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NPSOT-NPAT 2007 JOINT SYMPOSIUM

TEXAS PRAIRIES: CELEBRATE A NATURAL TREASURE

The Blackland and Grand Prairies and Grasslands of the Edwards Plateau

Efforts to Identify, Restore, Conserve and Celebrate a Natural Treasure

Thank you for joining us on October 18th-21st, 2007 in Georgetown for the 2007 Joint Symposium of the Native Plant Society of Texas (NPSOT) and the Native Prairies Association of Texas (NPAT).

Hosted by the Williamson County chapter of NPSOT
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THE BLACKLAND AND GRAND PRAIRIES
AND GRASSLANDS OF THE EDWARDS PLATEAU

**October 18-21, 2007
Georgetown, Texas**

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The Geological Origin of the Blackland Prairies, the Grand Prairie, and Edwards Plateau Areas and Their Soils

Donald Beaumont, PhD

Abstract:

The weathering and erosion of limestone rock outcrops in Central Texas tend to produce plateaus and hills because in our climate limestones are more resistant to weathering than sandstones and shales. In Central Texas, there are four major limestone layers formed during the Cretaceous Period (Fig. 1), 145 to 65 mybp (million years before the present). They are about 3000 feet thick and outcrop with gentle dips of about 1 degree to the South or Southeast. Weathering and erosion of these layers has produced the unique topographies and soils that define the Blackland Prairies, the Grand Prairie, and the Edwards Plateau Vegetational areas. The thickness and "richness" of the soils produced by weathering is determined in large part by the amount of shale (clay) in the limestone: i.e. the larger the shale content, the thicker and "richer" the soil. Pure limestone weathers largely by solution, leaving little or no soil while limestone with high shale content weathers into clays and silt, which are the weathering products of shale. In Central Texas in Early Cretaceous time (145 to 100 mybp) the southern margin of the North American continent was slowly sinking forming a tropical ocean island "paradise": i.e. incredible volumes of sea shells, shell fragments, and shell "muds" accumulated in complex reef and reef debris patterns that with later burial became the Glen Rose and Edwards limestone formations. These formations form today's Edwards Plateau and Grand Prairie areas with their thin, "poor" soils. The Edwards environment of reef and reef debris layers are the aquifer and spring rocks. In Late Cretaceous time (100 to 65 mybp), the southern continental margin continued to sink even more rapidly and the Gulf of Mexico began receiving ever increasing amounts of mud and silt as the present river drainage systems of North America were developed. The resulting muddy limes were converted to shaly limestones by subsequent burial which produced the Austin and Taylor formations. These formations form the rolling hills with rich, thick soils of today's Blackland Prairies. Cretaceous geological events were the initiation of the present day Gulf of Mexico geosyncline that now contains erosional debris from one third of North America with a thickness of more than 12 miles! At some time in the not too distant geological future this mass of erosional debris will be crushed and welded back onto the North American crustal plate in the form of a mountain range on the order of magnitude of the Andes Mountains of South America. Mountain building will complete another cycle of continental destruction by erosion and renewal by mountain building that has been going on since the continental and oceanic plates of our earth were formed several billion years ago. Our Central Texas is, indeed, a natural treasure that we should treasure and make known to our generation and generations of the future.

Introduction:

The surface geology of Central Texas (Fig. 2) consists of the Llano-Burnet erosional "window", aka the Llano Uplift. It reveals at the surface very old (1 BYBP, billion years before the present) igneous and metamorphic rocks (Fig. 1). These rocks weather and erode to form the Texas Hill Country geologic province. Surrounding the "window" are

concentric “collars” formed by four much younger (65 to 145 MYBP, million years before the present) layers of limestones (Fig. 2). They were formed during the Cretaceous time Period (Fig. 1) when the southern margin of North America was flooded by a shallow, tropical sea (Fig. 3).

Cretaceous Limestones of Central Texas:

The Cretaceous limestones layers (formations) are composed of millions of sea shells, shell fragments, and shell “muds”. The two older limestone layers were formed in a tropical, coastal marine beach and near-shore reef environment (Fig. 3) much like that of western peninsular Florida today. The two younger layers were formed in a somewhat deeper water marine offshore environment (water depth less than 200 feet). However, they were “contaminated” though time with ever increasing amounts of mud and silt. The mud and silt came as the present-day river systems of Texas began to form in Upper Cretaceous time. Thus, during Cretaceous time the relatively pure limestones of the Lower Cretaceous (Glen Rose and Edwards layers) were buried by ever increasingly shaly (muddy) Upper Cretaceous limestones (Austin and Taylor layers). After Cretaceous time (Fig. 1) there are no younger limestones in Central and Coastal Texas because the North American continent drifted north out of the tropical zone favorable for reef limestone development (Fig. 3) and because the rivers continued to flood the Gulf of Mexico with ever increasing volumes of clastics: i.e. sand, silt, and mud. These post-Cretaceous clastics buried the Cretaceous limes to a depth sufficient to produce the fossiliferous limestones we have today.

The total thickness of the four limestones of Central Texas is about 3000 feet. They extend at least for 1000 miles in an East-West direction from Miami, Florida, to El Paso, Texas. North-South they extend some 500 miles from southern Oklahoma to the middle of today’s Gulf of Mexico (Fig. 4).

Cretaceous Limestones in the Geologic History of the Gulf of Mexico:

After the four limestones were formed along the north margin of the Gulf of Mexico, they were buried by the younger, very thick clastic deposits of sands, silts and clays. These clastics were delivered to the north shore of the Gulf of Mexico by newly developed river drainage systems that continued to develop though time into the present drainages.

As the south flowing rivers of North America filled the Gulf of Mexico, the shoreline moved south from southern Oklahoma to its present location. The progressive loading of more and more river sediment into the Gulf caused substantial sinking of the earth’s crust south of the shorelines which accommodated the sediment. North of the coast lines the continent rose because of the loss of continental mass eroded into the Gulf of Mexico. The sinking south of the coastlines and uplift north of the coastlines can be visualized at a teeter-totter action on a grand scale

The present elevation of the four Cretaceous limestones in Central Texas is the result of that teeter-totter uplift. Erosion continues to move material (rock debris) from the rising continent into the Gulf. A teeter-totter like action is active today with the land slowly rising as the Gulf slowly sinks to accommodate the debris brought in by the rivers. At this time the sediments (debris) below the coastal areas of Texas and Louisiana are as much as 12 miles thick! Meaning that the floor of the Gulf has subsided more than 10 miles to accommodate the ever increasing volume of sediment brought in by today’s rivers.

The gradual uplift and consequent weathering and erosion in Central Texas removed the post Cretaceous rocks that buried the four Cretaceous limestones and exposed them at today's surface.

The Edwards Plateau and Grand Prairies Provinces:

The distinctive topography and soils of the Edwards Plateau and the Grand Prairie provinces are the result of the weathering and erosion of the two older Cretaceous limestones, the Glen Rose (Trinity) and the Edwards (Fredericksburg) layers (Fig. 6). The Glen Rose layer is about 400 feet thick and the Edwards about 300 feet thick. Typically these limestones weather and erode into relatively flat topped hills with moderate to steep sloping hill sides. Flat hill tips are formed by erosion of resistant layers of dense limestone. Hill sides are the erosional expression of more easily eroded layers of sea shells and sea shell debris. In the case of the upper Edwards limestone, hill sides are often eroded in reef and reef debris; aka the Edwards Aquifer. The weathering and erosion of these rocks produced the Edwards Plateau and Grand prairies provinces (Fig 6).

Since the Glen Rose and Edwards limestones are mostly devoid of shale (mud), they weather primarily by chemical solution, leaving little soil producing residue, thus, the thin, poor soils of the Edwards Plateau and Grand Prairie (Fig.6).

The Blackland Prairies Province:

In the case of the younger Cretaceous limestones, the Austin and the Taylor layers, these rocks have significant shale (clay) content. The Austin is about 800 feet thick and the Taylor about 1600 feet thick. The resulting erosional topography is best described as rolling hills typical of limestones with high shale contents. The shales weather to various clays that can produce very productive soils like those of the Blackland Prairie (Fig 6). Rocks younger than the Taylor are sandstones and shales rather than limestones. They were made from the sands, silts, and muds. They weather and erode into ridges (sandstone) and valleys (shales) and produced the provinces east and south of the Blackland Prairies Province.

“High Gravels” Areas in the Blackland Prairies:

Within the Blackland Prairies there are significant areas where thick, very productive soils are being produced by weathering and erosion of a layer of geologically very young river deposits (Fig. 5). The name of these deposits is High Gravels derived from their composition at some site far removed for and west of Williamson County. In Central Texas the High Gravels are clays, silts, and small pebbles. The pebbles are composed of metamorphic and igneous rocks as well as limestone. Since metamorphic and igneous rocks do not occur within 50 miles of eastern Williamson County, the pebbles have been transported at least that distance by streams not directly related to today's streams.

“High Gravel” deposits are found capping hills, and are missing in stream valleys. At this time there is little agreement among geologists on the origin and significance of these hill-top soil

making materials. Since they are river deposits and are found only on hill-tops, the obvious conclusion is that they are the evidence of a relatively recent time of major river flooding that buried all of the topography we now see in Central Texas. How geologists resolve this situation is yet to be determined.

Central Texas Geology in the Development of North America, a Brief Summary:

The geology of Central Texas is a window into 1 billion years of the history of the North American continental plate. Central Texas also contains examples of some of the awesome geological processes that have through the ages maintained environments favorable for plant and human life as we know it today. In the Llano-Burnet erosional window we see two episodes of massive coastal sedimentation like that currently happening in the Gulf of Mexico. The Llano-Burnet area also shows that the two coastal sediment volumes were crushed and welded back onto the North American continent to form Andean scale mountain ranges. Mountain building is the final stage in a cycle of continental destruction by erosion and continental reconstruction by mountain building. In mountain building we have the erosional debris “rescued” from oblivion in the deep oceans as it is welding back as part of the continental crust. Some have termed this an example of the Earth’s Living Crust, i.e. crust periodically renewed itself (being reborn).

Conclusions:

The obvious conclusion is that we are privileged to live in an environment of amazing long term stability that contains resources that should be treasured and protected. In Central Texas we are especially privileged to be the “custodians” of an amazing variety of these natural treasures.

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- Fig. 1: Blij, Muller, and Williams. Physical Geography. 2004
- Fig. 2: Geological Atlas of Texas, Llano Sheet. 1:250,000 1986 Geological Atlas of Texas, Austin Sheet. 1:250,000 1981
- Fig. 3: Blakey, Ron. Paleogeography of the North Atlantic Region, Early Cretaceous, jan.ucc.nau.edu/~rcb7.120Nat.jpg
- Fig. 4: Author, multiple sources
- Fig. 5: Geological Atlas of Texas, Austin Sheet. 1:250,000
- Fig. 6: Geologic Map, Texas. University of Texas Bureau of Economic Geology, Vegetational Areas, NPSOT

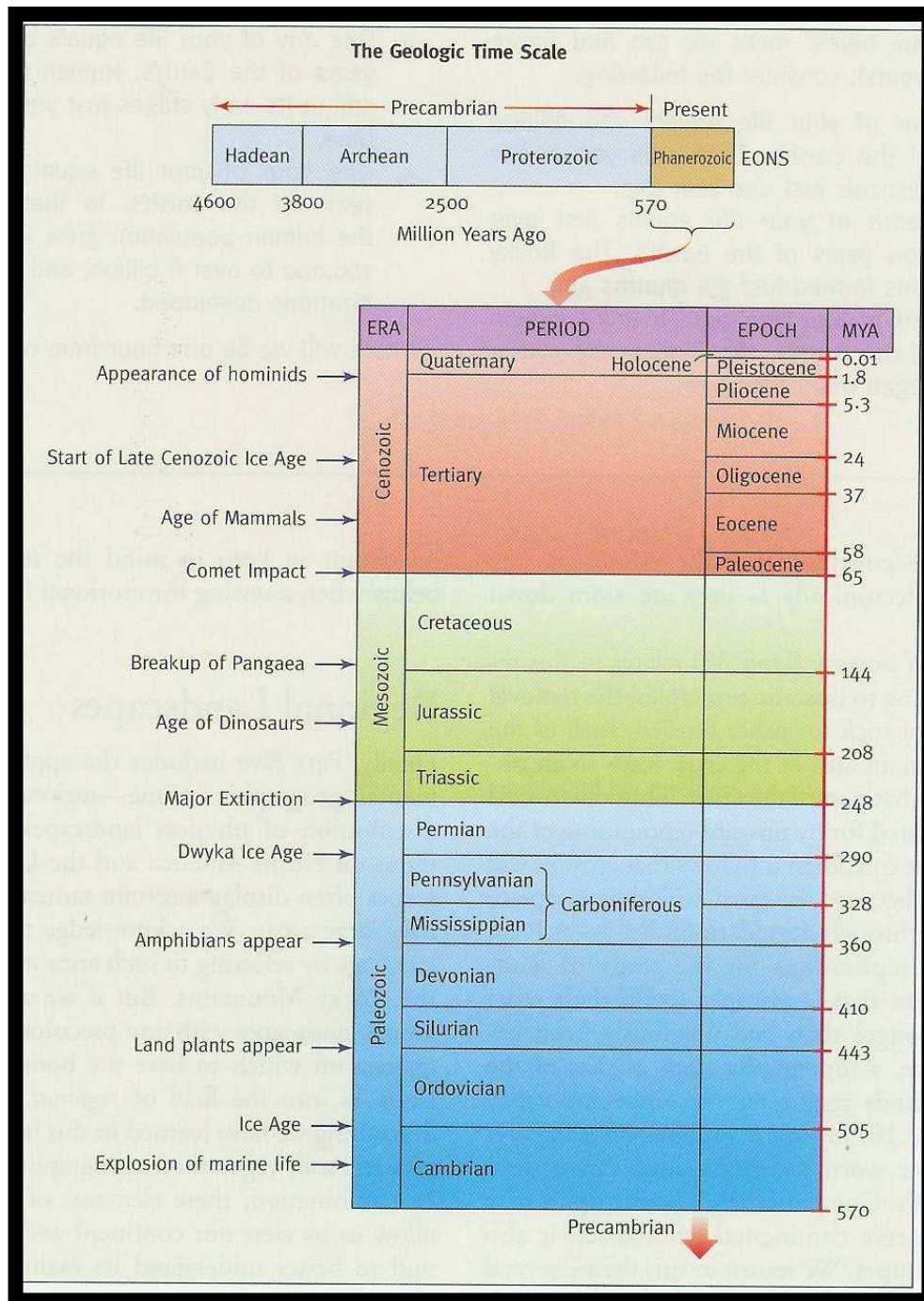


Fig. 1: Geologic Time Scale

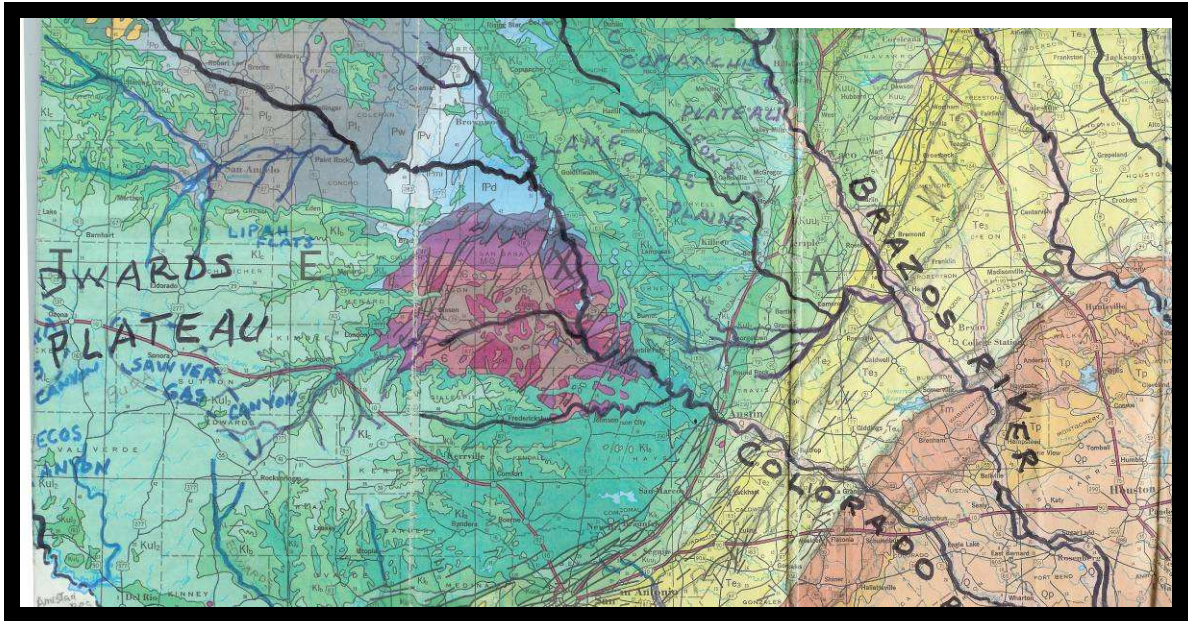


Fig. 2: Geologic Map, Llano-Burnet "window" (purples) surrounded by Cretaceous Limestones (Greens and Blues)



Fig. 3 Continental Plates, 115 MYBP. Note: Texas covered by shallow sea at about 15N.

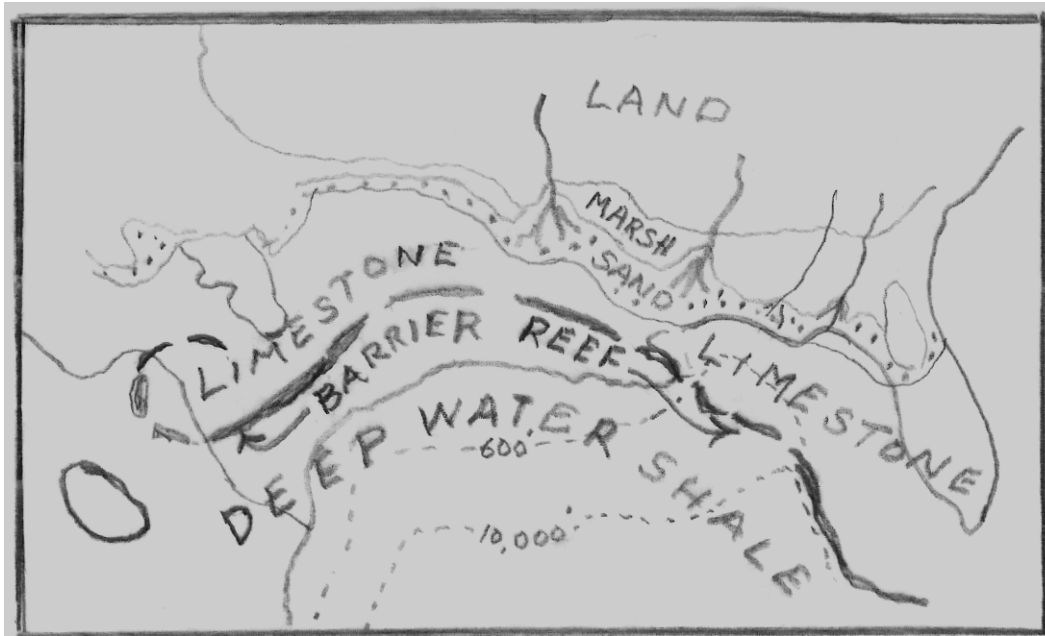


Fig. 4: Paleogeographic Map, Cretaceous Edwards limestone Environments, El Paso to Miami.

Limestone environment, Dark line = barrier reefs, Deep water shale. Note: Llano Uplift area in central Texas , Vegetational provinces of this paper bound it on south and east.

