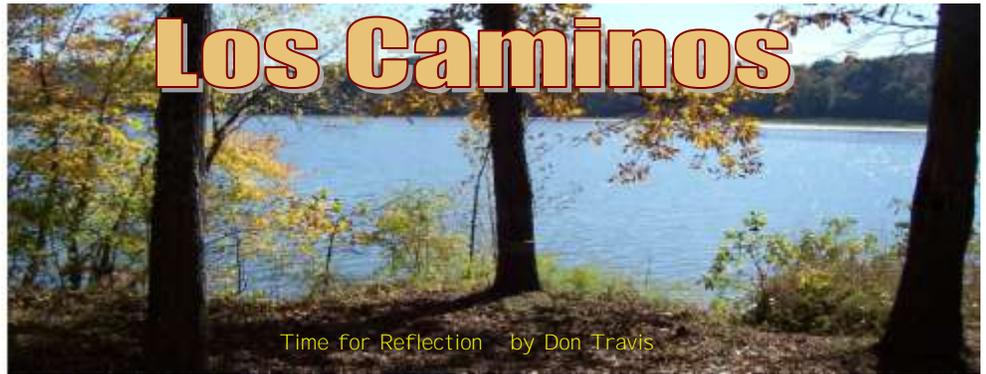


Master Naturalist™



Time for Reflection by Don Travis

The Texas Master Naturalist program activities are coordinated by AgriLife Extension and Texas Parks and Wildlife. Texas Master Naturalist and Extension programs serve all people regardless of socioeconomic level, race, color, sex, religion, disability or national origin.

*Celebrating and sharing our experiences along "the roads" we take through nature.*

A Quarterly Newsletter of the El Camino Real Chapter  
Milam County **Texas Master Naturalist** Fall '09

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A Last Look From The Top, by Paul Unger

Hard to believe two years have passed since we first began our journey. It was in September of 2007 when the concept of a Master Naturalist chapter was first bantered around. Largely through the efforts of Mike Mitchell, we quickly formed the first training class, graduated, and became certified, both as members and as a chapter.



In 2008 we concentrated on training. Most members recertified as a result. During the summer, the concept of inventorying Milam County's nature resources was conceived as a venue for member and public education. LOOK, LEARN, TEACH, CONSERVE became our motto.

This year the chapter hosted a new training class bringing an influx of new ideas and energy. The new class brought beneficial changes to our chapter making us more attentive to nature.

During this year we embarked on our signature public venue - the Milam County Master Naturalist Nature Festival. As a consequence, TPWD is becoming much more involved in our Milam County activities to support our TEACH and CONSERVE initiatives.



We now have a weekly nature article that is gaining rave reviews. The Forum and library displays are being noticed by the public as well.

At the end of the year a new group of officers will begin to lead the chapter as it continues to become the leading nature conservation organization of Milam County.



As your outgoing president, I hold in high esteem those who have tirelessly toiled to make ECRMN effective and



Our Motto

- Look
- Learn
- Teach
- Conserve

Our Mascot  
Green Tree Frog

**Did You Know?**

What animal can drink up to 40 gallons of water at a time?

See Answer on the last page.

(A Last Look From The Top, Continued from page 1)

successful. People taking the initiative to organize and lead nature activities are the engine which enriches us all and makes us superior naturalists.

It has been a real joy to see members catch fire, become enthused with nature, and then transform into Master Naturalist educators.

The Nominating Committee will soon bring forth a new slate of officers and committee leaders. I urge all members to support these new leaders with the zeal needed for the Chapter to reach our goal of being an effective educational organization serving nature in Milam County.

**Above all, I have learned "There is a World out there".** One only has to LOOK and LEARN. This is the fun part **which I consider "playing". I intend to do a lot of playing** next year. This will invariably lead to TEACH and CONSERVE, our ultimate goal and the part which brings a personal satisfaction playing cannot do by itself.

I look forward to the New Year. Join with your new **officers for a New Year's resolution to renew your commitment** to nature, bringing with it your full support, initiative, and enthusiasm. Opportunities are endless for those wishing to make a difference.

