

T E X A S

Master
Naturalist™



HIGHLAND LAKES CHAPTER



Highland Lakes Steward

June 2016

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MISSION

The Texas Master Naturalist program is a natural resource-based volunteer training and development program sponsored statewide by Texas A&M AgriLife Extension and the Texas Parks and Wildlife Department.

The mission of the program is to develop a corps of well-informed volunteers who provide education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities for the state of Texas

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MESSAGE FROM MELISSA

by Melissa Duckworth

SWITCHING GEARS

After the anticipated completion and success of our various children's outreach programs aka GOP, HOP, BOP and dare I say BLOP (Blanco State Park outdoor programs), we are now preparing to focus our time and efforts on major projects that will benefit many in the years ahead.

I would like to mention the Texas Brigade Program. This summer HLMN is sponsoring Brianna Arnold to the Ranch Brigade program taking place July 18-22 in Santa Anna, Texas located in North Central Texas on a private ranch. "The Texas Brigades is a wildlife focused leadership development program for middle and high school youth interested in learning habitat management, communication skills and a land ethic." The Brigade Program consists of the Bobwhite Brigade, Bass Brigade, Buckskin Brigade, Ranch Brigade and the newly formed Coastal Brigade. We will hear about Brianna's experience at the Ranch Brigade in August.

This month, we begin the creation of the "discovery trunks" under the leadership of Paula Richards and the various Friend's group's representatives. We will prioritize which trunks will be most in need first, corroborate with available pro-

fessionals and secure materials after research and cost determination. These "discovery trunks" will be available for check out through an online system for all HLMN approved programs and/or activities.

Fredi Franki is chairperson of the steering committee for the creation of the Granite Shoals Bird Blind - Wildlife Viewing Station. As of this writing, we will be meeting with Granite Shoals city officials to discuss their vision, our vision and how the two will mesh. We will corroborate with them on plans using our varied skill sets to eventually finalize an area that will be valued years into the future.

Now, on the horizon, is the composting toilet at the Inks Lake State Park Wildlife Viewing Station. It will be funded by a grant from Texas Parks and Wildlife that was submitted by George Brugnoli, President of Friends of Inks Lake, and Park officials. No doubt the future toilet will be a friend to the surrounding environment. However, it will also be a teaching tool for any visitor making use of it.

Get ready to roll up your sleeves, get dirty, and put your thinking cap on for the second half of 2016. Busy days are awaiting us.

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Please submit pictures, articles, reports, stories, announcements, etc. to

chili865@gmail.com.

Photos should have captions and appropriate credits. The deadline for submissions to each month's newsletter is the 10th of the month and publication will be by the 15th.

NO JULY MEETING!

NO JULY NEWSLETTER!

AUGUST PROGRAM by Cathy Hill

Our speaker for the August meeting will be Marble Falls Middle School eighth grader Brianna Arnold.

She is our chapter's sponsorship recipient for the Ranch Brigade Youth Camp. She will be telling us about her experiences there.

GET WELL!

Prayers and/or Get Well Wishes :

- Sue Lilley
- Mike Kersey
- Dan Nutter
- Margie Dearmont's husband, Dean
- Judy Parker's husband, Bob
- Bob Glover
- Wade Hibler's wife, Ellen Ely
- David Payton

Stewardship

An ethic that embodies cooperative planning and management of environmental resources with organizations, communities and others to actively engage in the prevention of loss of habitat and facilitate its recovery in the interest of long-term sustainability.

THE HISTORY AND GEOLOGY OF OIL PRODUCTION IN TEXAS

by Cathy Hill

For our June 2016 HLMN chapter meeting we welcomed Linda McCall and Eric Roberts of the Bureau of Economic Geology. The BEG, established in 1909, is the oldest research unit at the University of Texas at Austin. Both geologists, Ms. McCall is the outreach and educational coordinator and Mr. Roberts is the associate director, energy division.

After a few introductory remarks, Ms. McCall turned the presentation over to Mr. Roberts. He began with a brief history of the oil industry which actually began with the hunting of whales in the 1800s, a practice which came close to driving them to extinction before hydrocarbon based oils were discovered in Titusville, Pennsylvania in 1859. Oil drilling in Texas began in 1866 but the real age of oil in Texas began in 1894 with the discovery of oil near Corsicana in East Texas followed by the boom started with the infamous Spindletop well in 1901 near Beaumont and the Gulf Coast Basin. These discoveries were followed by even larger ones, including the East Texas Oil Field in 1930, the largest oil field in Texas or any of the lower 48 states as measured by cumulative production. Texas has produced more oil and natural gas than any other state and remains the largest daily producer. No other state or region worldwide has been as heavily explored or drilled for oil and natural gas as Texas!