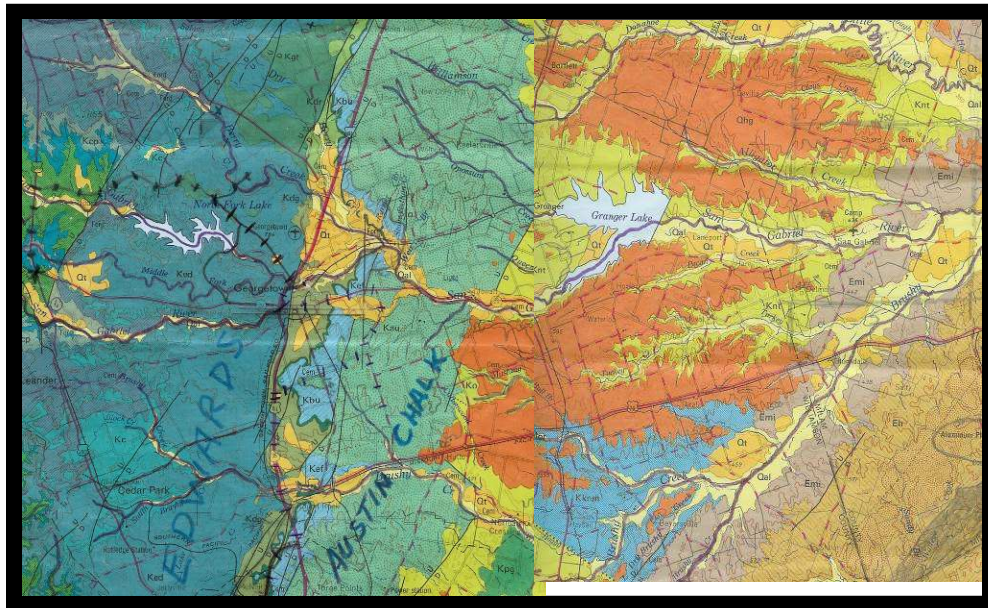
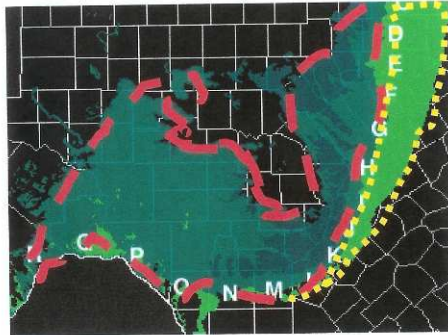


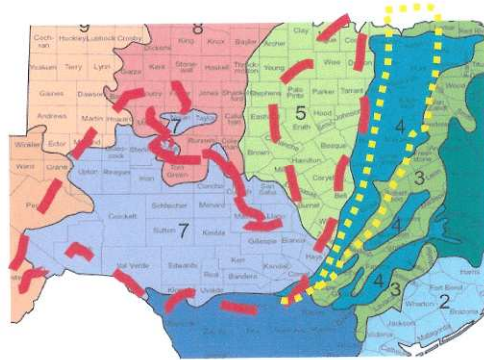
Fig. 5: Very fertile soils on hilltops crowned with “recent” river flood plain deposits, orange. Central and Eastern Williamson County.

Rock Outcrops & Vegetational Provinces

Geologic Map



Vegetational Map



Red Dash line = outline of older Cretaceous outcrops
Yellow Dot line = outline of younger Cretaceous outcrops

Fig. 6: Comparison of Cretaceous Limestone outcrops to Vegetational Areas in Central Texas

Native Plants of the Tallgrass Prairies and Hill Country Grasslands

Dr. Fred Smeins
Professor of Ecology
Department of Rangeland Ecology and Management
Texas A&M University

The native prairies and grasslands of Central Texas are home to a wide variety of native plants and plant communities. From the prairie communities that dominated the tallgrass prairies with native grasses and flowers, to the savanna communities with native grasses and flowers underneath scattered oaks and other native trees, our native flora and the wildlife that depends on it is diverse and beautiful. Though these once-dominant plant communities are now imperiled and have mostly been replaced with plowed fields, non-native pastures, and urban and suburban development, the beauty of our native prairies and savannas still enchant Texans.

Notes

Prairie Conservation

David Bezanson
Northeast Texas Program Manager
The Nature Conservancy

Most of our native prairies and grasslands have been destroyed due to plowing, improper overgrazing, brush and tree encroachment, and now development. However, tracts of beautiful virgin Texas tallgrass prairie survive – a small number of large prairies and a larger number of small prairies escaped the plow and remain to this day, many still used as native hay meadows. An overview of the remaining large and small native prairies that have been conserved will be presented, along with how we can conserve more of these natural treasures of Texas.

Notes

Prairie Time: A Blackland Portrait

(Plenary Speaker)

Matt White

Author

“Prairie Time: A Blackland Portrait”

Matt White's connections with both prairie plants and prairie people are evident in the stories of discovery and inspiration he tells as he tracks the ever-dwindling parcels of tallgrass prairie in northeast Texas. In his search, he stumbles upon some unexpected fragments of virgin land, as well as some remarkable tales of both destruction and stewardship.

Helping us understand what a prairie is and how to appreciate its beauty and importance, White also increases our awareness of prairies, past and present, so that we might champion their survival in whatever small plots remain.

Notes

Native Prairie and Grassland Restoration

Bill Neiman
Co-owner, Native American Seed

With so little native prairie and grassland remaining, restoration is necessary to ensure the survival of the native plant communities, grassland birds, and other prairie wildlife that call it home. In the tradition of Aldo Leopold, we can use the same tools that destroyed prairies to recreate them by preparing the land, planting native grasses and flowers, enjoying the wildlife and educating others to spread prairie enthusiasm throughout Texas.

Notes

The Prairies - Ecosystems in Search of Balance

Paul D. Ohlenbusch¹
Emeritus Professor, Grazingland Management
Kansas State University

The prairies of the United States and the world are disappearing at a rapid rate. Estimates of the loss of agricultural land in the United States between 1997 and 2001 averaged 2.2 million acres per year (USDA-NRCS, 2003). This loss includes all grasslands such as native prairies, tame pasture, and grazed forestland. The prairies are a unique ecological type since they are actually the result of recurring fires. Their disappearance, unless attitudes change, is unavoidable.

What Are the Prairies?

The term *prairies* is unique to the North American continent. The term is attributed to the French word for a meadow grazed by cattle. Prairies are a part of the grasslands of the world which include pampa (South America), veldt (Africa), and steppe (Asia). Regardless of their name or location, grasslands are "open fields and meadows carpeted by deep-rooted grasses" (National Geographic, 2007).

Prairies Before European Settlement

The prairies of North America were vast before European settlement. The prairies of central North America, stretched from central Mexico into northern Canada and from the Rocky Mountain chain to the Appalachian Mountain chain. In addition, various savannas, prairies, and tundra of the north provided habitat for many species. Large herds of ungulates, such as bison and pronghorn antelope, grazed the prairies and with recurring fires maintained "a habitat where the dominant plant community consists of grasses and non-woody flowering plants called forbs" (Great Plains Nature Center, 2007).

After European Settlement

Settlement of the Central United States was slow since many considered it the "Great American Dessert." Then, settlers found that the rich prairie soils could grow crops such as corn and wheat. Over time, trails became roads, barbed wire fenced the land, towns developed, and then cities. Add to this the European concept of ecology and degradation of the prairies began.

European ecology concepts that probably influenced this degradation included fire destroyed the prairie and trees brought rain. As a result, trees were planted and fires were suppressed as much as possible. Today we recognize that trees have nothing to do with rain and prairies are the result of fire as a disturbance. Fire, properly applied, suppresses woody plants and enhances many of the native grasses. This "new" philosophy has been and is being documented in many locations. In the absence of recurring fires, the prairies become woodlands or forests, often of less desirable species.

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The Prairies Today

As mentioned above, agricultural land, including the prairies, is disappearing at over 1,200 acres per day. The land becomes transportation, developments, green space, malls, and parking lots. Also, the trend to “ranchettes,” small acreages with a house and maybe some outbuildings and a horse or other farm animal have been increasing. The current term for this is fragmentation. Previously, it was urban sprawl.

The Future

There are many changes occurring as the prairies disappear. As the prairies disappear, some of the changes are increased runoff, less carbon sequestration, and changes in wildlife populations.

Increased runoff results from rooftops, concrete and pavement, and increased woody plants. The prairie vegetation of grasses is Nature’s way of reducing runoff through the root mass in the soil and the vegetative barrier above ground. Woody plants often reduce or eliminate herbaceous vegetation. Unless an adequate leaf or other mulch layer is present, bare soil results in increased runoff.

Carbon sequestration is a major process that removes carbon from the atmosphere. Grasslands, including the prairies, have the highest sequestration rate of all vegetation. They sequester the carbon in the soil where it remains indefinitely. This also includes introduced grasses and grass crops such as corn and sorghum. Post, et.al. (2004) state that if changes to use carbon sequestration are to be accepted they must “be suitable for adoption only if they are technically feasible over large areas, economically competitive with alternative measures to offset greenhouse gas emissions, and environmentally beneficial.”

Changes in wildlife populations result from changes in vegetation type, land use, and land management. If a prairie gradually becomes a woody vegetation, the prairie species will be replaced by woodland species. When the prairie is replaced by urban type use, only those species that can adapt to the urban environment will remain. If the prairie type is maintained but not harvested, grazed or hayed, a build up of mulch will displace ground nesting birds in favor of rodents and their predators.

The Future

What does the future hold for the prairies? Probably a continual loss of acreage, both from changes in vegetation type and land use and management. The potential changes that could change what appears to be the inevitable would be to change the attitude toward land values and the use of restrictions on future land use. The first would require a political change that probably wouldn’t happen. The latter would be at the discretion of the current land owner and their heirs.

The only way to change the continual degradation of all native vegetation is to have a change in attitude toward land. Unless land is valued as a non-renewable natural resource, it will continue to disappear.

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Landscaping with Prairie Plants and Attracting Wildlife

Flo Oxley
Director of Conservation and Education
Lady Bird Johnson Wildflower Center

Want to attract hummingbirds and other birds, butterflies and other pollinators, and more wildlife to your garden? Would you like to see native prairie flowers bloom in the spring, and entice songbirds with native grasses in the fall and winter? Learn about native prairie plants, and how to use them in wildlife and native plant friendly landscaping.

Notes

Native Grasses of the Tallgrass Prairie

One Key to Understanding the Natural Resources of Texas

Dr. Barron Rector
Associate Professor and Extension Range Specialist
Texas A&M University

Early explorers and naturalists found the State of Texas to be predominantly a land classification named rangeland. Early estimates showed that 90.7% of the state's land area was rangeland while 9.3% of the state was classified as forestland. Texas's rangeland included tall, mid- and short grass prairies or grasslands, savannahs, shrublands, high desert grasslands, wetlands and even the desert of Far West Texas. The prairies also had patches of trees and shrubs. Early educators noted that rangeland occurred in almost every county. The dominant plant type growing on rangeland was and is grass. Grasses are the most abundant and widespread family of plants. Even forestlands grow an array of grasses. Grasses are important vegetation components of forests, wetlands, riparian areas, deserts, and alpine tundra.

Early settlers traveling by wagons from Galveston Bay to San Antonio, crossing the coastal prairie, Blackland Prairie and Post Oak Savannah, found the area to often be a sea of grass and with so much of the land dominated by grasses, boredom often set in. Early livestock managers saw so much grass that they exclaimed we will never bring enough cattle to Texas to eat all of this grass.

Because of the size, varying topography and large variation in the climate of the State of Texas, the area is noted to support some 5,000 species of flowering plants. Following the Sunflower Family in numbers (about 850 species), the Grass Family (Poaceae) is the second largest family of plants in the state with approximately 650 taxa (taxonomic units including species, sub-species and varieties) or about 560 species of native and introduced grasses. Grasses are monocotyledonous plants, meaning grasses are a type of angiosperm that belongs to a class whose members are characterized by having one cotyledon (one seed leaf or embryonic leaf in the seed).

All grasses are not the same. Texas's grasses come in a wide array from annuals to perennials, cool season or warm season, sod-forming to bunchgrasses and short to tall. Grasses were often named for characteristics of growth, such as tall or short, little or big, giant or vine-like, weeping and even if they grew like a carpet on the ground. Although most grasses are not considered to be wildflowers due to the lack of showy and colorful petals, many were named relative to the color of the leaves, stamen or total inflorescence. Many native grasses were named after other grasses they looked like, such as seaoats, wildryes, wheatgrass, cane or barley. Some were named after the situation or soil they grew on such as sand, alkali, meadows, marshes, seashores, inland, uplands and others. Grasses were also named from characteristics of being hairy, or from what part of the country did they grow (eastern or western, northern or southern). Some grasses were named to honor people, such as botanists, early naturalists or explorers. Even the visual characteristics of the root system could be involved and resulted in names like knotroot or bulbed. Whatever name was given, the grass name could build a mental vision or picture of what the grass "namer" saw on a specific day in history when the name was formulated.

Because humans have always needed a way to communicate knowledge, things around us and in our environment have been named. Many grasses ended up with a long list of common names. These names originated in different parts of the state or were names used by various ranchers, farmers, educators, agencies or land resource managers. Texas panicum, a fairly common warm season annual, was also named sourgrass, Texas millet, Colorado grass, hoo-rah grass and Texas signalgrass. Even unrelated grasses could have been given the same name. To solve a communications problem, a standardized common name has often been selected, a name that was most often used over the largest geographical area. Common names have often changed. Sideoats grama, the State Grass of Texas, was known by the name buffalograss in the late 1800's. Today, buffalograss is a sod-forming grass of grasslands.

Grasses have great value on the landscape and for human-kind. Previous authors have stated that grass is our basic heritage. Out of all of the kinds of plants, grasses were seen as the type of plant that protects the soil surface from raindrop impact, water erosion, and floods. Maintaining an excellent soil cover with grasses, including current growth and litter, will reduce seedling establishment of undesirable plants. The adapted native grasses help to maintain or rebuild the natural hydrologic cycle, the nutrient cycle, organic matter in the soil for a healthy ecosystem. Grasses also are the number one kind of plant on the landscape which provides channels for rainfall to infiltrate into the upper soil profile where stems and roots provide a pathway for entry into the soil in even the tightest clays. In the recovery of farm and grazing lands after the dust bowl days, grasses were most often used for planting to minimize soil movement from wind erosion.

Most individuals know the grass family best as the plants that feed us from oats, wheat, rice, barley and corn. Others know grasses as the kinds of plants used in building a beautiful lawn or landscape. Still others know grasses as the number one source of food for grazing herbivores such as bison, elk, pronghorn, domesticated livestock, horses and donkeys. Today, grasses are noted to be the most important plants that can help landowners and agencies to see changes in the health of a landscape. Grasses can be one group of plants useful for indicating land deterioration or recovery from past disturbances or land use. Because plants are adapted to very specific environmental management situations called habitats, by knowing the name of the plant you are looking at, you can interpret the landscape as to whether it is improving or deteriorating from your desired conditions or how it may be different from the natural conditions that once prevailed. This has always led humans to declare that some grasses are desirable and others undesirable. But in reality, each grass species serves as an indicator and fills a specific niche on the land where it has adapted to the prevailing climate, soils, availability of water, nutrient cycle and land use. As the future of grasses and their value unfolds, we may find that we are eating the seeds of Eastern gamagrass as a new grain crop for human consumption or we will find that grasses such as switchgrass are being grown to be converted and transformed into fuel alcohol for running our vehicles. Whatever the future holds, you can bet that grasses will be an important component of our landscape, human survival and our way of life.

Web Site: <http://tcebookstore.org> - Click on agriculture, then Rangeland, then management and find Extension publication B-1379, Seeding Rangeland and Range Risk Management Paper E-117; Extension Publication B-182, Know Your Grasses..

We Can Make A Difference

Jason Spangler
Board Member
Native Prairies Association of Texas (NPAT)

Pieces of beautiful virgin Texas tallgrass prairie still remain. However, plowing, development, and improper management are threatening many of these natural treasures of Texas. We can save these special places and restore prairie where it once flourished to protect the native plants, grassland birds, butterflies and other pollinators, and other prairie wildlife. Together we can make a difference.

Presentation

This has been a great turnout. I'm thrilled to see so many people who care about native plants and prairies here to learn about efforts to identify, conserve, restore, and celebrate these natural treasures. Our tallgrass prairies and grasslands and their native plants are beautiful pieces of Texas' heritage and natural history, as you can see from the prairie flowers and grasses on the screen behind me.

Quotes

To start, I'd like to share two of my favorite Texas prairie quotes with you.

"I can sit on the porch before my door and see miles of the most beautiful prairie interwoven with groves of timber, surpassing, in my mind, the beauties of the sea. Think of seeing a tract of land on a slight incline covered with flowers and rich meadow grass for 12 to 20 miles..." - John Brooke, an early settler in the tallgrass prairies of Texas, 1849

"The most variegated carpet of flowers I ever beheld lay unrolled before me – red, yellow, violet, blue, every color, every tint was there... The finest artificial garden in the world would sink into insignificance when compared with this parterre of nature's own planting." - Charles Sealsfield in the tallgrass prairies of Texas, 1843

Learn

We learned about prairies, the plant communities, grassland birds, and other wildlife that call them home.

Most of our native prairie communities are ranked as G1 or G2, which means critically imperiled/imperiled. They are almost gone: the tallgrass prairies are the most endangered large ecosystem in North America. The grassland birds that live in the prairie are the most declining group of birds in North America.

In the documentary on Thursday, we also learned that prairie plantings for biofuel can sequester carbon and fight global warming while helping to solve our foreign energy independence problem.

It may all feel overwhelming, but we can make a difference. We can help save these incredible, beautiful places, for our generation and our children's generation and beyond. The government will help but aren't going to do most of it. It is up to us. The people in this room are the ones who can make a difference. We care about native plants and prairies, and we can transform that emotion into action.

Advocacy organizations like NPSOT can promote native prairie and plant conservation, landscaping with prairie plants. We can educate our families, friends, neighbors, other conservation and nature organizations about native plants and the rarity of our once vast prairies. Landscaping with native plants is a great gateway which leads to people caring about native plants and habitats, which is how I got involved with prairie conservation work.

We can help conservation groups like NPAT, TNC, NAPA, and other land trusts. We can join the organizations, volunteer our time, serve on boards, donate so they can accomplish our shared missions, and even leave bequests in our wills.

We can restore prairie on our own land. We can protect virgin prairie on our own lands. Conservation easements, where the owner retains ownership but legally protects their prairie in perpetuity, have become very popular. Texas land trusts are currently engaged in finishing out conservation easement transactions which will permanently protect tens of thousands of acres, some of it prairie. Some generous prairie owners, some in this room, have even donated prairie land or easements to land trusts.

Learning that most of our native prairies are gone is sad. I know. It can be hard to watch these places we've cared about for years be destroyed. But we can make a difference. We can save the special places that remain for current and future generations. And the people in this room and others like us are the ones who will make it happen.

Thank you.

Notes

Breakout Session 1

The Restoration of Hill Country Grassland at Selah

J. David Bamberger
Selah, Bamberger Ranch Preserve
Co-founder and former CEO, Church's Fried Chicken

After his success in the business world, J. David Bamberger bought “the sorriest piece of land in Blanco County” and restored it to ecological health. Brush removal, replanting of native grasses, and good land management practices returned water to the springs and restored 5,500 acres of the Hill Country that had been almost destroyed by decades of misuse. David will discuss the restoration of Selah and the new book by Jeffrey Greene about the story of Bamberger Ranch Preserve. In addition, J. David will discuss the Texas Snowbell (*Styrax texana*), an endangered plant species endemic to the Edwards Plateau, and the recovery effort they have led since 1994 for this beautiful native understory tree.

Notes

Breakout Session 1

The Prairie/Grassland Birds of Central Texas and Williamson County

Tim Fennell
Travis Audubon Society

The prairie birds of North America, usually thought of as those birds that breed and/or winter in the grasslands of the continent, are geologically young as are the Great Plains where they evolved. In Central Texas, grasslands range from the short and mixed grass prairies of the Edwards Plateau in the west to the tall grass prairies on the downthrown side of the Balcones Fault Zone in the east. Although Central Texas has plenty of prairie species that breed and/or winter here, other species just pass through this ecosystem on their migratory journeys to the south and north. The original prairie ecosystem of this area consisted of a mosaic of habitats (members of early expeditions traveling through the area used Alligators for target practice in the San Gabriel River) that supported a wide diversity of prairie and migratory bird species.