Paul Unger

## Outdoors with the V.P. By Katherine Bedrich

**Doodlebug, doodlebug, come on out ... remember playing** with these strange insects when you were visiting Grandma and Grandpa on the farm? Those funnel like holes you may be seeing around your yard this year are made by an insect called Antlion. They are a member of the most primitive order of insects, Neuroptera. It translates to "nerve wings". **As adults they have four**



wings marked with a netlike pattern of veins. The family name, Myrmeleontidae, comes from the Greek words myrmex (ant) and leon (lion).

When I was younger, I would be outdoors playing and find a doodlebug hole. Well, I could not resist taking a

**small stick and start the "doodlebug, doodlebug come on out rhyme" .... and watch for some movement in the hole.** And if that little critter moved at all, I would want to catch it and put it in my palm and watch it either play dead or start moving and tickling my hand. Boy, was **that fun. (Young'uns these days do not know what they are missing).**

Have you ever really looked at a doodlebug? They could easily be in one of those monster movies as a scary creature from outer space. You know, maybe the insect world is where many space creatures that were invented for the big screen came from ... **hmmm.**



Have you ever seen an ant get stuck in a **doodlebug pit... it is very interesting. The ant falls in** the hole and there is no way it can get out. It tries to climb the sides of the pit, but those pits are precisely engineered. While the ant is exhausting itself trying to

(Continued on page 3)

(Outdoors with the VP, Continued from page 2)

get out, the doodlebug is waiting at the bottom. When the ant falls to the bottom, the doodlebug grabs it with its pincher like jaws and pulls it under the soil. It is like watching something get stuck in dry quicksand. The ant is struggling, but that doodlebug has it and takes it under and sucks out its bodily fluids (yum yum); then it discards the rest.



You also need to watch them make their doodlebug home. They doodle around and around, spiraling deeper and deeper until the pit is built. It is an amazing part of

nature to watch.

**Antlions go through full metamorphosis ...** egg-larva-pupa-adult. The female will find a suitable place to lay eggs. Larvae, which hatch from the egg, are what we call "doodlebugs". When the larva reaches its maximum size, it transforms into a sand cocoon. This is the pupa stage. In the spring the adults will appear and the process of mating for survival begins. Adult lifespan is around 20-25 days, and they are active only at night.

Doodlebug, doodlebug come on out, so I can enjoy your amazing feats of surviving in this world of ours.

## The Forest Underfoot, Part I, by Dale Kruse

The "forest" in this case refers to the miniature world of mosses, liverworts, hornworts (collectively known as bryophytes) and those often very colorful, lichens. As



Mosses and lichens inhabit rock crevices at Inks Lake State Park near Burnet, Texas.

casual observers of the natural world, or as trained botanists, we often focus on the more visible components of the landscape: trees, shrubs, forbs, grasses, **wildflowers, etc.** This "botanical bias" if you will, is understandable since these growth forms are easy to pick out of the landscape, morphological characters are usually observable to the naked eye (or with a slight magnification), and in many cases they are just attractive.

However, it could be argued that tremendous beauty is also present in many of the less conspicuous components of the landscape - you just need to look a little harder. With that in mind, it is the goal of this article, and subsequent editions, to foster an appreciation of the diversity and complexity that resides in these unique components of the landscape.



A fruticose lichen, *Usnea* sp., clings to the branches of an Oak tree along the banks of the Navasota River in Brazos County, Texas.

Despite their miniature stature; bryophytes and lichens contribute significantly to the biodiversity and biomass of certain ecosystems. In many of the higher rainfall zones of the world, the productivity of bryophytes rivals or exceeds that of vascular plants. For example, at

(Continued on page 4)

(Continued from page 3) together as though they were indeed the same, the fact is these two groups have very little in common aside

northern latitudes both bryophytes and lichens constitute a large portion of the biomass in some tundra ecosystems where they also sequester a staggering amount **of the earth's carbon helping to potentially mediate the effects of global warming.** A casual hike through any of

from inhabiting many of the same, or similar, microhabitats and substrates. Each group possesses very different and unique morphological, physiological, reproductive, and ecological characteristics.

In the most basic context, bryophytes are photosynthetic green plants with a dominant gametophyte generation and an ephemeral (somewhat parasitic) sporophyte generation. In these generational relationships, bryophytes are just the opposite of vascular plants where sporophytes are dominant and gametophytes are rarely seen.

On the other hand, lichens represent a symbiotic (semi-parasitic according to some) miniature ecosystem within **themselves. Lichens are in essence a "cozy relationship"** between a fungus and an alga. The fungus provides a sheltered environment for the algae, while the algae (being photosynthetic) provides useable byproducts to the non-photosynthetic fungal partner.

