s) who would like to take an active role on our Board.

Thanks to everyone who entered our photo contest and helped build our image database. It has been so successful, we are planning to repeat the contest next year. A special thanks goes out to the contest team; our judging sessions may not have been easy but they were educational, as well as being great fun.

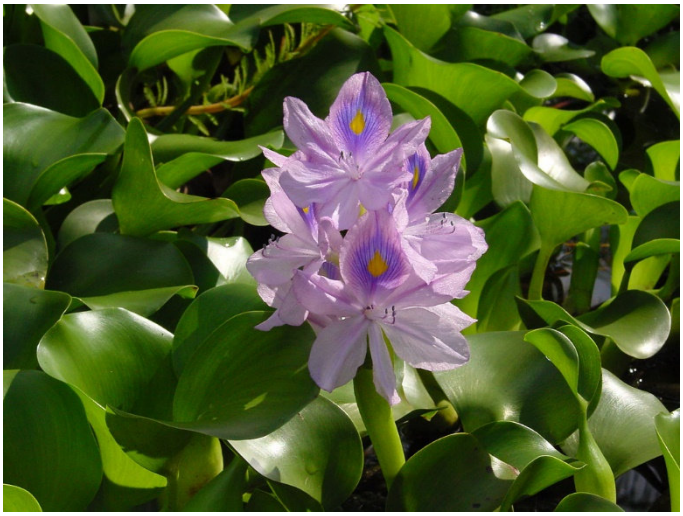
Oh yes, and don't forget to mark your calendars for the annual TMN Meeting to be held October 24-26 at Mo Ranch in Hunt, TX. The state meeting is a great way to meet others and expand your horizons.

Go out and enjoy; find your passion. Nature is calling!

August photo winner by Lynn Wright. Congratulations Lynn!

Wetland Wanderings by Diane Humes

During the month of August, the Wetland Restoration Team traditionally moves indoors to study wetland plant identification - makes us better wetlanders and encourages new team members! We concentrate on the plants we WISH to plant in the wetlands; however, as I write, the "world's worst weed" is propagating in our lakes and bayous, trying to take over our world, if a plant can be said to have such intentions.



Banned in 56 countries and Texas, water hyacinth, *Eichhornia crassipes*, is that plant, currently choking Armand Bayou's waters from bank to bank. A floater with bulbous petioles, fleshy round leaves, masses of feathery roots, and gorgeous purple flowers, it is a perennial native to the Amazon Basin. A freshwater plant, very popular in ponds and water gardens, it is intolerant of salinity, and finds refuge in the upstream portions of bayous, such as Horsepen Bayou, where the wastewater treatment plant outfall provides a constant supply of freshwater.

Water hyacinth was introduced into the U. S. in New Orleans in 1884 as an ornamental aquatic plant at the World's Industrial and Cotton Centennial Exposition, at what is now Audubon Park. This fair commemorated one hundred years of cotton trade between the U.S. and England. By 1890, water hyacinth had reached Florida and has caused problems ever since. Trying to solve the problem in 1910, the senator from Louisiana introduced a bill in the U.S. House of Representatives proposing to import and release hippopotamus from Africa into the bayous, on the theory that they would control water hyacinth and people could then eat the hippo meat. The bill lost by one vote, or we might also have been battling hungry hippos for the last one hundred years!

Stopped only by salinity or frost, water hyacinth grows incredibly quickly, especially in our warm, nutrient-rich waters with plenty of sunlight - it can double its biomass in 1 - 3 weeks and completely cover lakes and ponds. It reproduces by stolons that make daughter plants and forms thick, dense vegetation mats that impede water flow, shade all submerged vegetation, and prevent oxygen diffusion at the water surface. This kills both plants and fish, but provides good mosquito breeding habitat. The thousands of seeds produced can remain viable for three decades.

During the drought years, with high bayou salinities, water hyacinth was all but absent, leading some to think it was under control. Alas, it has returned with a vengeance.

There are three main methods of treatment against water hyacinth: chemical spraying, mechanical removal, and biological control with introduced beetles. Each method has drawbacks; none is foolproof; all are expensive. Passive treatment would wait for a "frog strangler" to wash it out of the bayous, into the higher salinities of Galveston Bay; then it will be found dead on Galveston beaches. But, "be careful what you wish for"; we have no guarantee of a storm and may not want one! So, chemical spraying has already begun and will continue, if funding permits.