Today, prairie birds, along with the prairies that support them, are declining at alarming rates. The populations of two-thirds of North American grassland bird species are declining and their decline is steeper, more consistent and more widespread than any other ecological grouping of North American birds. Some of the more common breeding grassland species of the Central Texas of today include the Killdeer, Mourning Dove, Common Nighthawk, Lark Sparrow, Dickcissel, Red-winged Blackbird, Eastern Meadowlark and Brown-headed Cowbird. Others, such as the endangered Black-capped Vireo and Golden-cheeked Warbler, breed in the more wooded parts of the Central Texas mosaic. Still other species, such as the Mountain Plover, Burrowing Owl, Sprague's Pipit, Le Conte's Sparrow, longspurs and Western Meadowlark, only spend the nonbreeding season in the area. Finally, many species, including over 30 shorebirds species and over 30 warbler species, just pass through the area during their migration. Over 400 bird species have been recorded in the Travis Audubon Society checklist area, a 60-mile radius circle centered on the Texas State Capitol building.

In the presentation, most of the following bird species were discussed:

Greater White-fronted Goose
Snow Goose
Ross' Goose
Cackling Goose
Canada Goose

Blue-winged Teal
Northern Shoveler
Northern Bobwhite
American White Pelican
Great Egret

Cattle Egret
Black Vulture
Turkey Vulture
Mississippi Kite
Northern Harrier

Swainson's Hawk
Red-tailed Hawk
Ferruginous Hawk
Crested Caracara
American Kestrel

Merlin
Prairie Falcon
Sora
Sandhill Crane
Whooping Crane

American Golden Plover
Killdeer
Mountain Plover
American Avocet
Upland Sandpiper

Long-billed Curlew
Baird's Sandpiper
Pectoral Sandpiper
Buff-breasted Sandpiper
Wilson's Phalarope

Franklin's Gull
Black Tern
Mourning Dove
Yellow-billed Cuckoo
Great Horned Owl

Burrowing Owl
Short-eared Owl
Common Nighthawk
Red-headed Woodpecker
Scissor-tailed Flycatcher

Loggerhead Shrike
Bell's Vireo
Black-capped Vireo
Horned Lark
Purple Martin

Barn Swallow
American Pipit
Sprague's Pipit
Golden-cheeked Warbler
Vesper Sparrow

Lark Sparrow
Savannah Sparrow
Grasshopper Sparrow
Henslow's Sparrow
Le Conte's Sparrow

McCown's Longspur
Lapland Longspur
Chestnut-collared Longspur
Blue Grosbeak
Painted Bunting

Dickcissel
Red-winged Blackbird
Eastern Meadowlark
Western Meadowlark
Yellow-headed Blackbird

Brewer's Blackbird
Brown-headed Cowbird

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Breakout Session 1

Grasses and Gases: Impacts of Atmospheric CO₂ Enrichment on Grasslands

Wayne Polley, PhD

Introduction

The concentration of carbon dioxide (CO₂) gas in the atmosphere has increased by about 40% since the beginning of the Industrial revolution 200 years ago to the current level of 380 parts per million (ppm). Fossil fuel consumption and changes in land use account for much of this increase in CO₂. Atmospheric CO₂ concentration is increasing at the rate of about 1-3 ppm per year and is expected to reach at least double the pre-Industrial concentration within the century. Change in CO₂ is nothing new. The CO₂ concentration has increased and decreased through geological time, dropping to levels of 200 ppm or below during glacial periods including the last glaciation that ended about 15,000 ago. But, atmospheric CO₂ now has reached levels that apparently are unprecedented from about ½ million years, and is increasing at a rate for which there is little or no precedent in Earth's history.

Atmospheric CO₂ enrichment is of concern for at least two reasons. First, CO₂ is an important greenhouse gas. Increasing CO₂ thus may contribute to warming of the Earth's atmosphere and to associated changes in precipitation regimes. Second, biological processes are fueled by carbon derived from atmospheric CO₂. Consequently, the ongoing increase in atmospheric CO₂ concentration almost surely is affecting plant productivity and grassland properties and will continue to do so for the foreseeable future. Indeed, past CO₂ change may have played a role in development of the grasslands we know today. Aridity is thought to have been necessary for grasses to expand, but extensive areas of grass did not appear until after CO₂ concentration declined to about the current concentration

Scientists with the USDA-Agricultural Research Service in Temple, Texas have been researching effects of CO₂ enrichment on grasslands for more than a decade, first on pasture dominated by an introduced grass and currently with tallgrass prairie species planted in intact monoliths of soil of three types. Here, we discuss results from these experiments, with an emphasis on how increasing CO₂ from pre-Industrial to predicted concentrations may affect the plant species composition of grasslands.

Plants grow by fixing or assimilating CO₂ that diffuses from surrounding air into leaves through small leaf pores called stomata. Atmospheric CO₂ enrichment directly increases the rate of which leaves fix CO₂ by increasing the amount of CO₂ that diffuses into leaves. Greater rates of photosynthesis usually result in faster rates of plant growth. Atmospheric CO₂ has a second effect on plant physiology. Stomatal pores usually close partially as CO₂ rises, thereby reducing stomatal and leaf conductance to the diffusion of water vapor from moist surfaces inside leaves to the atmosphere. As a consequence, CO₂ enrichment typically reduces the rate at which plants use water (the process of transpiration) and deplete soil water reserves. Additional benefits include improved plant water status and greater biomass production per unit of transpiration (greater water

use efficiency), such that CO₂-enriched plants produce more biomass on a given amount of water or the same biomass on a smaller amount of water.

CO₂ enrichment typically increases plant biomass production, especially when environmental conditions are favorable and other essential resources of plants, like nitrogen, are not in short supply. Plant responses to CO₂ may differ among species, however. Increasing CO₂ usually stimulates photosynthesis more in species like trees and forbs with C₃ photosynthetic metabolism than in species with C₄ photosynthetic metabolism, like the warm-season perennial grasses that dominate grasslands in the southern Great Plains of the U.S. By preferentially stimulating growth of some species, CO₂ enrichment may alter species abundances and contribute to change in the species composition of grasslands. Indirect effects of CO₂ enrichment on species composition also are possible. By reducing rates of plant water use and soil water depletion, for example, CO₂ enrichment may benefit species that otherwise would be eliminated from grasslands during drought.

We used transparent, tunnel-shaped chambers to expose plots of pasture and intact monoliths of soil planted to tallgrass prairie species to a continuous gradient in CO₂ spanning pre-Industrial to predicted concentrations. A primary objective of these experiments was to determine CO₂ effects on grassland production and species composition. The pasture on which CO₂ treatment was imposed was dominated by the introduced C₄ perennial grass *Bothriochloa ischaemum* (King Ranch bluestem). Co-dominate species included several C₃ perennial forbs, notably *Solanum dimidiatum* (western horsenettle) and *Ratibida columnaris* (mexican hat).

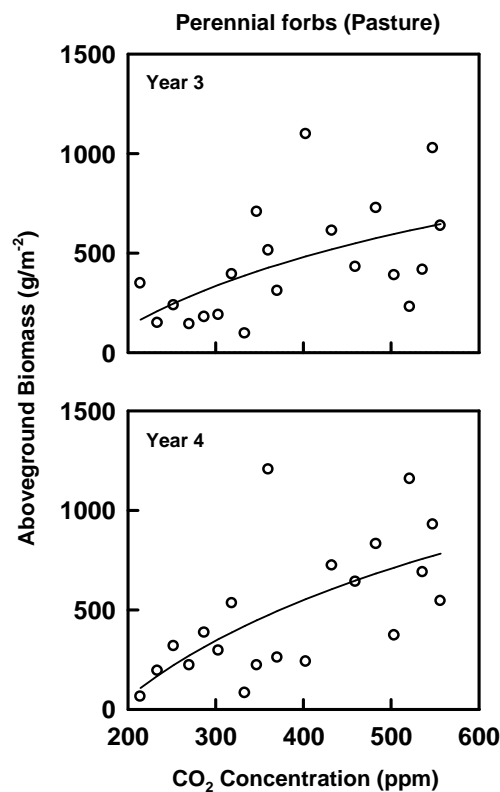


Fig. 1

During a second experiment, we grew species characteristic of the Blackland Prairie region of central Texas in intact monoliths of soil of 3 types to determine whether regionally-important differences in soil type influence the CO₂ response of vegetation. Species studied included the C₄ perennial grasses *Schizachyrium scoparium* (little bluestem), *Sorghastrum nutans* (indian grass), *Bouteloua curtipendula* (side-oats grama), and *Tridens albescens* (white tridens) and the C₃ perennial forbs *Solidago canadensis* (goldenrod), *Desmanthus illinoensis* (Illinois bundleflower), and *Salvia azurea* (pitcher sage).

Experimental Results

Enriching CO₂ from pre-Industrial to elevated concentrations increased aboveground biomass of both pasture and prairie species. During the first year of CO₂ exposure, for example, aboveground production of the pasture community increased by 85% as CO₂ was increased from 200 to 550 ppm. Increasing CO₂ from the pre-Industrial concentration of 270 ppm to a CO₂ level expected within 50 years, 470 ppm, increased aboveground biomass of prairie communities growing in both shallow and deep clay soils by 46%, but did not affect production of prairie plants growing in a sandy loam soil.

CO₂ enrichment also caused a shift in species abundances. Pasture vegetation changed considerably during the 4 year of CO₂ treatment from dominance by C₄ grasses to co-dominance by C₄ grasses and C₃ perennial forbs. The C₄ grass *Bothriochloa* comprised almost 60% of biomass harvested from chambers following the first season of CO₂ treatment. Contribution of *Bothriochloa* declined to about 25% of biomass in years 3 and 4 of CO₂ treatment, partly because of an increase in abundance of taller perennial forbs. Increasing CO₂ from pre-Industrial to elevated levels increased aboveground biomass of perennial forbs by a factor of 4 in year 3 and of 7 in year 4 of the study (Fig. 1). The increase in forb biomass was especially great at elevated CO₂ and occurred at the expense of the dominant grass. A similar trend of greater biomass of perennial forbs at higher CO₂ was evident during the first year of CO₂ treatment of prairie species growing on a deep clay soil. Aboveground biomass of prairie forbs growing in deep clay increased by an amazing 365%, on average, as CO₂ was increased from 270 to 470 ppm (Fig. 2). Conversely, CO₂ enrichment had no effect on biomass of prairie

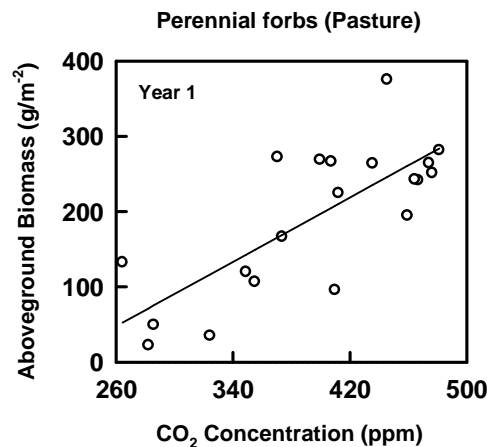


Fig. 2

forbs growing in sandy loam soil and shallow clay soil. CO₂ enrichment increased grass biomass on the shallow clay soil only. Biomass of grasses, chiefly *Bouteloua curtipendula*, increased by 57% as CO₂ was increased from 270 to 470 ppm.

By slowing the rate at which plants deplete soil water, CO₂ enrichment may benefit seedlings or even larger plants that otherwise would succumb to water stress. For example, CO₂ enrichment increased the average water content of the upper 15 cm of pasture soil from about 21% to 24% during a drought period in 1998. Survivorship of honey mesquite (*Prosopis glandulosa*) seedlings that emerged from seeds planted before the drought in adjacent pasture correlated positively with soil water content. Percentage survival of seedlings increased from 1.5% to 15% and 28% at the soil water content measured in pasture exposed to CO₂ concentrations of 270 (pre-Industrial), 360 (near current), and 550 ppm (future), respectively. Recent and projected increases in atmospheric CO₂ concentration thus may slow transpiration and increase soil water content sufficiently to increase the establishment of invading mesquite seedlings on some grasslands.

Conclusions

The continuing rise in atmospheric CO₂ concentration likely is stimulating the production of grassland vegetation, but also may be contributing to changes in species composition. Greater CO₂ tends to increase production and abundances of forbs and establishment of woody species on grasslands during controlled experiments, a trend that may be of concern to both conservationists and livestock producers. The number and relative abundances of plant species on grasslands depend on a complex suite of factors in addition to CO₂, however, including disturbance regimes (i.e., fire, grazing) and soil fertility. Impacts of CO₂ enrichment on grassland composition likely will be greatest when they reinforce effects of other factors. We expect CO₂ effects on species composition to be greatest in recently-disturbed or newly-established plant communities where nutrient and light availability are high and species change is influenced largely by growth-related parameters of plants.

Breakout Session 1

Wildlife Habitats and Global Warming

Alice Nance
National Wildlife Federation

Learn how global warming will impact native wildlife and plants, and what you can do to make a difference. Attract wildlife to your garden and landscape by planting a Wildlife Habitat with native prairie flowers and grasses.

Notes

Breakout Session 2

Tallgrass Prairie Restoration Planning Your Prairie, Site and Species Mix

Bob Burleson
Attorney at Law
Former Texas Parks and Wildlife Commissioner

Most folks get interested in prairies, decide that it would be fun or a good experience to create a mini-prairie, and plan to use a tract of land, large or small, that is already owned. Although this will work, the ideal method would be to make the decision and then look for and purchase land that is suitable. Although replicated prairies can range in size from that of an urban garden to hundreds of acres, and since even small projects can help educate oneself and foster a greater appreciation of nature and diversity, we are not trying to discourage anyone from attempting any form of prairie replication, any place, any time, or by any method. Neither are we trying to discourage anyone from trying to improve or restore their existing grasslands or pastures, because this sort of effort is also worthwhile and fosters greater appreciation of prairies in general. However, it probably does help to have an "ideal" tract in mind from the start, if you are serious about prairie replication. So, here's the "ideal":

1. A tract of 50 to 100 acres, or as much more as you can afford. Larger tracts seem to be able to sustain themselves as an ecosystem better than small tracts, although there are many variables involved. A 1,000-acre prairie is a rare beauty!
2. Level to gently rolling land is best, free from terraces, erosional ditches, streams, woods, fences or treelines.
3. Fertile soil, suitable for growing crops. Deep soil is best. Very shallow, rocky soil is problematic, as it is harder to till and plant.
4. Land that has been in crop production and is generally free from weeds and Johnsongrass or other strong competitors. You need to look at the history and past uses of your proposed tract, as weed seed can lie buried but viable for many years.
5. Land that does not currently border a pasture or roadside where Bermuda grass (common) grows or where King Ranch Bluestem grows. There is no point in setting up right next to strong competitors. Since most public roadsides are infested with KR Bluestem, you may wish to avoid them to the extent that you can, or plan on a barrier strip.
6. Avoid low, very wet, heavy clay soils, if you have any choice. Such soils are subject to invasion by many tough competitors, such as the ragweeds, sump weeds, Max sunflower, goldenrods, dewberries and so forth. Higher, better drained soils seem to be best.
7. Since you may be burning every few years, it is best not to locate right next to a bunch of rural homesites, as the smoke can create neighbor problems with some folks. You need to think in advance about burning and its associated risks.

By now, you may wonder if there really is any "ideal" site for a prairie replication, in light of all the above requirements. However, the truth is that such lands, generally open farmland,

are plentiful, probably cheaper, and readily available not far from most cities. The tracts with creeks, trees and hills are the first to be purchased by urbanites wanting to move to the country, and generally bring the higher prices.

If your land is not ideal, then you need to consider making it more ideal before you plant. Take down perimeter fences, doze out tree lines, remove all trees and brush, level all terraces, fill in all gullies, and sculpt the land so that you can safely and easily burn, disc and shred it during your project. Fences attract birds, who sow weed and tree seeds. Fences shelter brush, saplings and poison ivy. Fences are impossible to shred under. Trees not only spread their own seed by wind and water, but attract birds, who carry the seeds further into your prairie. We certainly do not say that you cannot have a prairie in the middle of the woods, with a pretty creek nearby, and woods as a wildlife haven, but you will be planting your prairie in the very midst of the enemy camp and will have to work much harder and forever in a battle to preserve it.

We did not know or think about the foregoing when we first started our prairies. We have learned these lessons the hard way, by making mistakes. It has been a constant battle against woody and weedy invasion, because we built our prairies right beside creeks, fence lines and woods, and because we did not doze down all terraces and shape all gullies before planting. We've learned a lot since 1969, much of it by trial and error, mostly error!

Almost everyone wants to fence their property. It seems to be one of the attributes of ownership, and important to most folks to establish their property lines and territory. However, you rarely have any trespassers on prairies, and there is generally nothing to steal on a prairie, so fences really are not required. Fences also encourage owners to "make some use" of their prairie by grazing, most commonly by a few head of cattle, a horse or two, and Heaven Forbid, goats, miniature Zebu cattle, midget donkeys, or sheep. While a really good manager can graze a prairie without harming it, good managers are hard to find, and the skills are not easily learned. You will probably go backwards on your prairie project if you plan to manage your prairie by grazing, most likely by hitting it too hard at the wrong time or for too long a period. Unless you have ample other tame pasturage for your stock, so that you can turn them into the prairie only at the proper time, remove them at the proper time, and not feel compelled to hit the prairie a bit harder because you have run out of other grazing, you will do best to forget replicating a prairie.

Is prairie replication only for the wealthy? What about the person who has limited means and must make some return from a tract of land in order to justify its purchase? What about the person who has inherited an undivided interest in a family tract, sharing ownership with siblings who have no interest in creating a prairie? These are genuine problems. Ideally, the prairie ownership should be segregated, so that only one owner is involved. Also, the fact should be faced at the outset that not a lot of money can be made off a prairie. You can cut one cutting or possibly two a year and sell the hay, if a market exists, or use it to feed livestock on other pastures you own or control. If you are very good at prairie and grassland management, you can graze a prairie for short periods during the year, and get some return from the gain of your animals. But you are unlikely to net as much income from a prairie as you could gain from renting the same land to a farmer for crop production, although you will get a poor return either way. Prairies do not generally pay their way, and the creation of one and the management of one is a labor of love. You are creating a rare and wonderful thing that pays you by its beauty and diversity. We do not regret any of the sums we spent on our prairies, nor the years of hard work, nor the time involved, and would not sell an acre of them for any sum.

A partial prairie species list for Central Texas is available from many sources. This is not an exhaustive list. It is difficult to locate, identify and collect seeds or rootings from many of the less common or less visible prairie plants, and it will take you many years to find some of them at just the right moment. However, such a list does give you some ideas to toss around, and probably will cover a majority of the more common prairie species for Central Texas.

However, we collected and planted Maximilian sunflower in all our prairies. Having observed it since 1969, we would not advise planting it in any prairie replication on the blacklands. It is too aggressive, spreads by tillers and underground shoots, and will overpower and force out many other prairie grasses and forbs. It will come in all on its own, but keep an eye on it, and use Roundup spray or wick treatments regularly to control the size and spread of the plants that establish themselves in your prairie. If you strip or combine your seed from existing stands, you will get plenty of Max sunflower without planting seeds all over! Likewise, although goldenrod is frequently found in low, moist prairies, it is best to avoid planting it and to also keep it from spreading too much. A little bit goes a long, long way! Hit it regularly with Roundup to control its spread.

Some forms of silphium, those with lanceolate leaves, are also too aggressive in Blackland Soils, particularly in wet areas.

Breakout Session 2

Restoring and Managing Grassland Habitats Landowner Assistance from Texas Parks and Wildlife Department

Linda S. Campbell
TPWD Wildlife Division Program Director
Private Lands and Public Hunting

Assistance to Landowners

Biologists of Texas Parks and Wildlife Department (TPWD) provide guidance and recommendations to landowners and managers who want to include wildlife management considerations in present or future land use decisions. This service is provided without charge.

The goal of the Private Lands program is to help landowners assess the wildlife potential of their land and recommend ways to improve the land to support a diversity of wildlife. Biologists help landowners achieve their wildlife management goals. Through on site assistance, biologists provide recommendations to landowners on how to manage the various wildlife populations on their land. By encouraging private land stewards, TPWD hopes to slow or reverse declines in the quantity and quality of the State's natural resources. Our goal is to provide practical information on ways to manage wildlife resources consistent with other land use goals, ensure plant and animal diversity, provide aesthetic and economic benefits, and conserve soil, water and related natural resources.