So the next time you are out for a walk in the woods, look out for the forest under your feet. Until the next installment arrives, the following websites offer glimpses into this new world.

American Bryological and Lichenological Society - (<https://mywebspace.wisc.edu/jpbennet/web/abls/>)

British Bryological Society - (<http://rbg-web2.rbge.org.uk/bbs/bbs.htm>)

Dale A. Kruse, Curator, S. M. Tracy Herbarium, Texas A & M University

#### FACTOID

*Syntrichia caninervis* Mitt., a desert moss, can survive desiccation for up to six years and still recover normal activity after rehydration (Oliver et al., 2005). At the other extreme, *Sphagnum* sp. (peat mosses) which inhabit bogs can survive desiccation for only a few hours, or days.



The leafy liverwort *Porella pinnata* L. surrounds a tree branch in the Neches River Bottom, Hardin County, Texas.

the eastern or western forests will reveal a surprising number of species that clothe the bases and trunks of standing trees and shrubs, soil embankments, decaying logs, manmade surfaces, and other substrates.

In ecological stark contrast, these organisms are also capable of persisting in deserts and other arid environments. In these dry places they take advantage of brief episodes of moisture availability and frequently inhabit ephemeral sites prone to perturbations. They are major components of biological soil crusts in both cold and hot deserts. These soil crusts are vital to the delicate desert ecosystems where they help to bind the soil, contribute valuable organic matter, and temporarily harbor small amounts of moisture in an otherwise inhospitable environment. Found on every continent, yes even Antarctica, these highly adapted and extremely resilient life forms also provide habitat for countless **microscopic and macroscopic organisms, truly a "forest within a forest."**

Although bryophytes and lichens are frequently lumped

Citizen Science and Species Monitoring by Mark Klym

Biodiversity in Texas is phenomenal. We have more birds than any other state in the union, more butterflies than any other state in the union, and more wildflowers than other states. This is just a sample of the great diversity of nature in Texas. Some of these taxa



Eastern, or 3 Toed, Box Turtle, photo by Terry Hibbitts

are struggling though, and the state, or even the various not for profit partners that work with Texas Parks and Wildlife Department or the Texas Agrilife Extension do not have staff enough to track each and every one of these various, declining species.

Volunteers participating through programs like those included in the Texas Nature Programs offer the opportunity for community participation in feeding back information on population trends, resource use and even basic occurrence data on these organisms, providing resource managers with important and vital data that can be used to inform management decisions and practices impacting the resource. Your data, when combined with that of other volunteers across the state, is invaluable in that it can not be secured by other means.



Monarch Butterflies



Jeremiah Bullfrog

But how can we know the data is accurate, reliable or even that it is not manufactured? These programs are coordinated by biologists who, by working with specialists in the particular fields, will review any questionable data for accuracy.

By requesting photos, asking for more details and other techniques, these staff members can filter out misidentified or errant data and keep that information on which

decisions are based or recommendations made as accurate as possible. The standards are, and must be, "if we are unsure we do not use it."

Current Nature Tracker programs involve monitoring hummingbirds, turtles, horned lizards, prairie dogs, mussels, amphibians, butterflies and other animals - both charismatic and some not so interesting. There is literally something for everyone in the program - and your help is not just wanted - it is critical to the success of these programs. For more information see [http://www.tpwd.state.tx.us/learning/texas\\_nature\\_trackers/index.phtml](http://www.tpwd.state.tx.us/learning/texas_nature_trackers/index.phtml) to find out how you can get involved.



White Eared Hummingbird

By Mark Klym, Information Specialist, Wildlife Diversity Program, Texas Parks and Wildlife. All photos courtesy of the above web site.

*Editors note:* Our chapter has conducted several advanced training sessions and field trips for members. The Horned Lizard team, led by Lucy Coward, has several members certified for handling and taking DNA samples and has located several resident colonies in the county. The Amphibians and Mussels team, led by Katherine Bedrich, has also conducted several field trips. Both teams are eager to share their knowledge with any "Citizen Scientist" who is interested.