Photo by Chuck Snyder

Some suggest that this plant's high growth rate makes it a candidate for biofuels, although it has rather a high water content. It is also tolerant of pollutants and has potential for phytoremediation; the roots can remove heavy metals, organic compounds, and nitrogen and phosphates from water. The plant fibers are used to make rope and handbags, even paper!

So, it appears every black cloud has a silver lining. In lieu of wishing for a frog strangling rain, we can take the example of Patterson Clark, (alienweeds.org) naturalist/artist in Washington, D.C. who makes his art supplies from harvested invasive species. Perhaps we can make paper for our nature print projects out of our own "worst weeds"?

Creating Stormwater Wetlands by Mary C. Edwards

I have seen some amazing flora and fauna while working in the wetlands, but one of my favorite species is humans. It is tremendously satisfying to see young students tentatively wade into their first wetland restoration experience and come out several hours later muddy, happy, more knowledgeable and connected to the land. Former children of any age can experience this too, while doing something vitally important for the local environment.

My organization, the Texas Coastal Watershed Program (TCWP), is a part of Texas A&M AgriLife Extension and Texas Sea Grant. We coordinate grant-funded projects which improve water quality and community resilience along the Texas Gulf Coast. You may be familiar with the wetland restoration effort led by my colleague Marissa Sipocz at Sheldon Lake State Park. Another of these projects, the Stormwater Wetland Program, demonstrates how wetlands can be used in flood control basins to clean run-off water naturally, while providing natural habitat and parkland in Galveston County, Brazoria, and lower Harris counties.

This is important for several reasons. First, the bad news: most of the waterways in this area have been designated as impaired, often due to stormwater runoff carrying sediment, fecal bacteria, fertilizer compounds, and other contaminants from paved and developed areas. This contributes to fish kills, and trouble downstream such as oyster bans and beach closures. At the same time, the coastal prairie and wetland complex which once blanketed our region has been reduced to a mere 1% of undisturbed prairie[1].

Now for the good news: wetlands filter and clean water naturally through a number of biochemical and physical processes. They also attract and support wildlife; about half of North American bird species spend part of their life cycle in the wetlands[2]. Stormwater detention basins are required for new commercial, suburban and road development in the region, but generally wetlands are not included in the design. As the benefits of wetlands created in flood control basins are demonstrated, we can improve the standard for stormwater basins and make a positive impact on water quality and natural habitat.

Although stormwater wetlands are still cutting-edge for our area, they have been put to use in many states. Have a look at the American Public Works Association's Project of the Year: the Alewife Stormwater Wetland in Cambridge, Mass. http://www.cambridgema.gov/citynewsandpublications/news/2014/07/alewifestormwaterwetlandprojectnamedpublicworksprojectoftheyear.aspx

Closer to home, planning has been underway for several local stormwater wetlands. A key project will be at Exploration Green Park, a 200-acre redevelopment of the defunct golf course in Clear Lake City. The master plan includes a chain of lakes and stormwater wetlands, in addition to amenities such as ball fields and a complete trail system. The park is in the watershed for Horsepen/Armand Bayou and Clear Lake. In order to provide the thousands of wetland plants that will be needed in each of the five phases of construction, TCWP facilitated construction of a wetland nursery adjacent to a tree nursery at the park.


Photo by Mary Edwards

Another project will be the replanting of the floating wetlands at Clear Creek I.S.D.'s Education Village in League City. Currently, you can see three rafts made of plastic fibers floating on the surface of the campus stormwater detention pond. They are one of the first demonstrations in Texas of floating wetlands, which have been used elsewhere for various habitat and water quality improvements. Shortly after the wetlands were planted and launched last fall, with great work from students and Master Naturalists, nutria arrived and ate most of the new plantings! This fall we will replant using test plots of plant species nutria are reputed to avoid, and for an experimental control, some of those we know they

will eat. Students will monitor the plots as part of a hands-on science experience.

Other projects are planned for Brazoria County. A wetland for the existing detention basin at the John Hargrove Environmental Complex in Pearland will enhance the proposed Pearland Nature Center. In Alvin, TCWP facilitated the design of wetlands into the proposed 15-acre stormwater detention basin at Kost and South Street. This is the first of three new stormwater detention basins to relieve flooding along the M1 canal, part of the Mustang Bayou watershed. Cradle of Texas MNs will also take part.