Landowners can request assistance by contacting one of the Wildlife District Offices (www.tpwd.state.tx.us/landwater/land/technical_guidance/biologists). A biologist assigned to the landowner's county will schedule a site visit with the landowner/manager to assess the habitat potential and offer guidance on ways to improve habitats for the species of interest consistent with the landowner's overall land management goals. Once the property's potential has been determined, the biologist will provide recommendations and if requested, help the landowner develop a written Wildlife Management Plan (WMP). The WMP is a guide to achieve the landowner's stated goals. Components of the WMP include current description of habitat, land use, and management practices, and specific habitat management recommendations and population management goals for various species of interest. The importance of keeping good records to evaluate progress toward management goals is explained. WMPs approved by TPWD biologists are confidential by state law according to Parks and Wildlife Code Section 12.0251.

Habitat recommendations focus on increased ecological diversity benefiting a wide variety of native wildlife, along with specific management practices designed to benefit featured species identified by the landowner. Biologists teach landowners how to recognize plants important to various wildlife species and discuss the relative importance of grasses, forbs (weeds), and woody plants (trees, shrubs, succulents and vines). Unique plants, animals, and habitats are identified and management options suggested to enhance or conserve these resources.

Biologists explain the use of proper harvest as a key management tool to maintain big game populations in balance with available food supplies. Landowners are advised on how to achieve and maintain desired population parameters such as age structure, production level, and sex ratio. Information is provided on survey techniques designed to monitor population levels and support harvest recommendations. The merits of various survey techniques, including their relative accuracy and cost, are explained. Landowners are instructed on how to conduct surveys of various species of interest.

Information on various cost share and incentive programs offered by TPWD and other resource agencies is provided based on the landowner's interests and resource needs. TPWD biologists continue to assist landowners through periodic visits as needed to help interpret survey information, formulate harvest recommendations, assess progress toward management goals, and suggest additional management actions and adjustments. They are also available to provide recommendations to landowners interested in managing for wildlife as their primary agricultural use under the 1-d-1 Open Space Agricultural Valuation for wildlife management.

Federal Farm Bill Programs

President George W. Bush signed the current Farm Bill into law on May 13, 2002. This farm bill represented the greatest expansion in conservation program funding and creation since the Conservation Reserve Program (CRP) was initiated in the 1985 Farm Bill.

This has impacted Texas in some very significant ways. As of June 2007 Texas led the nation in land signed up for CRP— 4,072,663 acres. The majority of these acres are planted in native grass. Three-quarters of these acres are located in the panhandle with 28 counties at or near their statutory 25% farmland acreage cap. CRP grasslands provide landowners with over \$125 million in rental and maintenance payments every year.

With CRP nearing its statutory limit of 39 million acres nationally, its emphasis has shifted to conserving the most environmentally sensitive acres through a series of specialized conservation practices. One of these is the CP33 Habitat Buffers for Upland Birds Program that pays farmers to plant native warm season grass borders around their cropland fields. To date 3,652 acres have been enrolled in Texas. This spring a new practice – CP38 State Acres For Wildlife Enhancement (SAFE) was unveiled. Currently, various conservation groups around the state are preparing proposals that would convert an additional 40,000 acres of cropland into native grassland, savannah land and shallow wetlands in the panhandle, Rio Grande valley and coastal prairies areas.

Since 2003 Texas Environmental Quality Incentive Program has spent hundreds of millions of dollars to perform brush and invasive species control, prescribed burning and grazing management on over a million acres of native rangeland. Over \$8 million has been spent on 225 contracts covering 369,827 acres in 5 wildlife resource concern areas with over 99% of the funding going for native prairie management or restoration. These wildlife emphasis areas are: Rolling Plains Quail and Grassland Birds, Attwater's Prairie Chicken and Bobwhite Quail, Lesser Prairie Chicken and Black-tailed Prairie Dog, Longleaf Pine and Bobwhite Quail and Black-capped Vireo. Currently a sixth area has been proposed for 2008 that would target Trans-Pecos pronghorn antelope and short grass prairie.

Pastures for Upland Birds Program

The Pastures for Upland Birds Program is a TPWD Wildlife Division Program instituted in 1999 to research cost effective methods for re-establishing native grasses and forbs into bermudagrass pastures, establish demonstration sites on private land, and provide technical and financial assistance to private landowners interested in converting introduced pastures to native grassland. To date, approximately 47 landowners in 13 different counties have collectively converted, or are in the process of converting, over 1000 acres of Coastal bermudagrass pastures and hayfields to native grasses and forbs. Private landowners who enroll in the program are provided free herbicide (41% Glyphosate) to control the bermudagrass, and free use of the PUB program no-till seed drill to plant the mixture of native grasses and forbs.

For more information on how you can enhance and conserve your land for wildlife, visit our web site at (www.tpwd.state.tx.us/landwater/land/private).

Special thanks to Chuck Kowaleski (Chuck.Kowaleski@tx.usda.gov) and Jay Whiteside (Jay.Whiteside@tpwd.state.tx.us) for their contributions to this paper on Farm Bill programs and Pastures for Upland Birds, respectively.

Breakout Session 2

Comparing Revegetation Methodologies for Brush Pile Burn Sites

Scott Gardner (presenter)
Mark Simmons, and Steve Windhager

Brush pile burning is the most common method to dispose of Ashe Juniper (*Juniperus Ashei*) in central Texas land reclamation projects. Due to the intense heat and long duration of pile burns, the upper soil is often heated to extreme temperatures, resulting in soil crusts forming and reduced microbial activity. The result is typically very slow revegetation, or slight revegetation from invasive herbaceous weeds. Unassisted revegetation of burn sites often takes several years, sometimes decades. While other research has looked into the degree of sterilization based on soil moisture and temperature levels, this project tested different post-burn treatments aimed to revegetate the sites with a sustainable colony of native species.

Notes

Breakout Session 2

Prescribed Fire in the Balcones Canyonlands National Wildlife Refuge

Carl Schwope
Fire Management Officer
Balcones Canyonlands National Wildlife Refuge

Prescribed fire is a restoration tool used to restore native prairie, grassland, and savanna habitat for native wildlife such as black-capped vireo and grassland birds and the native plant communities our wildlife depends upon. An overview of the use of prescribed fire on Balcones Canyonlands National Wildlife Refuge will be presented, including a summary of planning, precautions, conditions, execution, and results of prescribed fire on the refuge.

Notes

Breakout Session 3

Anything But Plain: The Rich Cultural Legacy of the Prairie

Matt W. Turner

Living, as most of us do, in a modern urban environment, it is all too easy to be divorced from nature. Surrounded by non-native plantings and invasive species, we lose sight of what our landscape once looked like. Fed on a diet of largely non-native fruits, vegetables, and livestock, we tend to overlook the boon of food resources and wildlife well suited to our lands. Medicated with synthetic drugs, we forget that the plants in the field, and millennia of folk wisdom about them, were the signposts to and sources for those drugs. As we invent plastics and synthetic fibers, we forget the remarkable qualities of the materials that they replaced. Our technological advances have a tendency to propel us away from our natural setting, our local culture and history, our connection to the land—the flora and fauna—and, thereby, our sense of place and belonging.

I do not for a moment advocate that we turn back the clock and reject modern technological advances. Their advantages are manifold. But, in the spirit of a symposium on preservation and restoration, I seek to preserve memories that are in danger of being forgotten, and to restore connections that have been lost. Ethnobotany is nothing other than examining the connection between humankind and the world of plants. In a narrow sense, the field catalogs human uses of plants, but in a broader sense, it looks for cultural significance as well: the role plants play in human history and the story that they then have to tell.

This paper takes seven plants that grow partly if not predominantly on the tallgrass prairie—a grass, several annuals and perennials, and a tree—and restores their connection and relevance to us. This study, excerpts from a book in press,* will chart the natural and cultural history of blue grama, rattlesnake master, purple coneflower, horsemint, sunflower, compass plant, and Osage orange. Some of these are common and well known, others are seldom seen in the field due to the eradication of their habitat by the plow, but all have fascinating histories and many still play important roles, even commercially.

Blue Grama (*Bouteloua gracilis*)

Few if any native pasture grasses are likely to surpass the grama grasses in economic importance. They are undoubtedly among the most valuable forage grasses in the western U.S., especially in the central and southern Plains and Southwest.ⁱ The many species of this genus are widely distributed, abundant, and superior in quality. In the arid Southwest, grama grasses furnish the greater part of native forage from elevations of 7,000 ft down to the desert. There are about 17 species of grama—a Spanish word for grass—in Texas. Blue grama (*Bouteloua gracilis*) and sideoats grama (*B. curtipendula*)—the latter is the state grass of Texas—are the two most famous, for

* *Remarkable Plants of Texas: Natural and Cultural History* (Univ. of Texas Press) has a target publication date of Fall 2008.

together they make up a very large share of the native forage consumed in Texas and the Plains. While historically cut for hay, blue and sideoats grama are better utilized for grazing, since most of their nutrients are found in their basal leaves, whose relatively short length (6-8") discourages use for hay. Being perennial, they withstand grazing well, as long as they are not grazed too closely, at which point they may take two to three years to recover.

Being the dominant species of the short-grass prairie, blue grama is considered the premier forage grass among the gramas. It has the advantage of a short maturation, just 60-80 days. It is also cured by droughts, rather than by frosts, and its dry leaves lose little of their nutritional value. It will survive with a bare minimum of rainfall. With 85% of its roots within the top eight inches of soil, blue grama can utilize the slightest of precipitation, even as little as 1/5th of an inch of rain.ⁱⁱ This xeric nature allows this grass to make significant inroads into the mid-grass and even tall-grass prairies during times of lower rainfall. If thickly sown and well tended, blue grama can make a decent turf grass. The dense root systems and overall shorter habit historically made for excellent sod, which pioneers used in house construction as they began to settle prairie areas short of timber.ⁱⁱⁱ

The main reason for including this short grass in an ethnobotanical discussion of the tall-grass prairie, however, is this plant's connection to the American buffalo or bison, the keystone species of the Great Plains.^{iv} Tens of millions of buffalo once roamed the plains, relying largely on the grasses of the short- and mid-sized-grass prairies, which have higher protein-to-carbohydrate ratios than tall grasses. As all school children know, entire nations of Native Americans depended heavily on the buffalo for food, shelter, clothing, tools, ornaments, and weapons, especially after the introduction of the horse, which enabled the so-called "Plains lifestyle" to flourish. Wherever the buffalo ranged—from Canada south to central (occasionally even coastal) Texas—the nomadic Plains Indians would follow. The near eradication of the buffalo toward the end of the 19th century led more swiftly to the demise of these nations than did warfare itself. Interestingly, as aquifers lower and agriculture becomes less viable in the dryer parts of the Plains, and as interest in preserving natural habitats increases, there is renewed discussion of bringing back the buffalo as a sustainable future for the Great Plains.^v

The White Mountain Apache of Arizona are believed to have eaten blue grama seeds during prehistoric times,^{vi} and, while evidence is lacking, we can assume that this and other species were exploited by other tribes for their grains. The Blackfoot of Montana used blue grama to forecast the severity of winter: if the culm had but one seed head, the winter would be mild, if two or more, the winter would be respectively severe.^{vii}

Rattlesnake Master (*Eryngium yuccifolium*)

Eryngium yuccifolium is an odd plant. Aptly named, this species, when young, can fool even a seasoned naturalist into thinking it is a yucca. But it is no yucca. In bloom, the compact, prickly flowerheads resemble the buds of a thistle about to open. But they are not buds (they are flowers), and this is no thistle (rather, an umbel, a member of the carrot family). Its common name, rattlesnake master, is outlandish, and meaningless for identifying the plant in the field. But the name of this native perennial has a homegrown value and is key to its historical understanding.

Many Native American tribes of the Southeast and eastern portion of the Great Plains valued this plant first and foremost as an antidote against poison, in general, and snake venom, in particular. Three of the so-called "five civilized tribes," the Cherokee, Choctaw, and Creek of the southern Appalachians and deep South, are known to have treated snakebite victims with rattlesnake master, and tribes as far away as the Great

Lakes (such as the Meskwaki) employed the plant for the same purpose.^{viii} One Cherokee physician, who authored an influential medico-botanical book based on native cures, declared the herb “one of the most powerful and certain remedies for snake bite now known.”^{ix} Almost invariably the root was the part used, either consumed raw, steeped in water as an infusion, boiled as a decoction, or chewed to make a poultice for external application. The Meskwaki also incorporated the plant’s leaves and fruit in a traditional rattlesnake medicine song and dance.^x

The earliest Anglo settlers to Texas were reminded of the plant’s alleged powers by Mary Austin Holley, cousin to Stephen F., who noted in her famous book *Texas*: “A root called rattlesnake’s master grows abundantly in the pine woods, and is said to be an efficient remedy.”^{xi} William Bollaert, the writer, chemist, geographer, and ethnologist who traveled extensively through the Republic of Texas in 1842-44 preparing a report for the British Admiralty, mentions that “there is no scarcity of snakes” in Texas, but that “rattle-snake master is in great abundance.” He goes on to say that the root tastes like a “strong bitter carrot.”^{xii} Special caution must be taken with common names of plants purported to treat snakebite. Indigenous peoples used many plants to this end, and settlers began applying English common names such as “snakeroot” and “snakeweed” indiscriminately to many plants. For instance, both *Eryngium yuccifolium* and *Liatris punctata* (gayfeather, a member of the Aster family) were both called at various times button snakeroot and rattlesnake master.

Native Americans and folk healers employed *Eryngium yuccifolium* for numerous other medicinal purposes. The Meskwaki, Choctaw, and natives living along the Arkansas River, used the root as a powerful diuretic (increases urine). Apparently, if used in larger doses, the root can act as an emetic (incites vomiting). The Alabama and Cherokee, in fact, used an infusion of the plant for its emetic properties, either to treat illness, or, as in the case of the Seminole, for ceremonial purification. Southeastern tribes may have added rattlesnake master to their “black drink” (a tea made from yaupon holly, *Ilex vomitoria*) in order to impart strong emetic properties to the drink for ritualistic purposes. The Cherokee used a decoction of the plant to protect children against whooping cough and an infusion was held in the mouth to treat toothaches. Ante-bellum African-American healers soothed the coughing of tuberculosis with a root tincture.^{xiii} From 1820 to 1873 the *U.S. Pharmacopoeia* listed the rattlesnake master’s properties as a diaphoretic (increases sweating), expectorant (controls coughing), and emetic, while late-19th-century treatises of medicinal botany add to this list the properties of stimulant, febrifuge (reduces fever), caustic anti-fungal, and gangrene-preventative.

While many of these uses are unlikely to stand up to the rigor, or potency, of modern synthetic drugs, and while the number and variety of uses begins to smack of panacea, the one specific treatment for snakebite should, perhaps, give us pause. Many American tribes were aware of this precise use, across thousands of miles, and identified the same part of the plant for treatment. In the Old World, the Romans utilized the root of another species of *Eryngium* for the exact same purpose: to counteract poisons and venoms, especially those of snakes.^{xiv} And rural Jordanians employ yet another species to treat scorpion bites, for which there is scientific evidence for the plant’s effectiveness.^{xv} Despite all this, there is an absence of research on the effectiveness of rattlesnake master in treating snakebites. Given that the Apiaceae contains many species with reported medicinal uses, this absence is surprising.

All but forgotten in historic times is the prehistoric use of rattlesnake master as a fiber plant. In fact, footwear constructed from its fibers are arguably among the oldest in North America. Sandals and slip-ons, found in cave deposits in central Missouri, have been radiocarbon dated to 8300 calendar years before present.^{xvi} Cords, bags, braided work, and even burial cloth composed of the fibers appear in abundance in prehistoric

sites in Arkansas, Kentucky, Tennessee, and Ohio. Rattlesnake master leaves, similar to those of yuccas, can be shredded or used in their entirety; the stems also contain a strong bast fiber. Oddly, the use of this plant for fiber seems to have disappeared in historic times, as researchers have noted.^{xvii} Not a single entry for this plant as a source of fiber—or any other species of *Eryngium* for that matter—appears in the exhaustive scholarly work, *Native American Ethnobotany*.^{xviii} One has to assume that native peoples found better substitutes or that somehow ancient knowledge was lost.

Eryngium yuccifolium is a prairie plant, often considered an indicator for the tall-grass prairie. With the rich soils of the prairie having long ago been plowed for cultivation, rattlesnake master has doubtless diminished in numbers and is less commonly recognized. It is easily grown in gardens where it makes an interesting, and historically-rich specimen plant.

Purple Coneflower (*Echinacea angustifolia*)

Purple coneflower is one of our few native flowers that is as well known in gardening as in medicinal circles. An easily-grown, dependable perennial with attractive, long-lasting, daisy-like flowers, it has become a mainstay in landscaping, being equally suited to formal beds, native gardens, and wildscapes. In fact, the one place where it is increasingly unlikely to be seen is in its native habitat, the prairie. Not only is virgin prairie habitat rare, but, as one of the best-recognized and most touted of herbal remedies, the coneflower has been heavily over-harvested. Of the nine species of *Echinacea*, all of which occur in the eastern half of the U.S., three have a history of clinical use: *E. angustifolia*, *E. purpurea*, and *E. pallida*. As *E. pallida* is considered less desirable medicinally than the former two, and as *E. purpurea* only barely enters Texas in the extreme northeastern corner, *E. angustifolia* is the primary medicinal species in Texas. Historically, however, all three have been used as herbal medicines, for better or worse, with little regard to species. The state of Missouri actually had to ban the harvest of the three species in 1987 to prevent their eradication.

The recent over-harvesting of purple coneflower is the end result of a storied history of its root as a medicine, first noted among indigenous peoples. Indeed, this plant “was the most widely used medicinal plant of the Plains Indians”^{xxix} and “seems to have been employed as a remedy for more ailments than any other plant.”^{xxx} The Omaha, having noticed the tingling and slightly numbing sensation of macerated coneflower root, used it as a local anesthetic, while the Comanche employed the same specifically for toothache. Along similar lines, the Kiowa and Cheyenne chewed the ground root, swallowing the juice to treat sore throats and coughs, while the Comanche boiled the root into a tea for the same maladies. The Cheyenne imbibed echinacea root tea to treat rheumatism and arthritis. And many tribes of the Missouri River, such as the Sioux, swore that coneflower root was an excellent cure for snakebite (hence, snakeroot), and used it to treat various stings, bites, poisons, and burns. Other Plains tribes, such as the Crow, Meskwaki, Pawnee, Ponca, and Winnebago, used the herb as a general medicine, especially in healing wounds, skin diseases, and inflammations. The Sioux also thought the root helped to alleviate rabies, and Hidatsa warriors believed the root to be a stimulant and chewed it when traveling by night. Apart from the hegemony of medicinal uses, echinacea’s bristly flower disks were employed as hair combs among the Omaha, Ponca, and Meskwaki, a practice continued into the 20th century by Kiowa women (hence, comb flower).