Horned Lizard



Horn Shell Mussel

## Big Trees of Milam County by Don Travis

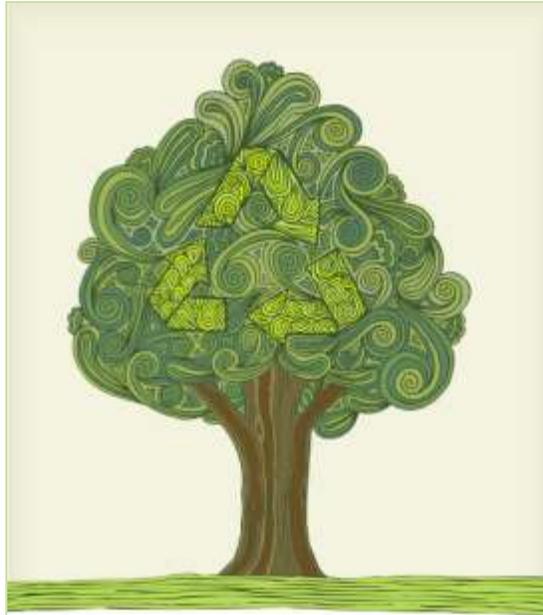
What would a big old tree tell you if it could talk? Would there be stories of local Indian tribes making camp nearby? Maybe early settlers passing by on their way to their new homestead? Or stories about some of your great great grandparents climbing its limbs when they were little children?

Big trees are usually pretty old trees, and some may even be historic in terms of their local significance. Perhaps you have one or more that appear in old land deeds such as: "... along a line to a large Post Oak tree a distance of **525 feet**". **Is that big 'ole tree** still there? Or has it long since vanished to be replaced by a metal survey rod?

Large majestic trees of various species may be found on your own property or that of someone you **know here in Milam County and we'd love to find the biggest** of them all. So, our Tree Committee from the El Camino Real Master Naturalist Chapter has decided to engage the entire County in finding the largest trees of each major species.

And in the process we want to share some conservation and preservation techniques that will help provide as long a life as possible for future generations of tree lovers. Preventing compaction, clearing out underbrush and parasitic vines, and proper pruning are a few of the important ones.

About once each month we will feature a particular tree in the local papers, and ask for nominations from the community for any tree they have, or know of that someone else has, which might be honored as some of the largest (and oldest) trees in the county - and perhaps in the whole state. The owner or submitter of the largest tree will have their picture in the newspaper



standing in front of the tree, and the next four largest will also be mentioned. We will maintain an ongoing list of the top 5 largest trees by species on our web site, **and if one qualifies for the Texas State "Big Tree" recognition** we will assist in getting that recognition as well.

Our nomination rules will be very simple. Take a circumference measurement between the ground and the 4 ½ foot level that represents the smallest size of the **tree trunk**. We say "**smallest**" to eliminate including large bumps, spread out roots or attached vines, and for a consistent standard. Then submit a nomination form by the published deadline. Our Big Tree committee will then make a site visit for verification and photo taking and determine the five largest trees. The picture will then be published along with a new species tree being

**highlighted for the next month's submissions.**

Our first feature tree will be the Native Pecan tree, and we already know there are some real bruisers out there! Next up is Osage Orange followed by the ubiquitous Post Oak. Additional species will follow.

Nomination forms will be available in several ways, and in several formats: 1) for download from our website at the bottom of the page at <http://grovesite.com/tmn/ecrmn/bigtrees> as either Word or Adobe PDF file, 2) by requesting the forms via email to [MilamMasterNaturalist@gmail.com](mailto:MilamMasterNaturalist@gmail.com), or 3) by picking up a hardcopy at the AgriLife Extension Office in Cameron.

Submissions of completed hardcopy forms can be mailed to: El Camino Real Master Naturalist, c/o AgriLife Extension Service, 100 E. First St., Cameron, 76520. Electronic submissions can be emailed to the same email ad-

*(Continued on page 7)*

(Outdoors, Continued from page 6)

dress above.

The formal public kickoff will be via the Rockdale Reporter and Cameron Herald publications due out on Wednesday, September 23, 2009. Information will also be shared at the Rockdale Forum on Big and Historical Trees on Thursday, September 24.

There are no fees, and no monetary rewards, just some fun and some local and possibly state recognition. So start looking around. Tell all your friends and neighbors **about what's coming. And let's all have some fun with the Big Trees of Milam County.**

For more information on Big Trees in Texas, visit the

Forest Service web site at: <http://texasforestservice.tamu.edu/main/article.aspx?id=1336> and for some interesting Historical Trees in Texas visit: <http://famoustreesoftexas.tamu.edu/introduction.aspx>.