Are you wondering how you can participate in creating these wetlands? There will be field collecting expeditions for seeds and plants, preparing and potting the collected plants, germinating seeds, dividing and propagating plants, depending on the plans for each site. We will, of course, plant the wetlands when excavation or other preparations are complete. There will be opportunities to mentor students or community volunteers in any of these tasks. Monitoring for water quality and flora and fauna surveys will also be performed.

Starting September 4, we will hold regular Thursday morning volunteer hours to field collect and propagate native wetland plants in the Exploration Green nursery. While Thursdays may present a conflict in the schedule for some GBA chapter members, it is a compromise between a number of other demands. Please see the calendar for more information, and send a note to mcedwards@tamu.edu to sign up and get weekly updates on volunteer activities.

Those who have participated in events with Marissa Sipocz and the TCWP Wetland Restoration Team will find this familiar work. It is also play…an opportunity to let your inner child get happily muddy and helpful!

1. U.S. Fish and Wildlife Service, U.S. Geological Survey. 1999. *Paradise Lost? The Coastal Prairie of Louisiana and Texas.* http://www.nwrc.usgs.gov/prairie/paradise_lost.pdf
2. U.S. Environmental Protection Agency. 2006. *Economic Benefits of Wetlands*. Office of Water. EPA843-F-06-004.

Native Bees of Texas AT by Madeleine K. Barnes

Master naturalists were treated to an in-depth look at native bees presented by Michael Warriner from TPWD Wildlife Diversity Program at TCPP on Monday, August 16th. When the talk is buzzing about bees, the non-native European honeybee comes to mind. This insect has been domesticated for over 4,000 years. In the 1950's there were 5.5 million managed honeybee colonies in the U. S.


Photo by Chuck Snyder

Here are some bee facts: bees are complete vegans and get their food in the form of nectar and pollen from flowers. They are the most effective and efficient pollinators. Pollination occurs incidentally during the active gathering of pollen and nectar by all bees. There are 4,000 species of native bees in North America with 700 species in Texas. They are the primary pollinators of native plants and others such as tomatoes and blueberries. They help to maintain the integrity of the terrestrial ecosystem. While the European honeybees are defined as social bees having a queen and daughter workers, 90% of native bees are solitary species, nesting in the ground or in dead woody material, and do not defend their nest sites. Bumblebees are also native bees and are one of the truly social groups of native bees having colonies with a queen and daughters. They nest in pre-existing holes and will defend their nest sites.

The characteristics of native bees are: rounded & robust bodies, hairy, have 2 pair of wings, 2 large eyes & 3 ocilli (smaller eyes on the center of the head), long elbowed antennae, and only females carry pollen and have a stinger. Sometimes there is confusion in identification between bees and flies, but flies have only two large eyes near the front of the head, 2 wings, are generally less hairy, have thinner legs and short, thick antennae. Flies do not carry loads of pollen either. There are also identifiable differences between bees and wasps and wasps are not effective pollinators.

Why are native bees important? Native bees are critical to native plant reproduction and ultimately, are key players in the maintenance of Texas's natural

ecosystems. A significant number of native plants pollinated by these bees produce fruit, nuts, or seeds that thousands of animal species depend upon for food, including some popular game animals. Native bees also play economically important roles in agricultural production. The value of native bees to U.S. agriculture is estimated to be approximately **$3 billion annually**.


Photo by Chuck Snyder

While most everyone has heard at least something in the news about declining bees, most press coverage has been directed toward the plight of the non-native European honeybee. Very little attention is directed towards native bees, like bumblebees. Over the past few decades a substantial body of research has identified declines in bumblebee populations in Europe and North America. Bumblebees have gone virtually unstudied in most states in this country despite their critical roles in agriculture and natural ecosystems. There is a real need to evaluate bumblebees in the United States to assess how their populations are faring and if conservation actions are needed.

What are the threats to our native bees? Native and non-native bees face the same threats including parasites like the varoa mite, diseases such as fungal disease from Europe, changes in agriculture, and loss of habitat. What can you do to help? There are two things that bees need: food from flowers and places to nest. You can help by including native flowering plants in your landscape that support more that one type of insect. Plan you landscape to provide a diversity of flowers in size and shape, 3-5 species for each season (spring, summer, and fall) and leave some bare areas of ground for nesting or provide wood nesting bees with wood block or other nest sites.