Mr. Roberts next briefly described some of the geology and origin of fossil fuels, which include oil, gas and coal. Most of the organic origins are comprised of single celled marine plants which were laid down as sediments into fine grained source rock, primarily shale. A basin refers to where these sedimentary rocks are much thicker than average and are buried deep enough to generate the heat to create hydrocarbons. Reservoir rocks are porous layers with spaces like in reefs, sand dunes and bar sands that can hold the hydrocarbons. A trap is a dead end in the subsurface plumbing system. Oil migration refers to the movement of hydrocarbons from a source bed / rocks into the porous reservoir rocks due to the pressure gradients and lighter specific gravity of oil and gas over water. Conventional reservoirs are when hydrocarbons flow readily into the wellbore. As it was pointed out by Bill Hill, spouse of member Cathy Hill, when fluid is brought up out of a reservoir by a pumping unit there is frequently a large amount



Eric Roberts and Linda McCall
Geologists with the
Bureau of Economic Geology
a division of the University of Texas at Austin

of salt water with the oil. These two components are then separated at the surface and stored in separate storage tanks. The oil is sold and then the water must be hauled away to a disposal well at the operator's expense unless the operator has a disposal well on site. These disposal wells are frequently oil wells that have been played out and converted to this purpose.

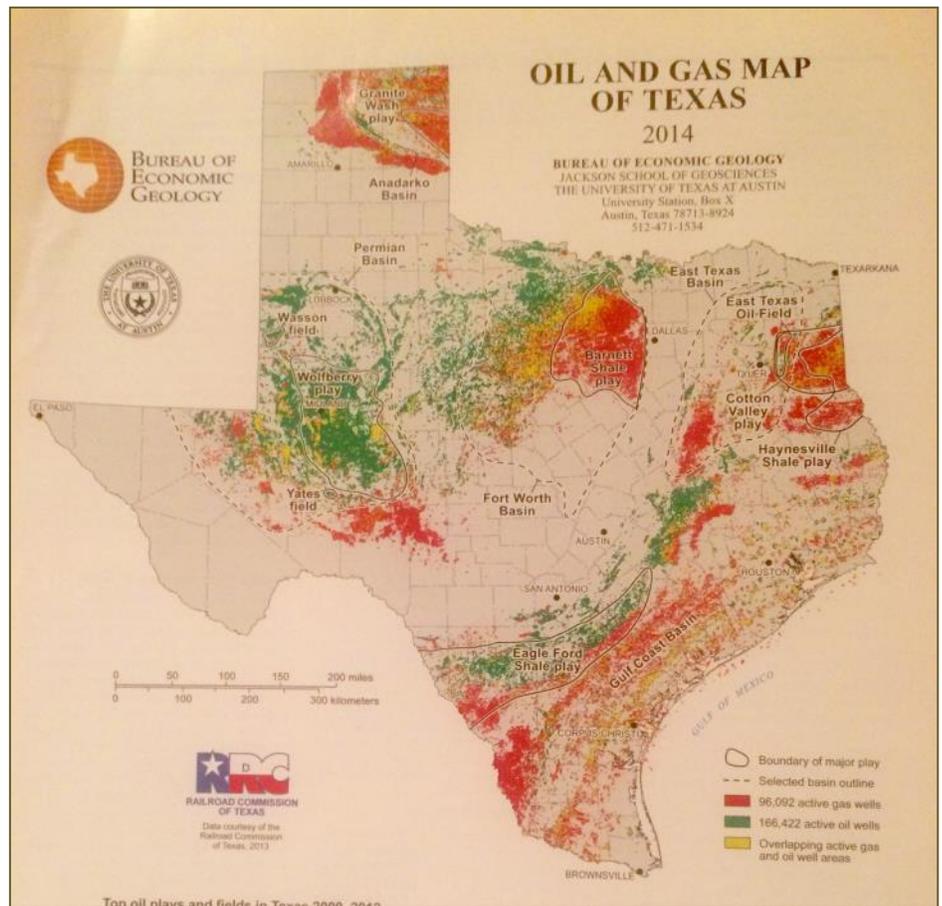
Overall oil production in Texas peaked in the 1970s. Successes in Enhanced Oil Recovery projects from the 1990s to the present were insufficient to offset the overall decline in production. From 2009 to at least 2013 however, oil production increased dramatically due to production from unconventional reservoirs. Unconventional reservoirs, including shales, are those which require hydraulic fracturing which creates cracks in the reservoir and enables oil and gas to flow into the well. The major sites for these procedures in Texas are in the Permian Basin, in West Texas, the Barnett Shale, in North Texas, and