Our own web site has a great deal of information on trees in general at <http://grovesite.com/tmn/ecrnm/forests> and our Big Trees page is <http://grovesite.com/tmn/ecrnm/bigtrees>.

Don Travis  
Tree Committee Chairperson

"Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left." Aldo Leopold

## Almost Time to Plant and Prune by Rob Grotty

**Ahhh... The daily high temps are now down to the low 90's...grab the parka!! Yes, that's right. It's finally starting to cool off. That means it's almost fall planting and pruning season! Woohoo! Go nuts and branches!!! Let's talk planting first.**

The absolute most important rule in selecting a tree species is to know where it came from. And not which nursery it came from, but where the seed was collected. Over **the past couple years I've seen** many red oaks fail that were bought from one of the big-box home improvement centers. The reason is that they are northern U.S. red oak species that do not grow well here in Texas. Yes, they look good when they are planted, but after several years in the ground their leaves start to turn a necrotic lime green or yellow and they never recover.



different environmental conditions that even transporting trees a couple hundred miles may prove to be too far **out of the tree's native range to allow it to grow successfully.**

Helpful planting tips can be found at that website noted at the end of this article.

### Now on to pruning...

Proper pruning of a tree is more important that most folks realize. Trees are extremely complex organisms that we are still learning about all the time. The vast majority of people have no idea how complex trees really are. Because of this complexity, **it's important to practice** proper pruning procedures (Say that ten times fast. Ha!) to ensure your trees health.

This even rings true with tree species from within our own state. Texas covers such a large area with so many

(Continued on page 8)

*(Plant and Prune, Continued from page 7)*

First and foremost, always have a good reason to prune.

**Now most folks don't just wake up one morning and say to themselves, "I feel like cuttin' on a tree today. Yep, that'd be right fun." But, you never know! Trees are self-reliant organisms that have to make their own food and seal up their own wounds. I realize that you already know this, but it helps to put things into perspective to help make the best decisions for your trees.**

#### **Trees seal, they don't heal.**

This means that trees do not have the capability of growing new tissue where a wound is made. So, minimizing wounding to a tree is best. This seems like a no brainer, but I see over-pruned and improperly-pruned trees all the time. The most common practice is topping crape myrtles, a.k.a. "Crape Murder!!"

#### **A couple rules to keep in mind when pruning your tree...**

1) Never prune off more than 1/3 of the green foliage in a growing season. Removing more foliage than this can prevent the tree from producing enough food and cause stress.



2) Make proper pruning cuts and stay out of the branch collar! Branch cells in trees are different than stem/trunk cells and they respond differently to wounding.

Branch cells are designed to be able to cope with a pruning cut much more than trunk cells.

3) Fall or winter is the best time to prune. Pruning a tree when it is dormant or starting to go dormant allows the tree to use all of stored energy for sealing that wound and root growth, instead of having to put on new leaves and branches in the middle of the summer.

4) Paint wounds on oak wilt susceptible oaks only! Trees in general respond best to cuts with no pruning paint on them. **However, if they're oaks, it's best to paint all the cuts.**

Here is the link to that website that I noted earlier. It has diagrams for proper planting and pruning techniques.

**Y'all probably already know the things that I've talked about, but it never hurts to have a refresher!**

<http://texastreeplanting.tamu.edu/TreePlantingTools.html>

Rob Grotty, Staff Forester  
Texas Forest Service, Austin

We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.

Aldo Leopold

# Historical Accounts, Archaeological Observations, and Ecological Interpretations along the Xavier Road of the *Caminos Reales* Corridor, Milam County, Texas

by Alston Thoms

We are fortunate indeed that the historical Xavier (aka Javier) Road of the *Caminos Reales de los Tejas* passes through Milam County, as many of those who travelled it left written accounts that described the countryside and its native inhabitants. From the late 1600s through the early 1800s, this Spanish Colonial road system linked missions and settlements in east Texas and western Louisiana with those in south Texas and northern Mexico.