Aside from a few passing references to coneflower as a treatment for saddle sores or toothache, Anglo healers did not take much notice of the plant until the second half of the 19th century. During this time, and well into the 20th century, a school of physicians known as the Eclectics became active and influential in the U.S.^{xxi} Eclectic

doctors relied exclusively on botanical medicines. While they later fell out of favor, their clinical knowledge of plants left a legacy for future herbalists and naturopathic healers. A certain German lay physician, H.C.F. Meyer of Pawnee City, Nebraska, became enamored of purple coneflower root, and around 1870 formulated his own patent medicine containing echinacea called "Meyer's Blood Purifier." He contacted two highly influential Eclectics of his day, Dr. John King and John Uri Lloyd, boasting that his tonic could cure snakebite and that he was willing to prove it personally. After much discussion and counter-discussion, the doctors, who initially dismissed Meyer as a quack, agreed that echinacea was indeed a new type of wonder drug, and, by the turn of the century, coneflower was the most popular of all medicinal plants used among the Eclectic School. Dr. King's classic *American Dispensatory* of 1905 reported that the plant was useful for treating blood poisoning, gangrene, sores, ulcers, inflammation, and meningitis. At this time coneflower roots brought 20 to 30 cents to the pound, and probably were a profitable side-harvest for some farmers.^{xxii} Early settlers of Oklahoma in 1914 were said to use the root for practically any sickness.^{xxiii}

As one might expect, the American Medical Association had little respect for the Eclectics and never officially accepted these claims. In 1909 the AMA excluded *Echinacea* from its list of remedies due to a "lack of scientific scrutiny."^{xxiv} And while there was a grudging respect for the herb among pharmacists--*Echinacea angustifolia* was listed in *The National Formulary* from 1916 to 1950--overall the plant fell out of favor from the 1930s onward. At this time, interestingly, Europe became excited about the herb, encouraging over 50,000 pounds of the plant to be exported annually from the U.S. to their markets. While botanicals and natural remedies have enjoyed continued popularity in Europe, it was not until the back-to-nature movement of the 1970s that purple coneflower once again became popular in the States. Today, practically every herbal company sells at least one product containing an *Echinacea* species and purple coneflower is considered to be one of the "top-selling herbs of all time."^{xxv}

The culture wars between alternative and conventional medicine continue to this day and *Echinacea* sits at the center. Those who support herbal remedies promote coneflower root primarily as a means to reduce the severity of colds, flu, or fever. Secondary modern uses for the substance continue to run a familiar gamut of applications: infections and wounds, upper respiratory and urinary tract infections, strep throat, whooping cough, burns, herpes, skin ulcers, psoriasis, boils, eczema, arthritis, and toothaches. Italian investigators have found some grounds for wound healing effects, which they attribute to Echinacin B, a polysaccharide that temporarily increases hyaluronic acid, a cellular binding and protective agent. Other research uncovered highly active polysaccharide molecules that possess immuno-stimulating properties. German studies found the root to contain mild antibiotic activity against both *Streptococcus* and *Staphylococcus* bacteria. Other investigations discovered insecticidal compounds in the plant that were toxic to mosquitoes and house flies.^{xxvi}

Despite these findings, recent research has questioned the extravagant medicinal claims made for the plant. As recently as 2005 the *New England Journal of Medicine* published a study showing that echinacea was no better than placebo in preventing colds or lessening their severity,^{xxvii} while even more recently a meta-analytical survey of studies published in *The Lancet Infectious Disease* concluded just the opposite.^{xxviii} More moderate alternative healers take a middle path, agreeing that the herb does not prevent, but does in fact reduce the duration and intensity of colds. Part of the problem lies in dosage, the species used, and which part of the plant is employed (roots, stems, or leaves). Only recently, it seems, has anyone bothered to notice the difference in these factors, and many preparations available commercially do not make the distinctions.

Horsemint, Beebalm (*Monarda* spp.)

As with so many members of the mint family, *Monarda*'s claim to fame lies in its pungent fragrance, due to its abundant volatile oils, with many of its species offering variations on a scented theme with fragrances redolent of lemon, orange, mint, basil, and oregano. If this weren't reason enough to admire the genus, several species are also a wildscape gardener's delight, given their easy growth, prolific, long-lasting blooms, and ability to reseed generously. Lemon beebalm (*M. citriodora*), an annual lavender-white to purple flower with a strong lemon odor, is touted as the ideal candidate for those needing an instant wildflower patch.

The many pungent scents of the genus are used for fragrance and spice. The Kiowa soaked the flowers of both the lemon beebalm and plains beebalm (*Monarda pectinata*) in water to make a perfume for the hair.^{xxix} Legend has it that Native American braves chewed the leaves of the former to sweeten their breath for courtship.^{xxx} And wild bergamot (*M. fistulosa*), an east-Texas perennial with a pleasant minty smell, has been frequently added to sachets and potpourris. Its leaves, both fresh and dried, are also used to flavor foods. New Mexicans of Spanish ancestry as well as many of the Puebloan and Apache tribes still employ *M. pectinata* and a non-Texan species (both locally called *orégano*) for seasoning *cabrito*, *frijoles*, and various stews.^{xxxi}

The strong scents of horsemints can also be used to repel as well as entice. The volatile oils of lemon beebalm yield citronellol, the active ingredient of citronella oil long used as an insect repellent and well known as an ingredient in insect sprays and patio candles. In the absence of a chemical lab, you can simply crush the dried leaves of the plant and rub them directly on the body. An early 20th-century source reports that lemon beebalm was placed in chicken nests to drive off mites and fleas and, more recently, the leaves of wild bergamot were shown to be potentially useful in deterring weevil infestation in stored foodstuffs.^{xxxii}

Like other mints, *Monarda* can be enjoyed as a tea, but many of our local species are so strongly flavored that they tend to be reserved for occasional or medicinal use. A hot leaf tea of the lavender-pink wild bergamot was used by the Cherokee to check fevers and assist in a good night's sleep, and by southern Appalachian tribes in treating respiratory and bronchial infections.^{xxxiii} The name wild bergamot comes from the resemblance of the plant's scent to the Italian bergamot citrus orange (*Citrus aurantium* subsp. *bergamia*), which yields the bergamot oil used in perfumes and cosmetics, and renowned for scenting Earl Gray tea. While our wild bergamot is in no way related to the bergamot orange, you can create a mock-Earl Gray tea by steeping the dried horsemint flowers (or leaves) in your favorite black tea, or simply enjoy them alone as an herbal tea.

Spotted or yellow horsemint (*Monarda punctata*) which grows throughout our area, enjoyed brief fame in medical circles. Thymol, an antiseptic and fungicide once used extensively in the treatment of wounds, skin irritations, eczema, and burns, was originally derived from common thyme (*Thymus vulgaris*). It so happens that yellow horsemint contains twice as much thymol (aka "monardin") in its leaves as thyme. When European thyme fields were destroyed in WWI, yellow horsemint temporarily gained economic importance as a substitute source. While thymol is now produced synthetically, *Monarda* hybrids are still investigated as potentially viable commercial crops, and their natural oils are still economically viable.^{xxxiv} Thymol is one of the main active ingredients of Listerine and is still extensively used in lip balms, toothpaste, cough syrups, and various antiseptics.

Monarda has a special relationship to bees. While horsemint flowers attract moths, butterflies, and hummingbirds, bees are particularly fond of them. In fact, Texas beekeepers consider spotted horsemint in particular, but also lemon beebalm and basil beebalm (*M. clinopodioides*) their most important sources of honey in the state, as they provide approximately 20% of the total honey crop.^{xxxv} Horsemint honey has a decidedly minty flavor which many people find, like the tea, to be overpowering, compared with milder, white-clover honey. Interestingly, if you're stung by a bee (or other insect) the fresh leaves of horsemint, crushed and applied as a poultice, reportedly soothe the sting—hence the name *beebalm*.

Sunflower (*Helianthus annuus*)

The wild common sunflower (*Helianthus annuus*) is one of the most readily recognized wildflowers in North America. Weedy by nature, it is widely distributed across most of the continental U.S. A drought-tolerant and long-blooming (May through October) annual, the sunflower sports its conspicuous yellow heads in masses along roadside fences, seemingly ubiquitous and ever cheery, even in the hottest and driest of summer months. Of the approximately 16+ species of sunflower in the state of Texas, *H. annuus* is the most abundant.

It is well noted among both domesticated and wild forms of *Helianthus annuus* that the sunflower is phototropic or heliotropic, that is, its flowering stalks grow toward the light, or sun. Before the flowers open, the terminal buds and upper leaf surfaces follow the course of the sun, facing towards the east in the morning, straight up at noon, and sharply towards the west in the late afternoon. At night, the leaves point downward, while the terminal buds face towards the sky, gradually leaning eastwards again as dawn approaches. Once the flowers start to open and the first ray florets unfurl, the stems below the heads harden, and the flowers “freeze” tilted towards the east or northeast.^{xxxvi} The Kiowa Indian name for the sunflower *ho-soñ-a* literally translated means “looking at you”; according to their plant lore, the heliotropic turning makes it a traveler's companion.^{xxxvii} Although many flowers exhibit heliotropism, perhaps none does so as remarkably, and throughout such a wide distribution, as the common sunflower. Indeed, this trait is likely what gives the plant its common name.

Both current and historical uses for the sunflower are manifold. The seeds are the most obvious part used, not only for eating (raw or roasted), but for obtaining oil, which is one of the world's most important vegetable oils, used in cooking, salad dressing, soap, and candles. In order to obtain the oil, some Native American tribes boiled the seeds, skimming off the oil, which was later used for cooking and as a base in ceremonial paints. The Caddo added ground sunflower seeds to cornmeal in the preparation of cakes or tamales. They also added sunflower seed meal to porridge or rolled it with roasted corn into small balls called *bogan*.^{xxxviii} The Apache often made a kind of bread from sunflower dough baked on hot rocks.^{xxxix} The fine and long fibers from sunflower stems have been used for thread, cordage, paper making, and as an adulterant of silk in China. The coagulated sap provided a kind of thirst-quenching chewing gum for the Kiowa.^{xl} And the flowers provided their own myriad uses. These were used for adornment in rituals and ceremonies among various Puebloans and Apaches. Small unopened flower heads can be eaten whole and taste similar to artichokes, which are also members of the aster family. Actually, the flowers in Texas have been found in coprolites in the Lower Pecos dating back to 6,000 B.C.E.^{xli} The ray flowers (“petals”) yield a yellow dye used among several tribes, and the Hopi still grow a variety of sunflower, “perhaps the most distinct variety in the world,” with purple-black

seeds, which they use to make a black dye for basketry, cotton, and wool.^{xlii} Mexican *curanderos* brewed the flowers and stems into a shampoo to treat sunstroke victims.^{xliii} The most common medicinal use of the plant worldwide is for pulmonary affections.

Like many wild plants, the sunflower was taken into domestication. What is remarkable is that *Helianthus annuus* is, so far as known, the *only* undisputed food plant completely domesticated in what is now the United States. Practically all New World food plants (corn, beans, squash, potatoes, etc.) were domesticated in Mexico or South America. It has been proposed that the sunflower's center of diversity is the southwestern or western U.S., where it became a camp-following weed and extended its distribution. In the Eastern U.S., a slightly larger-seeded variety evolved, from which a mutation for a single-headed, unbranched form likely arose, which Native Americans then helped to cultivate and secure.^{xliv} Domesticated sunflowers were already being cultivated by many tribes in what is now the U.S. when Europeans first came into contact with them. Although there is some argument that the sunflower may also have been separately domesticated in Mexico,^{xlv} the most recent DNA evidence confirms that extant domesticated sunflowers derive from a genetic bottleneck occurring in eastern North America.^{xlvi} Russia, of all countries, gets the credit for popularizing and mass cultivating the sunflower. Only introduced there around the 19th century, the sunflower was not on the list of oil-rich foods that was prohibited during Lent by the Russian Orthodox Church. It thus became immensely popular and widely cultivated in Russia, and the best known variety, Mammoth Russian, or Russian Giant, was exported back to the U.S. in the late 19th century before, ironically, the U.S. took any real notice of its own native son.

Since the domesticated sunflower can thrive in hot and dry climates, it is often cultivated on the plains. It is the state flower of Kansas, which is known as the "sunflower state" and whose highest point is Mt. Sunflower. In Texas sunflower production is strong on the southern High Plains of the Panhandle, especially in the counties near Lubbock. Aspermont, the county seat of Stonewall Co., 60 miles north of Abilene, was once called "Sunflower Flat" by early residents.

Compass Plant, Rosin Weed (*Silphium laciniatum*)

Another member of the Sunflower family that responds to the sun, though in a different way, is the compass plant. Early explorers of the prairie noticed that the basal leaves of the plant pointed almost exclusively to the north and south. In fact, a professor in Iowa remarked in 1870 that "Use is made of [the plant] by the settlers when lost on the prairies in dark nights. By feeling the direction of the leaves they easily get their bearings."^{xlvii} Nineteenth-century naturalists and scientists were keen to understand this phenomenon, which they called "polarity," and several hypotheses were proposed. Some suggested that the leaves were so rich in iron as to be magnetic, or that the plant's resin somehow produced electrical currents; very sensitive galvanometers were applied to the leaf tips, but no magnetism was noted.^{xlviii} Others attributed the phenomenon to the stomata on the leaves, which seemed to be about equally numbered on both leaf surfaces, which is not the case with most plants, where stomata are more numerous on the lower surfaces.^{xlix}

With no explanation in hand, but with curiosity piqued, poets had already found metaphors for the compass plant several decades before. In *Evangeline*, Henry Wadsworth Longfellow's epic poem about lovers separated in the 18th-century expulsion of the Acadians from Nova Scotia, we find the verses:

Look at this delicate plant that lifts its head from the meadow,

See how its leaves all point to the north, as true as the magnet;
It is the compass-flower, that the finger of God has suspended
Here on its fragile stalk, to direct the traveler's journey
Over the sea-like, pathless, limitless waste of the desert.

(Part II, Canto IV)

First published in 1847, the poem was an instant success, becoming one of the most popular works in American literary history, elevating Longfellow to the most famous poet of his day and well beyond (two separate films were based on the poem in the 1920s). For decades school children were required to read *Evangeline*, and the poem still enjoys iconic status in southern Louisiana where it is venerated as a kind of creation myth for the Cajuns. While Longfellow was misinformed on a few points—compass plant is hardly delicate, its stalk is anything but fragile, and half of its leaves point south—he gets the polarity right and the serendipity of the phenomenon if one is lost.

Modern science has confirmed the leaf orientation of compass plant and provided stronger evidence for a different hypothesis.ⁱ Only adult basal leaves consistently demonstrate the orientation. They initially emerge at random, but during the first two-three weeks of development they adopt a north-south alignment and become “fixed” when completely expanded, apparently having set their direction by the rising sun. Interestingly, the further north one travels on the Plains (e.g., Kansas, Iowa), the more the compass plant’s leaves orient themselves north of east (about 15 degrees) since the sun actually rises 15-30 degrees north of east at these latitudes during summer months. Studies show that leaves oriented in a vertical plane pointing north-south (facing east-west) have a higher water use efficiency (defined as carbon gained per water lost) than leaves oriented horizontally, or those pointing east-west (facing north-south). Vertical leaves that point north-south (and face east-west) can take full advantage of the sun at a time when temperatures are at their lowest (morning, evening); this reduces leaf temperatures and, thereby, water loss. Such orientation may have a selective advantage in a prairie environment. Fewer than ten plants are known worldwide to exhibit compass orientation: one is another species of *Silphium* (*S. terebinthinaceum*), and another is prickly lettuce (*Lactuca serriola*).

Many species of *Silphium* are known to exude sap, especially on the upper parts of the flower stalks. The genus actually takes its name from a Greek word for an unrelated resinous plant whose sap was used as a condiment and medicinal remedy prized by the Romans.ⁱⁱ An alternate common name used throughout the genus is rosin weed. The children of many Plains Indian tribes, such as the Dakota, Omaha, Pawnee, Ponca, and Winnebago, used the sap of compass plant as a chewing gum, which has a juniper- or pine-resin taste and is indeed very chewy and sticky (personal experience). The Pawnee names for the plant, “nakisokiit” or “nakisukiitsu,” translate as “pine water,” possibly on account of the taste.

Medicinal uses of compass plant exist, but are not particularly noted. Many Plains tribes used the pounded root to make a tonic tea, both for human and horse consumption. The same tea was said to rid horses of worms among the Santee Dakotas and to be used as an emetic (causes vomiting) among the Mesquakies.ⁱⁱⁱ In addition to their emetic properties, 19th-century American doctors employed various species of *Silphium* as stimulants to bring on sweats and productive coughs, to increase urine, and to reduce fever. The sap of the plant apparently was applied as a styptic, to reduce bleeding.ⁱⁱⁱⁱ

Osage Orange, Bois D’Arc (*Maclura pomifera*)

Osage orange is a paradox among Texan trees. Seldom used in city landscaping on account of its thorns, large fruit, and sometimes scraggly appearance, and not being part of any forest tree community, it rarely appears in groves or even in large groupings outside the Red River Valley. Unless beneath a female tree in fruit, or close enough to note its tell-tale orangish bark, one is apt to mistake the mature tree for an elm. And yet probably no other native Texan tree has been so widely disseminated across the U.S. or shares richer historical connections to man. Osage orange is all around us, but rarely noticed; steeped in history, it is all but forgotten.

For the first seven centuries of the last millennium, Osage orange was the source of a treasure, prized by locals and traded afar. This was its extremely hard and flexible wood, little affected by humidity, which local Indian tribes fashioned into excellent bows. Osage orange bows with draw weights of 70 pounds appear in archaeological sites as far back as 1050 C.E., and in historic times the Caddo fashioned bows from the wood that were the envy of their day.^{liv} These durable and resilient weapons, and perhaps the wood itself, were traded as far west as Arizona (Yaqui tribe), as far north as Montana (Blackfeet), and throughout the Plains (Pawnee, Omaha, and Osage tribes). Tribes of the southern Plains, such as the Kiowa and Comanche, had access to the trees themselves and could fashion their own bows. Tribes without such access, however, would barter a horse in order to obtain one, so highly valued was a bow of this wood.^{lv} As early French explorers of the Mississippi valley came upon this trade, they called the wood *bois d'arc* ("bow wood"), which was corrupted into the English *bodark*. It is likely that the distribution of the tree expanded during these times as various tribes sought to ensure a constant supply by planting seeds in propitious places. This may explain the tree's odd appearance at desert seeps in the Trans-Pecos and in opportune spots throughout the southern Plains; it also complicates attempts to understand the tree's natural range.^{lvi} Archers today still consider *bois d'arc* one of the two best bow woods in existence, the other being yew, which in the U.S. grows only in the Pacific Northwest.

Bois d'arc's fame might well have faded were it not for some unusual and historic circumstances.^{lvii} Around the turn of the 19th century, an inhabitant of the Great Osage Village of southwestern Missouri acquired *bois d'arc* trees from an undisclosed location 300 miles to the west. This individual gave samples to Mr. Pierre Chouteau, of the prosperous fur-trading family of St. Louis, who, in turn, gave cuttings from his garden to Capt. Meriwether Lewis of the Lewis and Clark Expedition. Lewis, in turn, sent the cuttings to Thomas Jefferson in 1804 in the first shipment of specimens from west of the Mississippi on that remarkable journey. In what constituted his first description of a plant unknown to science, Lewis commented: "So much do the savages esteem the wood...for the purpose of making their bows, that they travel many hundred miles in quest of it."^{lviii} Having made it to the East Coast in such good hands, the "Osage apple" (Lewis' term) began to be distributed among friends, with rumors that it made a good hedge. It is said that the huge tree at Patrick Henry's home in Brookneal, Virginia was from one of these very cuttings.^{lix} This venerable Osage orange is currently the National Champion measuring 60 ft high and 27 ft in circumference. By 1818 Osage orange was under cultivation and about the same time began to be used as a natural hedge plant in southern states. Sam Houston even planted these hedges in Huntsville.^{lx}

But the real transformation of Osage orange into the tree known simply as "hedge" came in the early 1850's when the *Prairie Farmer* actively promoted the plant as a way to fence the prairie. Without access to cheap wood and lacking stone, farmers of the prairie had no way to enclose livestock or protect crops. Hedge apple was a perfect solution and made agricultural settlement of the prairies truly possible. Given its drought, heat, and wind tolerance, rapid growth of thorny, zigzagging branches, and ability to sucker prolifically when cut, hedge apple could be pruned in four or five years

into a hedge that was “pig tight, horse high, and bull strong,” that is, too dense for a pig to squeeze through, too tall for a horse to jump, too strong for a bull to push over.^{lxi} In Illinois, as early as 1855, contractors were paid \$1 per mile to tend the hedges, and various Midwestern counties furnished free trees to encourage their planting.^{lxii} Horse apple seed prices reached \$50 a barrel and east Texas farmers started hauling the fruits along with their cotton to the steamships at Jefferson.^{lxiii} Tens of thousands of miles of hedges were planted throughout the Midwest and Plains, providing an American answer to Europe’s hawthorn hedges. Because of these efforts, hedge apple has been planted in greater number than almost any other tree species in North America.^{lxiv}

The final chapter in this saga is filled with irony. In efforts to come up with a better wire fence, one inventor, according to some sources, used hedge apple as his inspiration, and barbed wire was the result. So the hedge provided the model for its own demise, as barbed wire in the last quarter of the 19th century was ultimately easier and cheaper to install and maintain. But wire needed posts, and hedge apple got the last laugh by providing the very wood upon which the wire would be strung. This was not just convenience. Hedge apple is well known to be the most decay resistant wood in North America and is immune to termites. Prairie farmers even today clear-cut hedges every decade or so, producing 4,000 fence posts per mile of hedge.^{lxv} The wood is so hard that fence staples must be inserted while the wood is green; otherwise, they must be tied on with hay-baling wire.