Michael Warriner provided the following reference websites for help with identification and conservation, including book lists, additional native bee information, native plant information, and ways to Be(e) involved..

http://www.xerces.org/
http://texasbumblebees.com/
http://nativebeecoop.com/
http://www.inaturalist.org/

Sea Turtle Adventure – A Day of Memories by Maureen Nolan-Wilde

In mid-July, several Master Naturalists ventured down to Padre Island National Seashore to see the Kemp's ridley sea turtle recovery program in action. Our day was packed with events, starting with the release of baby sea turtles, followed by a talk given by Ranger Buzz, who outlined the park's history and challenges and then led us on a coastal prairie walk. Buzz took us off the formal pathway to stand on top of one of the dunes, allowing us to fully experience the park and its natural habitats. Before we left, Buzz told us one of the best times to visit is in late October/early November when the coastal prairie is in full bloom.

Later that day, we visited the University of Texas Marine Science Institute in Port Aransas and the nearby Animal Rehabilitation Keep (ARK). We were treated to a special tour of the institute's new learning center, which was set to open the following week. We then visited the ARK, where we were privileged to be taken on a tour by Tony Amos. Tony is a legend in his field and was an incredible tour guide, leading us through his sea turtle, colonial water bird and owl/hawk rehabilitation areas. He shared with us that, in a single day last winter, he and his volunteers released over 300 green sea turtles that had been cold-stunned - an effort that required a convoy of over 30 cars, each carrying 10-13 turtles. The highlight of the tour was Tony selecting a green sea turtle for release and inviting us to participate. It was amazing!

Many, many thanks to T. J. Fox for arranging such a wonderful trip!

Naturalist Paradise by Diane Humes

The last two weeks in July must have been pretty quiet around here, because a fair-sized group from our chapter was in Brazil with Cindy Howard, our intrepid leader, exploring the flooded forests upstream from Manaus. For 14 days we called the boat, *Dorinha,* our home, as we sailed on both the Solimoes and Rio Negro, tributaries of the Amazon, which officially begins by that name at the Meeting of the Waters downstream of Manaus.

Boat owner, expedition leader, and expert guide, Junior, informed us that the Amazon Basin has two seasons - rainy and less rainy. We were experiencing the beginning of the "less rainy" season - rivers were up by 10 to 15 meters and had yet to begin receding. Nearly everywhere we went, all we could see was water; we paddled the canoes through the treetops and tied the boat to a tree when we stopped.

From Manaus, the Amazon is still 1000 miles from the Atlantic Ocean. It is the main and, often only, means of transportation; we sailed past floating gas stations, barges, ferries - even a boat carrying school children. The people who call the forest home, since the high water lasts for several months, cope in various ways - houses are raised above flood levels, garden plants are set out on platforms until re-planting can begin, and everybody has a boat.

As befitted our collective interest in nature and wildlife, we got up early and explored in canoes before breakfast, again later in the day, and, often, again at night. We fished for piranha - they're pretty good - hiked (twice) on real land, swam with the river dolphins - pink and gray. We saw over 200 species of birds - scarlet macaws, toucans, and a harpy eagle! - and only six were already known - osprey, great egret, snowy egret, cattle egret, swallow-tailed kite, laughing gull.

We were interested in everything; we saw monkeys, bats, insects (not all were friendly or pretty, like dragonflies and Blue Morphos!), snakes, and caiman; we drank nine new kinds of fruit juices, and saw the Southern Cross. We crossed Indian territory, but also went to town - Manaus and Novo Airau - and shopped in the markets, toured the Opera House, and feasted on the culinary delights of Brazil. We were ably and cheerfully fed, guided, and taken care of by our wonderful crew and learned a little Portuguese, as in, "Uma outra caipirinha, por favor; Obrigada".

Arline, Helle, Beverly, Diane, Verva, Mike, Ellen, Sara, Jo, Cindy, and our friends and family, Marie, Deb, Vicki, Chris, Allan, Evelyn, Sue, Linda, Grace, Mark and Nancy, arrived home tired and happy (and broke!) after a marvelous trip to naturalist paradise, ready to go back before we even left, still feeling the boat rocking and hearing the dawn chorus of howler monkeys in our heads.