The Xavier Road roughly paralleled Brushy Creek and the San Gabriel River along the southern edge of the Blackland Prairie portion of Milam County before turning southeast

into the Post Oak Savannah not far from Rockdale. From there to a point near Caldwell in Burleson County, **the "road" traversed a particularly dense part of the Post Oak Savannah known by the Spanish as the *monte grande* (i.e., big brushy thicket) before it intersected today's stretch of Texas Highway 21 that follows the San Antonio or String Prairie between the Colorado and Trinity rivers.**

It undoubtedly followed prehistoric roads but its regular use by the Spanish began in 1716 and peaked during the mid 1700s when three missions—San Francisco Xavier, San



Idefonso, and Nuestra Senora de la Candelaria—were established along the San Gabriel River above its juncture with Brushy Creek.

From Spanish journals, we learn that the Blackland Prairie country south of Brushy Creek and the San Gabriel River was fairly open country, with good pasturage, a few thickets of mesquite, oaks, and grapevines, usually plenty of water, and generally level albeit with a few low hills. Willows lined parts of Brushy Creek and bison were usually found on the nearby prairie. The San Gabriel River contained plenty of fish and alligators were found in creeks and ponds in the vicinity.



In marked contrast with the open country, the *monte grande* portion of the Post Oak Savannah in southeastern Milam County was virtually impenetrable on horseback and it was often necessary to clear a pathway by cutting down trees and brush. According to William Foster, a scholar of Texas history, new pathways had to be cut through the *monte grande* each time an expedition traversed it. From my reading of many Spanish ac-



counts of traversing most sections of the Post Oak Savannah, however, the usual vegetation was not nearly so dense. Open patches were scattered throughout, deer were abundant, and the roadway was

much easier to follow. In short, Milam County was not

(Continued on page 10)

(Xavier Road, continued from page 9)

unlike what we see today, the notable exception being that it likely was much more open under Native American management.

According to fire management specialists such as Cecil C. Frost, ground fires equivalent to prescribed burns occurred every few years (1-12) in order for Milam County



and vicinity to appear as described during the Spanish Colonial era. **These specialists argue that the region's native inhabitants must have set many of those fires, surely with the understanding that productive savannah habitats and regular fire regimes were inseparable.**

**Within the last few decades, the term "anthropocene"** has been used to denote an interval of anthropogenic environmental change—global warming—ushered in by the Industrial Revolution that began in the early 1800s. More recently, William Ruddiman, an environmental scientist, **presented evidence that the "greenhouse era"** probably began more than 8,000 years ago when our ancestors increased their use of fire to clear forests for agricultural and animal husbandry purposes.



It seems to me that fire management by hunters and gatherers around the world must have contributed as well, prior to, during, and after the development of crop agriculture and animal husbandry. Said differently and as per the point-of-

view presented herein, we are apt to err as naturalists if we believe our predecessors in the Post Oak Savannah and surrounding ecological zones were merely passive occupants who did little to shape their environment through the millennia.

The known nature and distribution of projectile points and home-site remains (i.e., campsites or encampments)

demonstrates that Milam County and vicinity has been occupied by native Texans for 12,500 years. If we had **access to all of the region's yet-unrevealed evidence**, I suspect we would see that its occupational history extends back 15,000 and possibly 20,000 years. In any event, ethnographic data and ecological models developed by anthropologists and archaeologists depict Milam County and vicinity as a well-populated savannah region, rich in wild animal and plant foods, especially roots. At the dawn of written history some 500 years ago, the region probably supported an overall density of 8-16 hunter-gatherers every 40 square miles (100 sq km) or roughly one five-person family every 13 square miles (ca. 8,320 acres or 3.6 x 3.6 miles).



Spanish chroniclers travelling through the Post Oak Savannah, between the Colorado and Trinity Rivers, routinely encountered *rancharias* that were described as temporary villages of mat-covered, bent-pole-supported huts or wickiups. *Rancharias* contained from a dozen to a few hundred people, occasionally as many as 2,000. Early Spanish accounts describe well-fed regional populations that lived entirely by hunting wild animals and gathering wild plants and routinely shared their food with the Spanish travelers.



Prior to the arrival of Europeans and enslaved Africans who accompanied them, the *Caminos Reales* corridor connected farming communities in the Pineywoods of East Texas and the Mississippi Valley beyond with agricultural villages in the low **mountains of today's northern Mexico** and ultimately with pre-Columbian states and empires based in and **around today's Mexico City.**

(Continued on page 11)

(Xavier Road, continued from page 10)

Archaeologists sometimes refer to this ancient southwest/northeast trending route as the Gilmore Corridor, the pathway by which corn and beans were introduced to the Mississippi Valley from central Mexico beginning more than 2,000 years ago. This travel corridor was certainly traversed by a multitude of ethnically diverse groups. Trade fairs held along the corridor through the millennia must have had a decidedly multicultural flair.