the Eagle Ford Shale, in South Texas, which is currently by far the largest producing oil producing area in Texas.

These new procedures while great for increased production have raised some environmental concerns due to the large amount of water and power that is used in the fracking process. Seismic effects from both the hydraulic fracturing and high pressure injection wells are also a concern. There were numerous questions from our environmentally conscious members regarding these concerns and Mr. Roberts answered them in a calm, intelligent, and authoritative but never combative manner. And he assured us that there are continuous studies being done to address the matter. Additionally he mentioned the role of the Railroad Commission of Texas. The RRC, as it is commonly called, was established in 1891, and is the oldest regulatory agency in the state, and one of the oldest of its kind in the nation. It oversees all aspects of the oil and gas industry, plus surface mining of coal and uranium with special emphasis on safety and environmental issues and stewardship of natural resources.

The major resurgence of oil and natural gas production in Texas make this industry an important source of economic benefit in terms of value, jobs created, and tax revenue. Additionally the leasing of mineral rights to state and University owned lands provides royalty and leasing revenues that are deposited into the Permanent University and School Funds, important sources of revenue for public education in Texas.

One thing that Mr. Roberts did not have time to mention was that the increased production combined with the continued production in the Middle East and elsewhere soon flooded the market which began driving the price of oil down. This drop from a high of



around \$100 / barrel in mid 2014 to a low of about \$25 / barrel early in 2016 has had an enormous impact economically. Conventional drilling and pumping as well as fracking have come to a standstill in many areas. This has consequently put many out of work. Producers are storing their already produced oil in hopes of a resurgence in price. As of June 2016 the price of oil has crept back up to just under \$50 / barrel. For all of those involved in the oil industry this is good news. However it also means an increase in price at the gas pumps. So like many topics there are many sides depending on your perspective.

Note: Data from this article came from Mr. Robert's and Ms. McCall's presentation and some of the literature they brought from the Bureau of Economic Geology, as well as the personal business experience of my husband Bill Hill, a petroleum landman and oil well operator.

HLMN TRIP TO MAMMOTH NATIONAL MONUMENT

BY Cathy Hill

On Friday June 3, 2016, twenty five members of HLMN took a trip to the Waco Mammoth National Monument. This new unit of the National Park System as of 2015 is managed in partnership with the NPS, the City of Waco, and Baylor University. Our tour was led by the very knowledgeable and entertaining Master of Science candidate Dava Butler who is an employee of the Waco Mammoth Foundation. Her love of the subject was evident as she shared the history and science of this very special paleontological site which represents the nation's only recorded discovery of a nursery herd of Columbian mammoths. In 1978, two young men discovered an unusual bone in a ravine near the Bosque River on the northern outskirts of Waco. Luckily they had the good sense to take their find to Baylor University's Strecker Museum where staff identified it as a part of a Columbian mammoth femur. The Strecker Museum quickly organized a team to investigate the site and over the next 20

years uncovered the remains of many more mammoths as well as other ancient mammals and reptiles. It was determined that the find was that of a nursery herd of Columbian mammoths that appeared to have drowned together in a single natural event between 65,000 and 72,000 years ago. Among the female and juvenile remains however was also that of a mature male mammoth. Scientists believe that it may have been there for mating season, but as our guide Dava remarked, unfortunately it was a very short and tragic honeymoon. Columbian mammoths (named



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HATCHERY OUTDOOR Program

by Judy Parker

I'm calling it 'Super Cell Bummer'. It came roaring and sparking to the Hatchery just one hour after the inaugural session of this year's HOP began. The 2nd graders from Marble Falls Elementary got a show of nature nobody predicted. I'm not sure how we did it but all 95 kids stayed dry and sheltered until the buses were able to load. Many adults did not fare as well. 'Drowned Rats' is an appropriate description. The kids got in 2 stations before 'Bummer' unleashed.