Amazon Flooded Forest Ecology 101 by Cindy Howard

Where on earth would you look forward to an annual 45-foot flood? Welcome to the Amazon lowland floodplain - nearly 100,000 square miles of forest that gets inundated every year when the Amazon River and its many tributaries overflow as a result of the seasonal tropical rains. Forty-five feet? Every year? Can you imagine that happening in the Galveston Bay area?

The Amazon River is the largest river system on earth, draining about 40% of the continent of South America

and containing at least 20% of the world's total freshwater. It was thought for years that the Nile was a couple hundred miles longer than the Amazon, but even that fact is in question now. After the Amazon and the Nile, seven of the next 18 largest rivers in the world are tributaries of the Amazon – the Madeira, Negro, Japurá, Maranon, Tocantins and Tapajós (the Mississippi, by the way, ranks 15th). That's definitely a lot of water, but what causes the massive yearly flood?

Most of the Amazon River system is contained in a gigantic 3-sided bowl, with ancient highlands (called shields) on the north and south, the Andes Mountains on the west and a huge delta into the Atlantic Ocean on the east. The river originates in the Andes (Peru and Bolivia both claim the headwaters) and drops over 10,000 feet into the lowland bowl. From the bottom of the Andes, the Amazon flows 3,000 miles to the Atlantic over an elevation change of only 325 feet. That's a "drop" of 1.3 inches per mile! I think we'd all agree that the lowland Amazon is, for all intents and purposes, flat. Add 90-240 inches of seasonal tropical rainfall (dependent on region) and you have a bowl of water.

Granted, the bowl doesn't totally fill up, but the water does spread out a tremendous distance through the floodplain forest; in some areas the flood extends up to 14 miles from the river channel. This creates two types of flooded forests: varzea (flooded by nutrient-rich water from the Andes) and igapó (located along nutrient-poor blackwater tributaries).

In the central Amazon, the rainy season begins in December each year and ends in July, when the flood reaches its maximum height. This really changes the landscape: tall trees become inundated halfway up their trunks and shorter trees may become totally submerged. Lakes appear where thick woodlands existed just months earlier. Subsequently, during the dry season, the water recedes as the Amazon drains into the Atlantic, and the lowest water level occurs in November. [A note here, as our guide Mo would say: "It rains a lot in the rainy season, and in the dry season it just rains less."]

What does all of this mean for the plants and animals living in the floodplain forests? Well, it's adapt or get out of the way!

As the water rises vertically by inches each day, most terrestrial organisms migrate up – up to higher ground (mammals and reptiles) or up into the canopy (invertebrates, such as termites, ants, springtails, centipedes, the list goes on and on). When the flood recedes, these creatures return to their original habitats until the water rises again. It's like the great African migrations, only on a much, much smaller scale.

However, since the trees in varzea and igapó habitats cannot migrate out the way of the floods, they have adapted to either standing in or being all the way under water. But it's even more than that. It turns out that these trees are specifically adapted to the average water level and flood period for whatever part of the floodplain they inhabit. Trees that are totally submerged during the annual flood will stay green and resume photosynthesis as soon as their leaves reemerge from the water, even if they have been under for months. However, if over several years the annual floods become higher and last longer than average, the trees will die. If the annual floods become lower and shorter than average, the trees will die.

These floodplain forest trees don't waste that time they are standing in water either. Many species start to flower as the flood starts creeping up their trunks and fruiting is timed precisely with the maximum water level. The large, pithy fruits fall off the trees as the flood begins to recede and seeds are then dispersed downstream. Smart trees! One species, the false kapok (*Pseudobombax munguba* – sorry, I love its name), goes beyond that. This tree has flowers pollinated by bats and seeds dispersed by wind, so leaves are just in the way. When the water starts to rise, false kapok trees drop all of their leaves and don't

replace them until the water begins to recede. How do they function over six months with no leaves, you ask? They have ribbons of chlorophyll in their trunks!

The biggest winners in the varzea or igapó during the yearly floods are the fruit-eating birds, arboreal mammals (such as monkeys), fish and river dolphins. They migrate too, but it's into the flooded forest rather than away from it. Birds and monkeys head for the tasty fruit in the trees, fish feast on submerged leaves and fallen fruit, and river dolphins head into the underwater forest after the fish. It's a happy time for wildlife.