**As I see it, today's roadside market on the east side of Milano, where one can purchase baskets and other handicrafts from Mexico, South America, Africa, and Asia, is reminiscent of the roadway's ancient cosmopolitan character.** Portions of that roadway in Milam County continue to be used. They are now in the news as the National Park Service, state and county organizations, and private individuals endeavor to promote the newly established *Camino Real de los Tejas* National Historic Trail (<http://www.nps.gov/elte/index.htm>).

As a self-identified archaeological ecologist, I am decidedly uncomfortable with a concept of *natural* history that envisions Mother **Nature's ecosystem** as lacking in significant human roles; so too are most ecologically oriented naturalists. I suspect, however, that when many folks today ponder what Milam County looked **like in its "wilderness" state, the picture that comes to mind** is unlikely to be a landscape dotted with home sites. **Nonetheless, our mind's eye perspective of Milam County's natural state**, at least for the last 15,000 years of so, certainly should include Native American encampments.

It should also encompass fire-management as their foremost means of being native and pro-active land managers. While equating Indian-caused fires with fire management per se is speculative, in the absence of direct evidence, a multitude of historical accounts attest

to Indian people, from Cabeza de Vaca's time in the early 1500s to the Texas Ranger era of the mid 1800s, regularly set fires for various reasons from enhancing the hunt, to keeping mosquitoes at bay and as an aid in warfare.

In my opinion, the beautiful glens and dales that the Spanish described in Milam County and throughout the Post Oak Savannah region were the result of hundreds of generations of fire-management practices. Such practices remain all too understudied and poorly documented. The investigative potential, however, is considerable in light of the ecological axiom that savannahs tend to be fire-maintained and given the magnitude of archaeological data demonstrating that humans evolved within and have long favored savannah habitats in general and the Post Oak Savannah in particular.



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 Bolch**

Los Caminos is a quarterly publication of the El  
 Camino Real Chapter of Texas Master Naturalists.

Upcoming Major Events:

- 9/24 Adv. Training, Big and Historic Trees, Rockdale Forum, 6:30pm, Patterson Center
- 10/10 **Chapter Meeting, John Rinn's home, 6pm**
- 10/22 Adv. Training, Bats, Rockdale Forum, 6:30pm, Patterson Center
- 11/12 Annual Meeting, Election of Officers, 6pm, Janice Pelzel's home
- 12/12 **Christmas Party, 6:30pm, Anne Barr's home.**

**Certifications, Etc. By Cindy Bolch**

New Certifications year to date include: Lucy Coward, Joyce Dalley, Rusty Thomas, Connie Roddy, Lisa Davenport, Shawn Walton, Tense Tumlinson. Cindy Travis, Larry Reynolds, and Janice Pelzel

Achieving 2009 Annual Re-Certifications year to date include: Cindy Bolch, Katherine Bedrich, Don Travis, Ann Collins, Anne Barr, Connie Roddy, Ed Burlison, Nancy Soechting, Paul Unger, Paula Engelhardt, Vivian Dixon, Lucille Estell and Rusty Thomas.

Lifetime to date Milestone Achievement Levels Awarded include:  
 250 Hours—Paul Unger, Ann Collins, Cindy Bolch, Katherine Bedrich, Paula Engelhardt, and Don Travis

500 Hours—Paul Unger, Ann Collins, Cindy Bolch and Katherine Bedrich

1000 Hours—Paul Unger

**Congratulations to All!**

Did You Know?

What animal can drink up to 40 gallons of water at a time?



The Camel.

**Now that's a face you'd want to kiss in the morning, right? Seriously,** Camels can drink up to 40 gallons of water at a time, and due to unique elongated blood cells and other physiological adaptations, can conserve and recycle water to go a long time without more. And NO, they do not store the water in their humps, which are used to store fat for up to a 2 week supply of food. The water is stored in the stomach, blood and tissues.

Photo courtesy of <http://wild-facts.com/?p=50>, and additional information available at <http://en.wikipedia.org/wiki/Camel>.