Eventually people found other uses for bois d’arc’s extremely durable wood. Charles Goodnight, the famous early Texas cattleman, built the first chuck-wagon in history out of the seasoned wood so it could withstand the abuse of his huge Panhandle spread.^{lxvi} The wood was coveted for house piers, street paving blocks, and railway ties. Bois d’arc limbs were even used in lieu of rebar for the reinforcement of concrete.^{lxvii} Other uses included bridge pilings, insulator pins, treenails, and pulley blocks. Bois d’arc wood, though very hard to work, takes a fine polish and is beautifully iridescent, reminiscent of tiger-eye. It is also considered a good “tone wood,” and is employed in making duck and goose calls and is preferred for some musical instruments, such as harps.^{lxviii}

A fact that any Texan will appreciate: bois d’arc fruit is proven to repel cockroaches. For a long time this was folk knowledge, but recently the chemical (2,3,4,5-tetrahydroxystilbene) has been shown to be the agent responsible.^{lxix} The root bark and sapwood yield a yellow-brown dye that once was used for the khaki coloring of army uniforms; trunk bark was used in tanning leather. The leaves have been used as a substitute food for silkworms, which normally feed on mulberry (*Morus* sp.), a member of the same family.

Bois D’Arc Creek, a sizeable tributary of the Red River on the Fannin / Lamar County border, is considered by many to be the epicenter of the plant’s range given the dense growth of the tree in this area. David Crockett, who thought about settling there, called the lush area “Bodark bayou.”^{lxx} The Fannin County seat, Bonham, was previously named Bois D’Arc. At least two other small Texas towns, a creek, and dozens of city streets in the state bear the name. In south Texas in Brazoria County, a particular tree receives unusual recognition. Known as the Freeman’s Bois D’Arc, it was one of the trees under which the slaves from fourteen plantations assembled in 1865 to be informed of their official freedom from slavery.^{lxxi}

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- ⁱⁱ Andrew C. Isenberg, *The Destruction of the Bison: An Environmental History, 1750-1920*, Studies in Environment and History (Cambridge Univ. Press, 2000), pp. 19-20.
- ⁱⁱⁱ Isenberg (2000), p. 19.
- ^{iv} For excellent discussions of the natural history of the buffalo, see Isenberg (2000), as well as Dale F. Lott, *American Bison: A Natural History* (Berkeley: Univ. of California Press, 2002).
- ^v See, for instance, Ernest Callenbach, *Bring Back the Buffalo! : A Sustainable Future for America's Great Plains* (Washington, D.C.: Island Press, 1996).
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- ^{vii} Alex Johnston, "Blackfoot Indian Utilization of the Flora of the Northwestern Great Plains," *Economic Botany* 24(3): 306 (1970).
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- ^{xiii} Erin Brooke Hamby, "The Roots of Healing: Archaeological and Historical Investigations of African-American Herbal Medicine." (Ph.D. diss., Univ. of Tennessee, 2004), p. 169.

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- ^{xv} Kindscher (1992), p. 101.
- ^{xvi} Jenna T. Kuttruff, S. Gail DeHart, and Michael J. O'Brien, "7500 Years of Prehistoric Footwear from Arnold Research Cave, Missouri," *Science* 281 (5373): 72-75 (1998).
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- ^{xxv} Hobbs (1990), p. 10.
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- lxv Burton (1990), p. 429.
- lxvi Peattie (1953), p. 481.
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- lxviii Ball (2000), p. 61.
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^{lxx} Donna J. Kumler, *Handbook of Texas Online*, s.v. "Bois D'Arc Creek,"
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Breakout Session 3

Grasses of the Texas Hill Country

Brian and Shirley Loflin

In our well-received presentation, we would like to provide an in-depth photographic look into the more important grass species of this popular natural area of central Texas. Our goal is to help everyone learn more about the characteristics and the identification of grasses in the field.

While identification of grasses can be most difficult for many people, our work will introduce the non-botanist to a proven method to easily identify many of the species found in the Hill Country and elsewhere.

Our recent book, ***Grasses of the Texas Hill Country***, reviews important species and is supported by habitat and detailed close up color photographic images of grasses unlike line drawings previously used in most popular publications.

Comments by noted botanists, ranch managers, land stewards and educators in natural science give our project praise. We hope it will become a well-used and most-enjoyed publication and a worthy resource for those who care about our natural environment.

We are independent writers, photographers and naturalists based in Austin, Texas. We now believe that our book has met our goal as it has been recently termed a “*grass book for the normal person*” and “*the must-have book on the grasses of our region*”.

Introduction

As this work started and many times along the roads of Texas, many folks would ask us why would we ever want to produce a book on grass? After the humor subsided, we told them of the abundance, variety and importance and of the many grass species of Texas. We told them about agricultural value and commercial importance, of land stabilization, aesthetic beauty and of secondary uses by wildlife. After a further chat and a kind handshake, they left with a much deeper understanding.

We feel this photographic identification guidebook of Grasses of the Texas Hill Country is a useful tool for amateur and professional naturalists, ranchers, land stewards, educators and many others interested in the natural science of Texas. Included in this easy-to-use field guide are seventy-nine of the most important grasses found in the region.

Significant information about each grass is provided along with the identification photos. It includes references to its visual characteristics, but most importantly the text describes the supporting soil type, habitat, grasses value as a crop, and other uses by farmers, ranchers and nurserymen. Although the book is a vast resource, the text is not a botanical tome. It is useful and easily read, written in a language suited for the non-scientist.

Our book is different than previous treatments of grass. Unlike more scientific works with complicated black ink line drawings, this guide has neither tedious language nor specialized, hard-to-use keys of the academic botanist. It is designed to be enjoyed using large, detailed close-up color photographs of each species presented. These, combined with color habitat images, illustrate the grasses unlike most references. Special techniques and new technology in photographic imaging and color reproduction provide an excellent perspective of the grasses in a way that enables easy species field identification by the naturalist with a specimen in hand.

Area of Interest

The study area of this book encompasses a large portion of nineteen west central Texas counties popularly known as the “Texas Hill Country”. This region encompasses some 24 million acres geographically situated around The Edwards Plateau. This unique and well-defined region is special to many Texans for its history, agribusiness economy, scenic beauty, natural wildlife, and exceptional recreational enjoyment.

The book covers the geographic area as illustrated below. This region includes the land within the area roughly bordered by Interstate Highway 35 on the east, U.S. Highway 90 on the south, Texas Highway 29 on the north and Texas Highway 55 and U.S. Highway 377 on the west.

The study area includes all or a portion of the following Texas Counties:

Bandera	Hays	Medina
Bexar	Kendall	Real
Blanco	Kerr	San Saba
Burnet	Kimble	Travis
Comal	Llano	Uvalde
Edwards	Mason	Williamson
Gillespie		

This area is largely rangeland. Its mixture of vegetation supports herds of cattle, sheep and goats. Cultivation is relatively confined to the soils deposited along narrow streams and some valleys. Sorghum, peaches and wine grapes are important products of the area.

The Hill Country also supports the largest white-tailed deer population in North America. Deer hunting and big-game wildlife production has become of major economic importance. Large herds of exotic species including axis, sika, and fallow deer, blackbuck antelope and mouflon rams and aoudad sheep are now managed for sport hunting, creating immeasurable annual revenues.

In recent decades, many weekend, or vacation properties and sporting lands have been developed throughout the Hill Country. Some are only a few acres in size; others are thousands of acres. These properties often modify traditional land use and conservation practices. Each land is unique in its needs. While some property owners are knowledgeable about land stewardship and practice good conservation, preservation and restoration practices, some do not.

The Edwards Plateau is unique geologically. Deeply dissected limestone hillsides, broad, undulating divides, stony plains and establish diversity in range habitats. The

soils are usually shallow yet fertile and vary from sand to clay and are frequently calcareous in origin.

The central portion in Llano and Mason counties contains nearly 1.5 million acres of granite and sandy soils mixture known as the Central Basin. The western portion of the area is comprised of the semi-arid Stockton Plateau. Bordered on its eastern and southern sides, the Balcones Escarpment forms a visible boundary of the Edwards Plateau, roughly following Interstate 35 and U.S. Highway 90.

Originally, the Hill Country was native grassland and open savannah-type plains with brushy species found along the hillsides and streams. The grasses of the American tallgrass prairies -- big bluestem, little bluestem, yellow indiagrass and switchgrass -- are still common in areas having good soil moisture. Throughout the Hill Country as in other parts of the state, smaller ecological sites exist, each with its own unique capability to produce different plant populations. Some are mesic and some more arid, each supporting its own blend of plant communities. In the more arid areas of the Hill Country shorter, more drought-resistant grasses such as side-oats grama, Texas grama and Buffalograss are better adapted rather than the tall, "big four" grass species.

The principal grasses of the clay loam soils include cane bluestem, silver bluestem, little bluestem, side-oats grama, hairy grama, yellow indiagrass, plains lovegrass and others.

The Stockton Plateau supports short-to-midgrass mixed species, including cane bluestem, little bluestem, sideoats and hairy gramas, common curlymesquite, buffalograss, fall witchgrass, tridens and elymus.

Throughout the Hill Country, rocky areas support grass populations under a canopy of live oak, shin oak, juniper and mesquite that dominate the woody vegetation. These woody species have invaded to the point that they require specific control as part of the range management process. In addition many species of cacti, yucca and other succulents are common.

The Texas Hill Country is well known botanically. The earliest professional botanical collections were those of Jean Louis Berlandier and the notable Texas botanist, Ferdinand Lindheimer. Lindheimer collected in the area for some years and many of the species of the region carry his name. From the 1920s onward, many botanists have collected here.

Today, approximately 2,500 species of native and introduced vascular plants have been recorded from the Hill Country. Throughout the state of Texas there are listed 143 genera of grass plants with about 560 species and 60 subspecies. More than half, some 280 species of grass are found in the Hill Country, establishing this region as a significantly diverse geography for the study of these important plants.

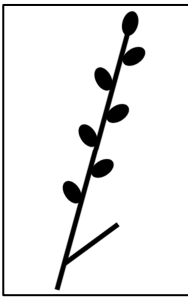
Of these grasses approximately 215 species are native with several endemic to the Hill Country area. The approximately 65 remaining species are introduced to the region and elsewhere. This book will cover both the native and introduced species that occur naturally in the region and may be found with common regularity. The text does not include any of the ornamental grasses that may be encountered. While these plants are of importance from a landscaping perspective, they do not fit within the context of this treatment.

How to use the Guide

The purpose of this work is to provide the non-scientist an easy-to-use visual guide to the grasses. Therefore, grasses are arranged by structural similarity, not always an accurate botanical taxonomic grouping.

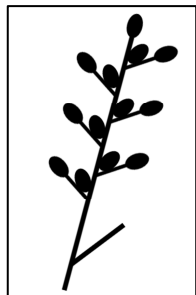
In using photographs, one must remember that the grass in hand may vary somewhat from the image in the book. This fact is due to various seasons of the year and the stage in the specimen's life cycle. It too, may vary due to the region, topography and soil conditions, as well as localized climate variations. In order to confirm an identification, read the more detailed descriptions of the species in hand and don't rely solely on the photographs.

The arrangement of the grasses follows a grouping based upon the anatomical arrangement of the structure of the grass seedhead or inflorescence. These are divided into spikes, racemes, spicate racemes and panicles. Panicles are further divided into additional specialized types. A review of the following inflorescence types and its icon will help in the recognition process.



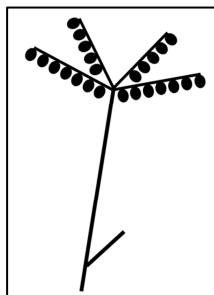
SPIKE

The spike has no branches arising from the central axis (rachis). The spikelet is attached directly to the central rachis without a stalk or pedicel. An example is Canada wildrye, *Elymus Canadensis*.



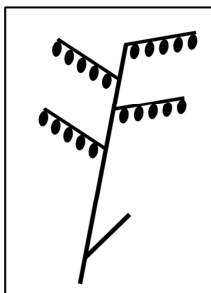
SPICATE RACEME

The spicate raceme also has no branches from the rachis. It features sessile spikelets and short pedicellate spikelets at each node. An example is little bluestem, *Schizachyrium scoparium*.



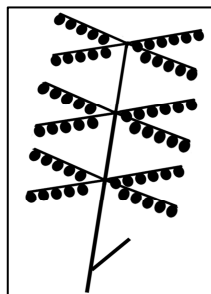
PANICLE OF DIGITATE SPICATE BRANCHES

Panicles of Digitate spicate branches have spicate primary branches predominately radiating from a common node at the apex of the axis. An example is bermudagrass, *Cynodon dactylon*.



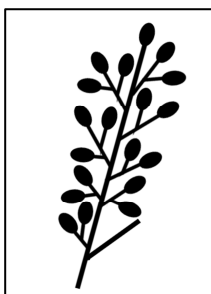
PANICLE OF ALTERNATE SPICATE BRANCHES

A panicle of alternate spicate branches has unilateral spicate primary branches arising from the nodes on each side of the stem. These branches in turn have the appearance of being one-sided. An example is vaseygrass, *Paspalum urvillei*.



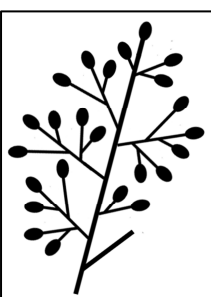
PANICLE OF VERTICILLATE SPICATE BRANCHES

Panicles of verticillate spicate branches are similar to panicles of digitate spicate branches, yet they include primary spicate branching from several nodes along the axis. An example is shortspike windmillgrass, *Chloris subdolichostachya*.



CONTRACTED PANICLE

The contracted panicle inflorescence has primary branches that branch and rebranch again. It has several to many spikelets supported by each branch or branchlet. The panicle is tightly compressed in appearance by the growth structure or often, by the many structures crowding the seedhead. An example is giant reed, *Arundo donax*.



OPEN PANICLE

The open panicle inflorescence has primary branches that branch and rebranch again. It has several spikelets supported by each branch or branchlet. In appearance there is a lot of space between the growth structures. An example is plains lovegrass, *Eragrostis intermedia*.

Several characteristics are common to all grasses: origin, longevity, season of growth and grazing response for cattle are represented on each species account by icons, easing the identification of these important characteristics.

ORIGIN



Native --Grasses that are indigenous to Texas.

Introduced --Grasses that have been brought in from foreign lands for cultivation or as weeds.

LONGEVITY



Annual --Plants completing their life cycle from seed to death within a single season.



Perennial --Plants with a life span of more than two seasons.

SEASON OF GROWTH



Warm season --Grasses that grow predominantly in the spring and summer.



Cool season --Grasses that grow predominantly in the late fall, winter or early spring.

GRAZING RESPONSE



Decreaser -- Productive plants in the original climax vegetation stand, palatable to livestock that will decrease on a range when exposed to grazing pressures or disturbance.



Increaser -- Species in the original stand that increase in site and number to take the place of decreasers which have weakened or died due to grazing or disturbance.



Invader --Weedy species that can move into an area and become dominant in terms of cover, resource use, or other ecological impacts. These are generally not palatable plants which invade and replace the plants which have died or become seriously weakened.

POISONOUS



Poisonous --Plants that may be toxic to cattle or domestic livestock at some period in their life cycle.

Plant Names

We carefully name plants so that communication with one another can be accurate, and without misunderstanding. Plants have two names, the common name and the scientific name. Most people are familiar with many common grass names. This may lead to problems however, in that a grass may have several common names as with hairy crabgrass. It is also called broad crabgrass, southern crabgrass and large crabgrass. This is often a function of history or of regional geography.

The scientific name is comprised of two parts, usually in Latin and to a more universally accepted standard. The first name is the *genus*, grouping grasses into quite similar characteristics, structurally and genetically. The second name is the *specific epithet*,

further breaking down the similarities, thus defining the unique plant species. Infrequently, the grass is further divided into *subspecies* and *varieties* accounting for more finite particulars of the grass. So, if talking about hairy crabgrass for instance, the scientific name *Digitaria sanguinalis*, leaves no doubt as to the subject grass species of the discussion.

Every effort is made in this book to assure the latest in taxonomical convention and the most authoritative common name. The reference used by the authors herein for accuracy in taxonomy is The 2004 Grasses of Texas Checklist, published by Texas A&M University. Other common names are listed for reference within the individual species account.

Scientific grass names generally come from Latin or Greek origins. Listed below is a collection of the origins of names for some of the grass genera collected in this work.

<i>Andropogon</i>	From the Greek <i>aner</i> (<i>andr-</i> , man) and <i>pogon</i> (beard), alluding to villous pedicels of sterile and male-only spikelets.
<i>Aristida</i>	From the Latin <i>arista</i> or the Greek <i>aristos</i> (bristle, or awn).
<i>Arundo</i>	From the Latin <i>arundo</i> , a reed.
<i>Avena</i>	From the Latin <i>avena</i> (nourishment).
<i>Bothriochloa</i>	From the Greek <i>bothrion</i> (a pit) and <i>chloë</i> (a grass), alluding to pitted lower glumes.
<i>Bouteloua</i>	Named for the brothers Claudio and Esteban Boutelou.
<i>Bromus</i>	From the Greek <i>bromos</i> (oat), and <i>broma</i> (food).
<i>Buchloë</i>	From the Greek <i>Boubalos</i> (buffalo) and <i>chloë</i> (grass), a rendition of the common name 'buffalograss'.
<i>Cenchrus</i>	From the Greek <i>kegchros</i> (millet).
<i>Chloris</i>	From the Greek <i>chloros</i> (green), referring to the leaves; also named for <i>Chloris</i> , mythological Greek goddess of flowers
<i>Cynodon</i>	From the Greek <i>kuon</i> (<i>kun-</i> , dog) and <i>odontos</i> (tooth), referring to the hard, conical, sharp scales on the rhizomes.
<i>Dichanthium</i>	From the Greek <i>dicha</i> (two) and <i>anthos</i> (flower), alluding to two kinds of spikelets found in the inflorescence.
<i>Digitaria</i>	From the Latin <i>digitus</i> (finger), alluding to radiating inflorescence branches.
<i>Echinochloa</i>	From the Greek <i>echinos</i> (hedgehog) and <i>chloa</i> (grass), alluding to the echinate inflorescence branches.
<i>Elymus</i>	<i>Elumos</i> : an old Greek name for a kind of grain.
<i>Eragrostis</i>	From the Greek, <i>eros</i> (love) or <i>era</i> (earth) and <i>agrostis</i> (a grass), probably alluding to the characteristic, earthy human female aroma of the inflorescences of many species.
<i>Eriochloa</i>	From the Greek <i>erion</i> (wool) and <i>chloa</i> (grass), referring to the hairy spikelets and pedicels.
<i>Leptochloa</i>	From the Greek <i>leptos</i> (slender) and <i>chloë</i> (a grass), referring to inflorescences.
<i>Lolium</i>	Latin <i>Lolium</i> : a name given by Virgil to a troublesome weed.
<i>Muhlenbergia</i>	Named for noted botanist G.H.E. Muhlenberg.
<i>Panicum</i>	<i>Panicum</i> : an old Latin name for common millet.
<i>Paspalum</i>	From the Greek <i>paspalos</i> , a kind of millet.

<i>Phalaris</i>	<i>Phalaris</i> is the name for members of this genus in both ancient and modern Greek. Perhaps via <i>phalos</i> (shining), referring to the glossy lemma, or (the ridge of a helmet), describing the keel-winged glumes.
<i>Schizachyrium</i>	From the Greek <i>schizein</i> (to split) and <i>achuron</i> (chaff), referring to the upper lemma.
<i>Setaria</i>	From the Latin <i>seta</i> (a bristle), alluding to bristly inflorescences.
<i>Sorghastrum</i>	From <i>Sorghum</i> and Latin suffix <i>astrum</i> (a poor imitation of).
<i>Sorghum</i>	From <i>sorgho</i> , the Italian name for the plant.
<i>Sporobolus</i>	From the Greek <i>spora</i> (seed) and <i>ballein</i> (to throw), alluding to the free seed and the manner of its release.
<i>Tridens</i>	From the Latin <i>tria</i> (three) and <i>dens</i> (tooth), referring to three excurrent veins of <i>Tridens flavus</i> , the type species.
<i>Tripsacum</i>	From the Greek <i>tri</i> (three) and <i>psakas</i> (small pieces), as in breaking up of spikes into at least three pieces.