Unfortunately, the Amazon flooded forests are among the most threatened ecosystems in South America, due to increasing human presence in previously inaccessible habitats. Some of these threats include increasing agriculture, cattle ranches and water buffalo farms in the varzea; selective logging and sand extraction in the igapó; overharvesting prized species of fish; urban expansion in several Amazon cities, along with new roads and proposed dams; even declining water quality in some areas.

And then there's the unknown effect of global climate change. The highest flood mark has been recorded on a wall in the port of Manaus in the central Amazon every year since 1900. The three highest floods (all went over the top of the wall) and two worst droughts ever measured have occurred since 2000.

What are the answers? Fortunately, most of the Amazon seems to be in better shape than any other tropical forest in the world. The government of Brazil has set aside huge tracts of land as forest reserves and national parks and is actively working to preserve more. Much of this land includes floodplain forests. The more we understand about the ecological value of the Amazon flooded forests, the more we will be able to protect them.

2014 Southeast TMN Regional Conference by Madeleine K. Barnes

On Saturday, July 19th in Livingston, Texas, the Piney Woods Lakes Chapter hosted a one day TMN Regional Conference. There were 11 chapters represented with 64 participants in attendance. The conference kicked off with Forester Mike Murphrey of Texas A&M Texas Forest Service covering how drought and pine beetles impact healthy forests and how to read a "tree cookie" (tree rings). The next speaker was Mark Waters who is the Trinity River Authority Lake Livingston Project Manager. He outlined the history of the dam and lake which is the primary water source for the Houston metropolitan area. Brian Van Zee, TPWD-Inland Fisheries Regional Director, followed by bringing us up to date on the zebra mussel as the latest threat in Texas river watersheds. The morning session was concluded with Mary Pearl Meuth, TMN State Assistant Program Coordinator.

The first afternoon session began with Ronald Havran who is the CoCoRaHS Houston-Galveston Regional Coordinator. You may be wondering like I was at what all those initials stand for - The Community Collaborative Rain, Hail and Snow Network. He answered the questions about who, what, how, and why this national volunteer citizen scientist program exists and how the data is used to help preserve Texas natural resources. For local historic insight, Katie Daniel of the Alabama-Coushatta Tribe discussed the tribe's cultural programs and natural resource management of Lake TomBigBee. The final presenter was Nancy Brown, US Fish & Wildlife Services SW Regional Public Outreach Specialist, who provided the history, formation, and goals of the national wildlife refuge system, consisting of 560 nationwide refuges with 20 of them located in Texas. Seventeen of these refuges are open to the public and four are in Anahuac, Brazoria (2), and Angleton - close to our chapter location.


Photo by Maureen Nolan-Wilde

Our chapter was well represented at the conference and we were all treated to breakfast goodies to start and a good lunch with ice cream for dessert. It was an opportunity to meet and visit with other chapter members and to learn about other issues and opportunities for Master Naturalists.

This was also an opportunity for a few of us to stay at the Lake Livingston State Park which is a great place to take hikes, go for horseback rides, try the fishing, or roast some marshmallows on the campfire while watching fireflies in the woods. The conference was a success due to all of the efforts of the Piney Woods Lakes Chapter members and well worth the trip up the highway.

Nature Printing - Gyotaku & More by Verva Densmore

"Explore your creativity and discover your inner artist" was the quote on the book lying among the beautiful prints and bottles of ink. That is exactly what the advanced training class, "Nature Printing - Gyotaku & More", presented by Suzanne Becker and Julie Massey, invited master naturalists to do. This very small class (only 15 could be accommodated) was very popular and had a long waiting list so, hopefully, will be offered again in the near future.


Photo by Mel Measeles

The students divided into two groups, one doing the advanced fish printing, while the other learned nature printing techniques with leaves, flowers, and other items from nature.

During the advanced fish printing, students made their own "tampos" for applying paint to the fish, made a "cradle" for the fish, and learned to blend their paints and highlight areas of the fish anatomy. Several students brought fabric items on which to print, but there was also rice paper for making works of art to frame and hang on the wall. Students used their hand-made applicators, rollers, paint brushes, and even their fingers to paint their fish and Julie suggested they use their creativity and imagination to figure out ways of getting the effects they were looking for.