RJ Richey in Burnet had a much different experience. 181 fifth graders split into two days enjoyed the entire HOP experience. They learned about cat-



fish production and general fish morphology. The overcast sky only precluded one group from completing their solar prints. While the prints were 'cooking' they learned all about ladybugs. Vernal pools transformed the Overlook Trail from outstanding to WOW. Jerry Stacy's edible plant smorgasbord is always the most talked about portion of the hike. I wonder if you could get kids to eat broccoli if it grew

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MAMMOTH NATIONAL MONUMENT

Continued from page 5)

for the explorer who discovered the new world) inhabited North America from southern Canada to as far south as Costa Rica. They are a distant but larger relative of the woolly mammoth which lived farther north in much colder regions. The Columbian mammoth was one of the largest mammals to have lived during the Pleistocene Epoch alongside giant ground sloths, saber tooth cats, giant armadillos. They grew to more than 14 feet in height at the shoulder and weighed up to 20,000 pounds! For comparison, modern day African elephants are 12 feet in height at the shoulder and weigh up to 12,000 pounds. On the tour our group gazed down in fascination at the many remains left in situ (still in their original position within

the bone bed) for visitors to see. These have been protected in recent years by a climatecontrolled "dig shelter," allowing for both public viewing and further scientific study. Large paintings depicting what these large animals presumably looked like decorate the walls. Additional artifacts fill display cases along the raised walkway. However the majority of the excavated bones are now housed at Baylor University's Mayborn Museum Complex. Our guide also told us that more remains continue to be found on site I'm sure I speak for our group that it was a very interesting tour and we highly recommend that you visit it for yourself. And if you go, this "daytripper" also highly recommends lunch or dinner at Buzzard Billy's just off I 35 near the stadium.

HOP

(Continued from page 6)

wild along a trail. Hmm? Learning to use binoculars to see birds up close and personal is a revelation to these kids. "how cool is that!" is echoed over and over and over at the Bird Blind. I think previous HOPsters disclosed the presence of the Master Casting station. There were more Ultimate Casters than ever before.

Unfortunately the 72 fifth graders from Llano Ele-

mentary were rained out. They will get first choice of available dates next year.

One of RJ Richey's teachers writes: "This was a great 2 days and very fun and educational for our kids. We appreciate all of the volunteers and the hard work that goes into making this program a success! Thank you!"

I would like to add my thanks to all the volunteers and Hatchery staff who made the 2016 HOP memorable.

GALLERY

Photos by Phil Wyde



Ladderback Woodpecker



Spiny Lizard



Red Wing Black Bird Female



Longhorn Family



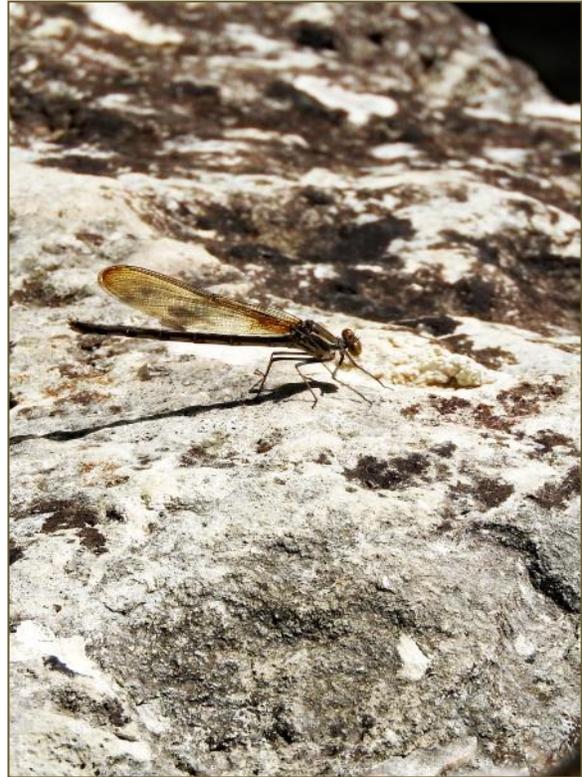
Whip Tail Lizard

GALLERY

Photos by Phil Wyde



Bee on Yellow Flower



Darning Needle



Indian Blanket Havoc



Monarch Caterpillar on Milkweed

Coreopsis