Remembering Names

Remembering grass names seems difficult at first glance. Like any other group of plants or animals, there are ways to break the many names down into palatable bites. Let's start with just **five**:

- State Grass of Texas
 - Side oats grama -*Bouteloua curtipendula*
- The "Big Four"
 - Big bluestem -*Andropogon gerardii*
 - Little bluestem -*Schizachyrium scoparium*
 - Yellow indiagrass -*Sorghastrum nutans*
 - Switchgrass -*Panicum virgatum*

Many other grasses fall into the same genera as the previous five. Let's count some of them:

- Other grammas
 - blue -*Bouteloua gracilis*
 - hairy -*Bouteloua hirsuta*
 - red -*Bouteloua trifida*
 - tall -*Bouteloua pectinata*
 - Texas -*Bouteloua rigidisetata*
- Other bluestems
 - bushy -*Andropogon glomeratus*
 - cane -*Bothriochloa barbinoides*
 - King Ranch -*Bothriochloa ischaemum*
 - silky -*Dichanthium sericeum*
 - silver -*Bothriochloa laguroides*

Other important grasses may be remembered by a special characteristic, such as:

- The smallest grass in Texas
 - buffalograss -*Buchloe dactyloides*
- The largest grass in Texas
 - giantreed -*Arundo donax*

- And unfortunately, three grass pests
 - johnsongrass -*Sorghum halepense*
 - common sandbur -*Cenchrus spinifex*
 - purple three awn -*Aristida purpurea*

Learning the grasses above brings your list to 20 important species. Other important grasses fall into the same genera as our first group. Let's see some additional grasses in these families.

- Lovegrass - 9
 - mediterranean -*Eragrostis barrelieri*
 - mourning -*Eragrostis lugens*
 - plains -*Eragrostis intermedia*
 - red -*Eragrostis secundiflora*
 - sand -*Eragrostis trichodes*
 - tumble -*Eragrostis sessilis*
 - weeping -*Eragrostis curvula*
 - Willmann -*Eragrostis superba*
 - stinkgrass -*Eragrostis cilianensis*
- Muhleys - 3
 - canyon -*Muhlenburgia involuta*
 - Lindheimer -*Muhlenburgia lindheimeri*
 - seep -*Muhlenburgia reverchonii*
- Panicums - 4
 - common witchgrass –*Panicum capillare*
 - Kleingrass -*Panicum coloratum*
 - Halls panicum -*Panicum hallii*
 - vine mesquite -*Panicum obtusum*
- Paspalums – 4
 - dallisgrass -*Paspalum dilitatum*
 - longtom -*Paspalum lividum*
 - hairyseed paspalum -*Paspalum pubiflorum*
 - Vaseygrass -*Paspalum urvillei*

WHEW!!! That's 40 species right there!

Now that we can identify many of our important species, let's look at additional important characteristics of grass.

Use of Grass

- Forage for cattle and wildlife
- Food, shelter and nesting material for birds, small animals and insects.
- Land stabilization and restoration
- Decorative landscaping
- Manufacture of utilitarian items such as woodwind instrument reeds

Land stabilization & restoration

- Native grass is an **attractive choice**
 - Many colors and textures
 - Many sizes for visual scale

- Native grass is a **wise choice**
 - Natural biological selection
 - Excellent root penetration – up to 20 feet!
 - Good runoff prevention – recharges the aquifer
 - Good soil aeration – extensive fibrous root system
 - Excellent economics
- Native grass is an **economical choice**
 - Little water required
 - No fertilizer required
 - No disease or pests
 - Little mowing required
 - Natural appearance
- Native grass has **secondary benefits**
 - Attracts wildlife
 - Food and forage for wildlife
 - Habitat and nesting for wildlife

Sold on the use of native grasses for your property? Some of the grass experts* have provided the following selections for use in our area.

Choice Native Grasses*

- **Lawns**
 - Buffalograss,
 - Blue grama
- **Large, showy grasses**
 - Lindheimer muhly
 - Yellow indiagrass
 - Big bluestem
- **Delicate or accent grasses**
 - Broadleaf woodoats
 - Seep muhley
 - Sideoats grama
 - Little bluestem
 - Virginia wildrye

* Native American Seed Co. – Junction, TX. --Bill and Jan Neiman

Not the End...

“Understanding grass communities is now the beginning of good land stewardship and environmental preservation.”

Field Trips

Native Garden and Native Area Tours

Sun City Native Plant Landscapes
Sun City in Georgetown
Leaders: Homeowners

Sun City Nature/Walking Trails
Sun City in Georgetown
Self Guided

San Gabriel River Trail
Georgetown
Self-Guided

Patty Eason's Native Home Landscape
Georgetown
Leader: Patty Eason

Berry Springs Park and Preserve
Georgetown
Leader: Susan Blackledge

Serendipity (Nance Property)
Between Leander and Jonestown
Leader: Jean Nance

Burleson Prairie
Near Temple
Leaders: Bob and Mickey Burleson

Native Grasses & Plants along Cow Creek
Near Lago Vista in Travis and Burnet Co.
Leaders: Brian and Shirley Loflin

Agnes Plutino Pocket Prairie
Georgetown
Leader: Agnes Plutino

Wolf Ranch Shopping Center
Georgetown
Self-Guided

Perz Property
Georgetown
Leaders: Marilyn & Dennis Perz

Prairie Remnants and Grassland Birds
Granger Lake
Leader: Tim Fennell

Traci Wyrick Wildscape
Bell County near Killeen
Leader: Traci Wyrick

Balcones Canyonlands National Wildlife
Refuge, Lago Vista
Leaders: Jean Nance & Diane Sherrill

McKinney Falls State Park
Travis County near Austin
Leaders: Dr. Billie Turner & Dr. Matt Turner

Indiangrass Preserve
Austin near Decker Lake
Leader: Jason Spangler

Brodie Wild
Southwest Austin
Leaders: Sirpa, Bob, & Kirsti Harms

Lady Bird Johnson Wildflower Center
Southwest Austin
Leader: Andrea DeLong-Amaya

Tanglewood Prairie
Lee County south of Tanglewood
Leaders: Mark Steinbach & Kerry Olenick

Bastrop State Park
Bastrop County near Bastrop
Leaders: Bill Carr & Jason Singhurst

Simpson and Steward Prairies
Valley Mills near Crawford
Leaders: Mike Williams & Lisa Spangler

Falls County Prairies
Falls County
Leaders: Kunda Lee Wicce & Jim Eidson

Presenters

David Bamberger

Founder of Selah, the Bamberger Ranch Preserve, long recognized as the largest habitat restoration project on private land in Texas. Selah has been a model for other area landowners to emulate. The educational stewardship message of the ranch has influenced literally thousands of landowners and subsequently thousands of acres of land. J. David, along with his wife Margaret, has received numerous awards over the years. He has served on a variety of boards such as the Texas Nature Conservancy, Bat Conservation International, and the San Antonio Area Foundation.

Don Beaumont

A retired geologist for a large oil company in Houston, Don is a Sun City favorite in the Georgetown Senior University, covering the subject of Williamson County geology. The county's diversity makes this a difficult subject but Don organizes his lectures in an understandable and entertaining manner.

David Bezanson

David is the Northeast Texas Program Manager for the Nature Conservancy. He was previously Executive Director for the Natural Area Preservation Association (NAPA), a Texas land trust that conserves 40,000 acres in Texas. David is co-author of "Conservation Priorities for Texas: A Guide to Ten Threatened Areas in the Lone Star State" which identifies Texas tallgrass prairies as a conservation priority. He has also worked at the Texas General Land Office as a cartographer.

Bob Burleson

Bob and his wife Mickey own one of the oldest restored prairies in our area. Mr. Burleson is an attorney based in Temple, Texas, whose passion for exploration and conservation has taken him from early float and canoe trips down the Big Bend Canyons, to efforts to create a national park in the Guadalupe Mountains, to service on the Texas Parks and Wildlife Commission, and to work on restoring native tallgrass prairie.

Linda Campbell

Linda is a Florida native with degrees in Wildlife Ecology/Range Science from the University of Florida and Rangeland Ecosystem Management from Texas A&M. She spent 11 years working with landowners in Florida and Texas as a range/wildlife specialist with the USDA Natural Resources Conservation Service. She also has worked in the private sector as an environmental consultant. Linda has been with TPWD for 14 years, serving as Diversity Biologist for central Texas and statewide Nature Tourism Coordinator. Linda authored "Endangered and Threatened Animals of Texas" in 1995, a book describing the life history and management guidelines for federally-listed animals in Texas. Linda is responsible for completion of the Great Texas Coastal Birding Trail and additional wildlife viewing driving trails - the Heart of Texas, Panhandle Plains, and

Prairies and Pineywoods Wildlife Trails. In 2003 she became Program Director for the Private Lands and Public Hunting Program. In that position, she directs the agency's activities concerning the full spectrum of conservation matters affecting private lands as well as management of the TPWD public hunting program

Jim Eidson

Jim has worked for conservation in Texas for almost two decades. Jim received his Masters of Science in Rangeland Ecology and Management from Texas A&M University where his research interests were prairie restoration and management. Serving The Nature Conservancy almost 12 years as Ecoregional Manager for the Crosstimbers and Southern Tallgrass Prairie, he is happy to now be focusing exclusively on prairie preserve management as a Land Steward. He is also an adjunct professor at Texas A&M University in Commerce, Texas, where he currently teaches a course on plant diversity and conservation. Jim is a 4th generation Texan, with old roots in the Blackland and Grand Prairies, and serves on the Native Prairies Association of Texas (NPAT) board of directors.

Tim Fennell

Tim Fennell teaches Advanced Placement Environmental Science at the Liberal Arts and Science Academy of Austin at LBJ High School. He has been an active birder in Central Texas for 15+ years and has taught classes on shorebird identification for the Travis Audubon Society since 1999. Many prairie birds breed in Central Texas, while others only overwinter or migrate through the area. Tim has been particularly interested in these prairie birds since he moved to Round Rock in 1997 and has published articles on the Mountain Plover, a prairie species that is a candidate for the endangered species list and a winter specialty of eastern Williamson County. He has also led many field trips in Central Texas for such groups as the Texas Ornithological Society, the Travis Audubon Society, and the Houston Ornithology Group.

Scott Gardner

Since 2002, Scott Gardner has managed the C.L. Browning Ranch in Blanco County, Texas to offer selected institutions, organizations, and government agencies opportunities to collaborate with the Browning Ranch on studio projects and research studies that promote good land planning and environmentally sound management practices in the Texas Hill Country and elsewhere.

Brian and Shirley Loflin

The Loflins are independent writers, photographers and naturalists based in Austin, Texas. Their new book, "Grasses of the Texas Hill Country", has been termed a "grass book for the normal person".

Alice Nance

Alice is a Educator, National Wildlife Federation

Bill Neiman

Co-Owner Native American Seed, Junction, Texas, Bill's work includes restoration projects and prairie plant seed collecting.

Paul Ohlenbusch

Paul is Professor Emeritus, Grazingland Management, Kansas State University, and owner of Grass by Design consulting service.

Flo Oxley

Director of Education and Conservation, Lady Bird Johnson Wildflower Center, Flo has a degree in Botany, a Masters in Mycology, and is currently working on her Ph.D. in aquatic resources at Texas State University. Flo has been a staff member of the Lady Bird Johnson Wildflower Center for 14 years. She manages the Center's education programs, onsite interpretations and exhibits, and docent training. She also oversees the seed bank and herbarium programs as well as writing for the Center's and other publications.

Wayne Polley

Dr. Polley of the USDA-ARS Grassland, Soil & Water Research Lab performs primary research on Water Balance and Forb-Grass Ratios on Mesic Grasslands.

Barron Rector

Barron is an Extension Range Specialist at Texas A&M University, Texas Agricultural Extension Service in the Department of Rangeland Ecology and Management. He is recognized nationally and internationally for his plant identification skills and training workshops regarding poisonous plant issues, exotic, noxious weed management and plant materials important to agriculture and urban interests in native plants.

Carl Schwope

Carl is Fire Management Officer, Balcones Canyonlands National Wildlife Refuge in Marble Falls, Texas. He is responsible for planning and executing prescribed burns in a safe and effective manner and for managing fire programs that benefit two critically endangered birds – the golden-cheeked warbler and black-capped Vireo.

Fred Smeins

Dr. Smeins is Professor of Ecology in the Department of Rangeland Ecology and Management, Texas A&M University. His research focuses on understanding the structure and dynamics of rangeland (grassland, wetland, savannah) ecosystems as influenced by herbivory, soil, fire and weather. Current research includes life history and successional studies of Ash Juniper, habitat features of Golden Cheeked Warblers, influence of summer burning on Edwards Plateau rangelands and Blackland Prairie Restoration. Dr. Smeins is also the scientific advisor to the Native Prairies Association of Texas (NPAT).

Jason Spangler

Jason is Treasurer and board member, Native Prairies Association of Texas (NPAT), Webmaster, Austin and Williamson County NPSOT Chapters, Secretary, Austin Chapter NPSOT. In addition to his regular job as a software engineer, Jason is passionately devoted to helping preserve native prairies and restoring the land. Jason speaks to organizations about native Texas prairies and the need for their conservation and protection. Jason has also arranged and led prairie and native plant field trips, organized advocacy for protecting and restoring native prairie, contributed native prairie and plant articles to the newsletters of NPAT, NPSOT, and other conservation organizations, and searched for and recorded native prairie remnants.

Matt Turner

Matt Turner is a market researcher at the University of Texas, McCombs School of Business, as well as a teacher, naturalist, and free-lance writer. Armed with a Ph.D. in Comparative Literature and having a botanist for a father, he approaches the natural world from a humanities perspective. His first book (coming soon from UT Press), "Remarkable Plants of Texas: Natural and Cultural History", explores the little-known facts – historical, medicinal, culinary, and cultural – behind our everyday botanical landscape. He has published several articles on botany in scientific journals, has given talks at the Lady Bird Johnson Wildflower Center, and has contributed pieces to their magazine, as well as to NPSOT News. He is currently the President of the Austin Chapter of the Native Plant Society of Texas.

Matt White

Matt is author of "Prairie Time: A Blackland Portrait" which helps us understand what a native prairie is and how to appreciate its beauty and importance. Matt teaches American and Texas history at Paris Junior College and studies and grows prairie plants on his land near Campbell, Texas. In addition, Matt also authored "Birds of Northeast Texas". Matt is also a board member of the Native Prairies Association of Texas (NPAT).



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Pre-order T-Shirt

The symposium T-shirt is a Hanes Beefy-T in "Prairie Sky Blue". The logo and text above will be printed in black with the blue of the t-shirt showing through as the prairie sky. T-shirts run true to size.

A limited number of T-shirts will be available for purchase at the symposium. Reserve your size by ordering it when you register.



To contact us:

Email: symposium2007@npsot.org

Phone: 830-997-9272

Mail: NPSOT, P.O. Box 3017, Fredericksburg, TX 78624



NPSOT-NPAT 2007 Joint Symposium

Schedule

The schedule is included in the [symposium pamphlet](#).

[Click here](#) to download the [revised Sun City Garden and Native Areas Tour information](#) for field trips #1 and #2.

The pamphlet and registration form are in PDF format. If you can not view the documents, [download and install Adobe Reader](#) by [clicking here](#) and following the directions.

Registration

The symposium has already occurred. Thank you for your interest!

- [Symposium Pamphlet](#) including schedule

If you wish to join NPSOT and/or NPAT and receive member-only registration rates, please see the membership information on the following web sites:

- [NPAT online membership form](#)
- [NPSOT membership form](#)

All current NPSOT and NPAT members automatically received a registration brochure via postal mail around September 1st.

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NPSOT-NPAT 2007 JOINT SYMPOSIUM

THE BLACKLAND AND GRAND PRAIRIES AND GRASSLANDS OF THE EDWARDS PLATEAU

EFFORTS TO IDENTIFY, RESTORE, CONSERVE AND CELEBRATE A NATURAL TREASURE



Native
Plant
Society
Of
Texas

**October 18-21, 2007
Georgetown, Texas
at Sun City**

Native
Prairies
Association of
Texas



**Hosted by the Williamson County Chapter of NPSOT
Sponsored by the Del Webb Corporation, Dixon Water Foundation & Sun City Nature Club**

Dear Members and Guests –

Are you interested in efforts to identify, restore, conserve and celebrate a natural treasure? Then join us at Sun City in Georgetown for the Native Plant Society of Texas (NPSOT) and Native Prairies Association of Texas (NPAT) 2007 Joint Symposium, “The Blackland and Grand Prairies and Grasslands of the Edwards Plateau”.

This year the Native Plant Society of Texas and the Native Prairies Association of Texas join together as we focus on the important topic of conserving, restoring, and celebrating our native prairies and grasslands. Less than 1% of the original 20 million acres of Texas’ beautiful tallgrass prairie remains and Edwards Plateau grasslands are also highly threatened, and these natural treasures of Texas and their native grasses and flowers merit our attention and appreciation.

Festivities start Thursday afternoon with guided tours of the beautiful North San Gabriel River Trail. After communing with nature, return to your accommodations for a rest and/or join friends for dinner at one of Georgetown’s many fine restaurants. Then join us at Georgetown’s new City Lights Theatres for a talk by humorist Penny Burt remembering what it was like to grow up on a cattle ranch in the Panhandle in “Cattle Ranching and the Prairies in Texas: Personal Memories” and a showing of the moving PBS documentary “Last Stand of the Tallgrass Prairie”.

On Friday morning, our exceptional slate of speakers focus on the native plants and wildlife of the Blackland and Grand Prairies as well as the Grasslands of the Edwards Plateau. During the afternoon field trips, participants will have an opportunity to visit local parks and prairies and also homes with lovely native plant landscaping. A Friday evening BBQ supper is planned with live entertainment in an open-air pavilion in Sun City.

Saturday is filled to the brim with fascinating speakers and topics of interest. The Saturday evening banquet and traditional awards ceremonies for both organizations will be held in the Sun City Ballroom.

On Sunday, use Georgetown as a launching point for more exciting field trips in the Blackland Prairies, Edwards Plateau and Lampasas Cut Plains vegetative areas of Texas.

In addition, start your Christmas shopping early (and bid on something for yourself!) at NPSOT’s traditional silent auction of great items donated by chapters, members, and sponsors with all proceeds to benefit the NPSOT Ann Miller Gonzalez Research Grants fund.

Also, we have many exciting vendors lined up with informative books, native plants, organic gardening supplies, and other must-have items for sale. If that isn’t enough fun yet, this year we’ve added a Photo Contest. So read further to find out how to attend all the outstanding presentations and join in the fun and festivities.

See you in Georgetown!

NPSOT Williamson County Chapter and NPAT

P.S. In anticipation of the Joint Symposium, we are encouraging everyone to read *Prairie Time: A Blackland Portrait* by symposium speaker Matt White. You can order a copy directly from the publisher. Texas A&M University Press is offering a 30% NPSOT discount (Discount Code is JJNPS) either online (www.tamu.edu/upress) or by calling 800-826-8911.



How To Contact Us

**Native Plant Society of Texas
P.O. Box 3017
Fredericksburg, TX 78624-1929**

**Email: symposium2007@npsot.org
Web: www.npsot.org/symposium2007**

**Phone: 830-997-9272
Fax: 866-527-4918**



LODGING

Visit our website for the latest information: www.npsot.org/symposium2007 (click on Lodging)
or visit the Welcome to Georgetown website: www.visitgeorgetown.com for general information

Motels with Special Rates

We have NPSOT “special” blocked room rates at four motels up until Monday, October 1. After that date, the rates will revert to “regular season” rates. All four of these motels are either “on” or 1/2 block “off” I-35 and only a minute from Georgetown’s historic downtown square with many fine shops and local eateries.

Comfort Suites

11 Waters Edge Circle, Georgetown 78628 (512-863-7544) www.comfortsuites.com/hotel/tx819

Georgetown’s newest hotel. All rooms include a sofa (with pull down sofa-bed), high-speed internet, refrigerators, cable TV, microwaves and “Pillow Top Mattresses”. Just off San Gabriel River Walk.

Quality Inn

1005 Leander Road, Georgetown 78628 (512-863-7504) www.choicehotels.com

Previously a Comfort Inn. Completely refurbished several years ago with all new furnishings. Full amenities, microwave ovens, breakfast, HBO and a swimming pool.