The enthusiasm for this class was perfectly expressed when one student said, "This class should be a whole day class." Working with Suzanne on the printmaking obviously stirred creative juices, and folks wanted to keep it going. Using block print paint, felt markers, ink pads, and almost anything with water in it, students can make prints. Suzanne brought a variety of paper and dried leaves and flowers; many students brought items they had gathered to add to the possibilities. The results were beautiful. Suzanne promised that no one will walk around in nature or look at plants the same way again. We will all want to make a print from each one.

These wonderful new skills-- thanks to Suzanne and Julie-- will now be available for us to use as we work with students of all ages.

Heritage Book Study - Review of *Sierra Club: 100 Years of Protecting Nature*

by Madeleine K. Barnes

What do you know about the history of the Sierra Club? You may have heard about this organization in relation to their current focus on green energy and preventing climate change, but how did they start out and grow to over 2+ million members currently with chapters across the nation. The Sierra Club is one of the oldest environmental organizations in the U.S., having been founded in 1892 by John Muir.

Although he was Scottish-born, John Muir became a leading American conservationist, preservationist and naturalist writer. He discovered the Yosemite Valley during his travels and spent many years exploring it and the high country around it. It was through his efforts, principally, that Yosemite National Park became a reality. The idea was to protect that area from the commercial logging, grazing, farming and hog raising operations that were depleting the natural resources under the management of the State of California. The original concept of the club's organization was, "To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; and to enlist the support and cooperation of the people and government in preserving the forests and other natural features of the Sierra Nevada Mountains."

From this beginning, the author Tom Turner, who was a staff member of the Sierra Club Legal Defense Fund and an essayist on environmental issues, takes us on a journey of the growing activism in the organization and changes from promoting environmental conservation regionally to political advocacy and global involvement. The book contains almost 300 photographs from some of the most notable nature photographers, including Ansel Adams and Philip Hyde, providing a history of the Sierra Club's environmental movement. The scenery is amazing. The book delves into the organization's record of both successes and mistakes as it expanded in focus and membership. It still maintains a social function since inception to join others in enjoying hiking, mountain climbing, and other ways to see, experience, learn about, and appreciate nature. There are many names in the cast of characters along the way in the book and if you want to know more about the environmental movement, then this is the book for you.

Our current reading selection is *Tales of Old-Time Texas* by J. Frank Dobie. We read the first 154 pages for the September 8th meeting. The next reading assignment is the second half of the book (155 - 310 pages) for our meeting on October 6th at 10:00 a.m. This one is a real page turner and we look forward to a lively discussion. Hope to see you then!

State of the Prairie 2014 by Diane Humes

The last three days in May this year were notable for the State of the Prairie 2014 Conference, held in Fort Worth and sponsored by the Native Prairie Association of Texas. This was all *terra incognita* for me, but I made the journey without getting lost once and learned much about our fair state. With my hotel situated on a fork of the Trinity River, I could contemplate the source of my drinking water and how far it and I would travel to get home. I discovered lovely parks and a zoo, not to mention multiple fine art museums and a university, all within a few miles. I learned that Fort Worth was the "Queen of the Prairie City", which makes sense, but I had not known it.

The first day of the meeting was for field trips and I opted for a very informative tour of the Fort Worth Nature Center, one of the largest urban parks in the U.S., with a resident prairie dog town and herd of genetically pure bison - a beautiful place. The Fort Worth Botanical Gardens were an apt location for the next two days of meetings, with talks based on three themes: prairie biodiversity conservation, challenges in conservation and restoration, and community connections. Attendees had opportunities for food and fellowship; the fun was learning about prairies!

Prairies everywhere and in Texas face many challenges. Texas is the number one state in the rate of land conversion of its 142 million acres of privately held land. In addition to development, the change from native rangelands and croplands to non-native pastures on over 11 million acres, now constitutes the third largest land use category. But, it is clear that many landowners want to conserve their land; currently 8000 landowners have management plans with TPWD covering 31 million acres - almost a quarter of the state!

Photo by Diane Humes

Speakers discussed other prairie issues: invasive species management, finding and producing seed for restoration, grassland inventory and mapping tools (how can you save it, if you don't know where it is?),

immediate conservation needs and long-term prognostication, and the Farm Bill - who would have guessed? Seems that the federal government has subsidized farmers to keep land out of production - marginal land, or particularly environmentally sensitive parcels - since 1985, saving a lot of grassland from the plow. However, current commodity prices are very high, permits are expiring, and Congress has cut funding, with the result that conservation land - acres of pristine prairie - is being plowed under. Since one half of the U.S. is cropland, pasture, or rangeland, who will decide what is the highest use of the land?


Photo by Diane Humes

Do prairies always lose when they intersect with politics? Improving habitat for wildlife is also good for prairies and the Pittman-Robertson Federal Aid in Wildlife Restoration Act of 1937, law of the land since the Roosevelt administration, transfers funds from an excise tax on hunting licenses and guns to the Interior Department for wildlife management. Hunters in the 1930's were alarmed at the decline of game species and have been successfully supporting wildlife in all 50 states ever since. Two other such bills have been mainstays of wildlife: the Federal Aid in Sport Fish Restoration Act of 1950 (Dingell-Johnson Act) and the Migratory Bird Conservation Act of 1934 (Duck Stamp).

My hunting cousins surely knew this already, but I'm a city girl. Matt Wagner, TPWD, explained Texas's great successes with white-tail deer, bighorn sheep, whooping cranes, turkeys, and waterfowl populations due to this funding. However, the future is uncertain for hunters, because, although Texas has more than one million hunters, they are declining, as a percentage of the population.

But, the nation's current gun and ammunition buying frenzy has caused both joy and consternation due to the unprecedented amounts of money collected - exceeding $882 million combined for Pittman-Robertson and Dingell-Johnson just in 2013! This is cause for ecstasy from chronically under-funded state wildlife departments, but also consternation, because of the required match, which some states cannot afford. Is this what the law intended? (Personally, I have a hard time with spending money for conservation derived from the sale of AK 47's, but that's just me.)

Prairies are grasslands, which are by nature resilient and diverse; natives are more resilient than aliens. As grasslands have declined - prairies are today less than one tenth of a percent of their historical extent - grassland species have declined. The message from the prairies - they are down but not yet out. There is still land and always hope. We need to listen to the land and hear its story.

Ed Fair, a music attorney and self-described crazy-obsessed birder from Austin, listened to Common Ford Prairie, a park near downtown Austin. In 2009, when the 40-acre central field was 90% KR Bluestem, Johnson grass, and Bermuda grass and he could find one bird species in the park - a sedge wren. Ed thought it could be better habitat for birds, so he studied, asked questions, solicited funds, made plans, found helpers, worked on the seed mix, and got the support of the park manager. Now, in 2014, with 80% native plant species, he counts 99 species of birds, including Le Conte's sparrow, and has 150 helpers working on restoring the park's entire 215 acres.

Tell your story and let the land tell you its story, like Ed Fair. That may be the best thing you can do.

Ode to Julie by Carolyn Miles

Instead of asking Julie for an article, I thought we should write one to her. The following are all exerpts from Julie's nomination for Chapter Sponsor of the Year written by various chapter members in 2009.

Julie isn't worth her weight in gold; she's worth her weight in platinum! ..... She smoothly and effectively makes it possible and fun for us to do our best work as individuals and as a chapter. ..... On the clock or off, Julie is outdoors around Galveston Bay teaching, restoring, monitoring, enjoying. ..... Julie makes one want to learn it all and do it all. ..... But Julie's greatest motivational strength is the example she sets by "walking the walk" - she's there with us. .....

Julie is the glue that holds the Chapter together. She has a personal relationship with every single one of our 167 Chapter members, greets each by name and always has a cheery remark or a question about a family member, a recent trip, a volunteer project. She makes herself available, returns phone calls and sends personal notes commending an accomplishment or commiserating about a disappointment. As one member said, "Despite all that is going on, Julie is sensitive to each individual and aware of their strengths and personalities." These personal relationships allow Julie, in turn, to facilitate connections among members. She knows who might be willing to volunteer on a particular project or handle an administrative task. Because she is a friend to all, she is also expert at smoothing out any rough spots in relationships.

Julie Massey is an outstanding chapter advisor. The proof is in the pudding: training classes and chapter-sponsored workshops are full, the board is strong, leadership vacancies are readily filled; attendance at bi-monthly Chapter meetings averages 80 members and high numbers of volunteer service hours are achieved.

Although all those words were written 5 years ago, I strongly feel they are still true today.

Three Cheers for Julie!

Hip Hip Hooray! Hip Hip Hooray! Hip Hip Hooray!

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If you have Advanced Training or Volunteer Opportunities, please submit information to Cindy Howard, howardc@uhcl.edu

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