Holiday Inn Express

600 San Gabriel Village Dr., Georgetown 78626 (512-868-8555) www.hiexpress.com

Relatively new. Overlooking the San Gabriel River, with full amenities and a pool. Just off San Gabriel River Walk.

La Quinta

333 North I-35, Georgetown 78628 (512-869-2541) www.lq.com

Remodeled twice in last 25 years. Offers comfortable, well-equipped, spacious accommodations, with high-speed wireless internet and a swimming pool.

Other Motels

Historic San Gabriel Motor Courts

103 North Austin Ave., Georgetown 78626 (512-819-9374) www.sangabrielmotel.com

Historic tourist court built in 1930’s; each room has been restored to either an early Texas or Santa Fe style. Park-like ambience located between North and South San Gabriel Rivers. Easy to explore river, or enjoy abundant wildlife on property. Regular rates range between \$60 and \$120.

Days Inn

209 North I-35, Georgetown 78628 (512-863-5572) www.daysinn.com

This 30+ year motel has had several refurbishings. Old style “larger” rooms, cable TV, swimming pool, continental breakfast and free local calls. Regular rates range between \$49 and \$70, with Fri. and Sat. nights slightly higher.

Bed and Breakfast

The Harper-Chesser Historic Inn

1309 College Street, Georgetown 78626 www.harperchesserinn.com

For Reservations Phone: 512-864-1887 or Email: reservations@harperchesserinn.com

The Inn is located in the Historic District in Georgetown less than a quarter mile from Southwestern University. Built in the late 1800’s and surrounded by beautiful gardens, the Harper-Chesser Historic Inn Bed and Breakfast provides the perfect backdrop for your relaxation, play or business. Guests enjoy smoke-free facility, queen-size bed, private bath, wireless internet, cable TV/DVD, spacious rooms and a sumptuous breakfast prepared by chef/owners R.C. and Ruth Lumpkin.

San Gabriel House Bed and Breakfast

1008 East University Ave., Georgetown (512-930-0070) www.sangabrielhouse.com

Approx 9.9 miles from Sun City. This is a very nice Bed and Breakfast located across the street from Southwestern University. Reserve room immediately as the location becomes fully booked early. All guest bedrooms are located on the second floor and have private bathrooms, pillow-top mattresses and secure Wi-Fi Internet. The stairway is wide with a gentle incline and two landings on the way up. The innkeepers are willing to accommodate guests on the stairs, with their luggage, or in other ways to help guests with mobility issues. The atmosphere of this beautiful home is sure to please the most discriminating traveler. Stroll around the garden or relax and sip your tea in one of the most picturesque settings anywhere.

Campgrounds and RV Parks

Lake Georgetown

On-line Reservations www.reserveusa.com or call 512-930-5253 for more information.

For the more serious angler or water enthusiast, this 1200 acre U.S. Army Corps of Engineers lake is located off Williams Drive/Andice Rd and offers boating, skiing, fishing, four separate camping areas, a wildlife preserve and 16 miles of hiking trails. Cedar Breaks Park and Jim Hogg Park have boat ramps and camping facilities with RV hook-ups and restrooms with showers. Russell Park has both a camping and swimming area in addition to a boat ramp and restrooms with showers. Tejas Park offers primitive camping and picnic areas. Fishing is some of the best in the region, with small and largemouth bass, white bass, flathead and channel cat.

Berry Springs County Park

1801 County Rd. 152, Georgetown 78626

For Information and Reservations call 512-260-4283 or Email Parks&Rec@wilco.org

Simple campground for tents only in a beautiful setting on the old John Berry Estate, which recently opened as a county park with huge pecan grove, walking trails and restrooms.

New Life RV Park

1200 CR 152 in Georgetown (near Berry Springs Park)

For Information and Reservations call 512-931-2073 or Email: newlifervpark@wmconnect.com or visit

www.newlifervpark.com

Located in historic Georgetown. Two miles off I-35. Peaceful country setting, close to Sun City, Lake Georgetown and San Gabriel Park/River. Landscaped sites include 2 car concrete parking & patio, low level lighting, 20/30/50 amps and sewer. Showers, Rec. Hall, Pool, Horseshoes and Washers. Daily, Weekly or Monthly.

Live Oak at Berry Creek RV Park

2800 North I-35 Georgetown (512-863-3829 or 512-864-2724)

Approximately 6.5 miles from Sun City via Hwy. 195. Approximately 11.7 miles from Sun City via RM 2338/Williams Drive. From the intersection of I-35 and Williams Drive, go north on I-35 to Exit 265 (Toll 130 South to Austin). Stay on Access Road headed north. As you pass under Toll 130 continue 3.6 miles to Market St. Turn right. RV park is 0.2 miles on the left.

San Gabriel River RV Camp Resort

40005 Heritage Hollow, Georgetown (512-868-1401)

Approximately 10.2 miles from Sun City via RM 2338/Williams Drive.

From the intersection of I-35 and Williams Drive, go northeast on Hwy. 971 about 3.2 miles (past NE Inner Loop, Toll Road 130, Settlers Road) to Heritage Hollow. Turn right.

Sunshine RV Park

1351 CR 269, Leander (512-259-7200 or 877-259-7244 toll free)

Email rvinfo@sunshinex.com or go to www.sunshinervpark.com

Approximately 15 miles from Sun City. From I-35, go west on 2243 to Hwy. 183. Turn right. Located just north of Chandler Rd.

SYMPOSIUM SCHEDULE

Symposium Registration Hours:

- Thursday, October 18th 3:00 – 4:30 pm, Booty's Park Shelter
- Friday, October 19th 7:00 am – 1:00 pm, Sun City Social Center Ballroom Lobby
- Saturday, October 20th 7:00 am – 1:00 pm, Sun City Social Center Ballroom Lobby

Symposium Locations and Directions:

- **Georgetown** is 35 miles north of Austin on I-35. **Sun City** is 5 miles west of I-35, just off Williams Drive.
- If you are arriving Thursday afternoon, go to **Booty's Park** (3:00 - 4:30 pm):
 - **Directions from the South:**
 1. From I-35, take Exit 261A (RM 2338/Williams Drive).
 2. First stoplight is RM 2338/Williams Drive, turn LEFT and drive northwest on Williams Dr. for 1.3 miles.
 3. Turn LEFT on Booty's Rd/Lakeway Dr. (red-light at Walgreen's).
 4. Drive 1.6 miles to the entrance (on your LEFT) to Booty's Park and Hiking Trail. If you get to the dam you went too far, turn around and look to your right for park entrance.
 - **Directions from the North:**
 1. From I-35, take Exit 262 (RM 2338/Williams Drive).
 2. First stoplight is RM 2338/Williams Drive, turn RIGHT and drive northwest on Williams Dr. for 1.3 miles.
 3. Turn LEFT on Booty's Rd./Lakeway Dr. (red-light at Walgreen's).
 4. Drive 1.6 miles to the entrance (on your LEFT) to Booty's Park and Hiking Trail. If you get to the dam you went too far, turn around and look to your right for park entrance.
- If you are arriving Thursday evening, go to **City Lights Theatres** located just off I-35 at 420 Wolf Ranch Parkway, Georgetown (7:00 - 8:45 pm):
 - **Directions from the South:**
 1. From I-35, take Exit 261A (RM 2338/Williams Drive).
 2. First stoplight is RM 2338/Williams Drive, make a U-TURN at Williams Drive and go south on the I-35 Frontage Road.
 3. Turn RIGHT onto Rivery Boulevard (at the Wendy's).
 4. Turn LEFT on Wolf Ranch Parkway.
 - **Directions from the North:**
 1. From I-35, take Exit 261 (RM 2338/Williams Drive).
 2. First stoplight is RM 2338/Williams Drive, turn RIGHT onto Rivery Boulevard (at the Wendy's).
 3. Turn LEFT on Wolf Ranch Parkway.
- If you are arriving Friday morning, go to **Sun City Social Center**:
 - **Directions from the South:**
 1. From I-35, take Exit 261A (RM 2338/Williams Drive)
 2. First stoplight is RM 2338/Williams Drive, turn LEFT and drive northwest on Williams Dr. for 5 miles to Del Webb Blvd. Entrance sign on your right reads "Sun City"
 3. Turn RIGHT at light on Del Webb Blvd. for 1.6 miles to Texas Drive.
 4. Turn RIGHT on Texas Drive. Signage reads "Village Center". Look for Recreation-Social-Fitness on the LEFT.
 - **Directions from the North:**
 1. From I-35, take Exit 262 (RM 2338/Williams Drive)
 2. First stoplight is RM 2338/Williams Drive, turn LEFT and drive northwest on Williams Dr. for 5 miles to Del Webb Blvd. Entrance sign on your right reads "Sun City"
 3. Turn RIGHT at light on Del Webb Blvd. for 1.6 miles to Texas Drive.
 4. Turn RIGHT on Texas Drive. Signage reads "Village Center". Look for Recreation-Social-Fitness on the LEFT.

Thursday, October 18, 2007

A. "Early-Bird" Social at Booty's Park:

- 3:00 – 4:30 pm** Water and apples to refresh the weary traveler will be provided.
- 3:00 – 4:30 pm** Enjoy guided and self-guided walks along the beautiful **San Gabriel River Trail**, a unique combination of open areas, wooded and riparian areas with original native vegetation, unusual geologic features (including a Native American shelter) and a lovely natural spring. In October the native grasses are outstanding.
- 4:00 – 4:30 pm** Welcome and overview of the trail by **Randy Morrow**, Director of Community Services, City of Georgetown, at the shelter
- 4:30 – 7:00 pm** **Dinner on your own at one of Georgetown's finest or relax at your hotel**

B. City Lights Theatres:

- 7:00 – 7:15 pm** Welcoming Remarks by conference hosts
- 7:15 – 7:45 pm** Humorist **Penny Burt** remembering what it was like to grow up on a cattle ranch in the Panhandle in "Cattle Ranching and the Prairies in Texas: Personal Memories"
- 7:45 – 8:45 pm** Showing of the award-winning PBS documentary, "Last Stand of the Tallgrass Prairie"

Friday, October 19, 2007

Sun City Social Center Ballroom:

- 7:00 – 8:30 am** **CONTINENTAL BREAKFAST:** Fresh fruit, danishes, muffins, bagels, coffee and OJ
- 8:15 – 8:30 am** **Welcome** – Sun City Nature Club President Saunnie Box
Opening Remarks – NPSOT President Melissa Miller, NPAT President Kunda Lee Wicce
- 8:30 – 9:15 am** **The Geological Origin of the Blackland Prairies, the Grand Prairie, and Edwards Plateau Areas and Their Soils: Donald Beaumont, PhD – Lecturer, Georgetown Senior University**
Here in Central Texas, four major limestone layers formed during the Cretaceous Period (145 to 65 million years before the present). Weathering and erosion of these layers has produced the unique topographies and soils that define the Blackland Prairies, the Grand Prairie, and the Edwards Plateau vegetational areas. Our Central Texas is, indeed, a natural treasure that we should make known to our generation and generations of the future.
- 9:15 – 10:15 am** **Native Plants of the Tallgrass Prairies and Hill Country Grasslands: Dr. Fred Smeins – Professor of Ecology, Department of Rangeland Ecology and Management, Texas A&M University**
The native prairies and grasslands of Central Texas are home to a wide variety of native plants and plant communities. From the prairie communities that dominated the tallgrass prairies with native grasses and flowers, to the savanna communities with native grasses and flowers underneath scattered oaks and other native trees, our native flora and the wildlife that depends on it is diverse and beautiful. Though these once-dominant plant communities are now imperiled and have mostly been replaced with plowed fields, non-native pastures, and urban and suburban development, the beauty of our native prairies and savannas still enchant Texans.
- 10:15 – 10:30 am** **BREAK**

10:30 – 11:15 am

Prairie Conservation: David Bezanson – Northeast Texas Program Manager, The Nature Conservancy, and Jim Eidson – Land Steward, The Nature Conservancy

Most of our native prairies and grasslands have been destroyed due to plowing, improper overgrazing, brush and tree encroachment, and now development. However, tracts of beautiful virgin Texas tallgrass prairie survive – a small number of large prairies and a larger number of small prairies escaped the plow and remain to this day, many still used as native hay meadows. An overview of the remaining large and small native prairies that have been conserved will be presented, along with how we can conserve more of these natural treasures of Texas.

11:15 – 12:00 pm

Prairie Time: A Blackland Portrait (Plenary Speaker): Matt White – Author, *Prairie Time: A Blackland Portrait*

Matt White's connections with both prairie plants and prairie people are evident in the stories of discovery and inspiration he tells as he tracks the ever-dwindling parcels of tallgrass prairie in northeast Texas. In his search, he stumbles upon some unexpected fragments of virgin land, as well as some remarkable tales of both destruction and stewardship. Helping us understand what a prairie is and how to appreciate its beauty and importance, White also increases our awareness of prairies, past and present, so that we might champion their survival in whatever small plots remain.

12:00 – 1:00 pm

LUNCH ON YOUR OWN

1:00 – 5:00 pm

Native Gardens and Native Areas Tours

During Friday afternoon, enjoy a tour of homes which feature predominant use of water-conserving, native plants in the landscaping. You will also be able to enjoy guided and self-guided tours of preserved native areas along walking trails, prairie sites, nature preserves and parks. Details and maps will be provided at the symposium.

1. Sun City Native Plant Landscapes, Sun City in Georgetown, Leaders: Homeowners, (Easy)

Tour home landscapes that include native plants, native lawns, and certified backyard wildlife habitats. Learn about native plant gardening to attract wildlife like butterflies, hummingbirds, and other birds, and how to minimize expensive landscape water use.

2. Sun City Nature/Walking Trails, Sun City in Georgetown, Self-Guided (Easy – Trails)

Within the Sun City retirement housing community are dedicated native preserve areas with four walking trails that enable residents and their guests to walk areas that include flood plains along and crossing several creeks, large exposed limestone out-croppings, protected cave out-croppings, scenic bluffs, and lush wooded and open areas.

3. San Gabriel River Trail, Georgetown (3 miles), Self-Guided, (Easy – Trails of concrete, asphalt, crushed granite)

Hike the scenic San Gabriel River Trail that follows the North and South San Gabriel Rivers. Designated as a National Recreation Trail in 2006, the trail on the North San Gabriel River crosses four natural springs. The trail is eight feet wide and comprised of mixed surfaces including crushed granite, concrete, and asphalt. Along the trail you can see natural springs, historic features and animal tracks. The trail connects to United States Corps of Engineers trail at Lake Georgetown.

4. Patty Eason's Native Home Landscape (8.5 miles), Leader: Patty Eason, (Easy)

Tour Georgetown City Councilperson Patty Eason's native landscaping at her home in Georgetown. Patty's native plant landscape was designed by David Mahler of Environmental Survey Consulting. Learn about native plant gardening to attract wildlife like butterflies, hummingbirds, and other birds, and how to reduce or eliminate expensive landscape water use.

5. Berry Springs Park and Preserve, Georgetown (11 miles), Leader: Susan Blackledge, (Easy – Trails)

A 300 acre Williamson County park utilized for passive recreation including camping, hiking and fishing. The park features a 2.5 mile hike/bike trail that will eventually connect to Georgetown Parks and Recreation trails. The land historically has been used for farming and a dairy. Berry Springs Park and Preserve includes the future site of a planned 100 acre native tallgrass prairie restoration.

6. Serendipity (Nance Property), between Leander and Jonestown (30 miles), Leader: Jean Nance, (Moderate – Trails, sturdy shoes and long pants are recommended)

Hike the riparian habitat and woodlands with a diverse community of native plants at Serendipity, the Nances' special property near the Balcones Canyonlands National Wildlife Refuge. Serendipity is a lot of the Texas Hill Country packed into a small area! Hike along a network of informal trails that wander through the property for a quick-and-easy introduction to Hill Country habitats from riparian woodlands up to juniper-oak hilltops and grassy meadows. With over 200 native plants identified to date, including such Hill Country endemics as scarlet clematis, Plateau agalinis, and much more, the native plant-lover can find much to enjoy here. See rare plants such as Texabama Croton (*Croton alabamensis* var. *texensis*), a state imperiled species, and Sycamore-leafed Snowbell (*Styrax platanifolius* ssp. *platanifolius*), a beautiful species ranked as vulnerable to extirpation or extinction.

7. Burleson Prairie, Near Temple (50 miles), Leaders: Bob and Mickey Burleson, (Moderate – Mown trails) [This field trip is also occurring on Sunday.]

Visit Bob and Mickey Burlesons' Blackland Prairie tallgrass prairie restoration. The Burlesons' property includes approximately a hundred acres of restored and remnant Blackland Prairie. The Burlesons' have been restoring this tallgrass prairie for decades and have written a restoration guide (available on the NPAT web site) to help others restore native prairie on their own land. The Indiangrass and Little Bluestem at Burleson Prairie looks spectacular this time of year, and seed heads of fall flowers add interest and variety to the prairie landscape.

8. Native Grasses and Plants along Cow Creek, Near Lago Vista in Travis and Burnet Counties (45 miles), Leaders: Brian and Shirley Loflin (Easy – No walking required)

Visit a "Hot-Spot" for grasses along Cow Creek Road near Balcones Canyonlands NWR with the authors of "Grasses of the Texas Hill Country". This single spot has more than 40 species of mixed grasses documented by the Loflins. Photos of native grasses along Cow Creek were used in their book.

9. Agnes Plutino's Pocket Prairie, Georgetown TX (10 miles), Leader: Agnes Plutino (Easy – Garden)

Agnes Plutino's backyard contains a small prairie garden/restoration that blooms spectacularly in the spring and stops cars along the road. Come see what is blooming in the fall and the beauty of her native grasses.

10. Wolf Ranch Town Center, Georgetown TX (7 miles), Self-Guided (Easy – Shopping Center Parking Lot & Sidewalks) [This field trip is also occurring on Sunday.]

Native plant landscaping at Wolf Ranch Town Center won the first ever Landscape Recognition Award presented by the Williamson County chapter of NPSOT. This award was given to the five companies associated with the creation and maintenance of the native landscape at this site. Come see why they deserved this award and the plaque discussing the Blackland Prairie.

Legacy Hills Park Pavilion (Sun City):

- 6:00 – 6:15 pm** **Welcome:** Jim Rodgers, Parks and Recreation Director, Williamson County.
- 6:15 – 6:45 pm** **Landscape Recognition Award Background:** Dennis Perz will discuss the NPSOT Williamson County Chapter's NEW Landscaping Recognition Award, which recognizes developers who embrace the use of Native Plants and why our 1st recipient 'Wolf Ranch Town Center' was chosen.
- 6:45 – 7:00 pm** **BREAK**
- 7:00 – 9:00 pm** **DINNER & ENTERTAINMENT** (*There is an extra cost for this option, please refer to the Registration Form*) – **Legacy Hills Park Pavilion in Sun City** overlooking Berry Creek Lake, near the start of Berry Creek Nature Trail. Local chefs, Three Amigos, will smoke briskets and other meats on location, served up with all the trimmings. A vegetarian burger option is also provided. Water and iced tea will be provided and you can bring your own beverages, including BYOB, to this venue if you wish. Enjoy live entertainment by the lively Teresa Garner & Bluegrass Express band with a blue-grass sound, consisting of mandolin, guitar and vocals. Try dancing under the stars, or just relax and enjoy the music after supper.

Saturday, October 20, 2007

Sun City Social Center Ballroom:

- 7:00 – 8:30 am** **CONTINENTAL BREAKFAST:** Fresh fruit, danishes, muffins, bagels, coffee and OJ
- 7:30 am** **Silent Auction BEGINS**
- 8:15 – 8:30 am** **Introduction** – NPSOT President Melissa Miller and NPAT President Kunda Lee Wicce
- 8:30 – 9:15 am** **Native Prairie and Grassland Restoration: Bill Neiman – Co-owner, Native American Seed**
With so little native prairie and grassland remaining, restoration is necessary to ensure the survival of the native plant communities, grassland birds, and other prairie wildlife that call it home. In the tradition of Aldo Leopold, we can use the same tools that destroyed prairies to recreate them by preparing the land, planting native grasses and flowers, enjoying the wildlife and educating others to spread prairie enthusiasm throughout Texas.
- 9:15 – 10:00 am** **The Prairies: Ecosystems in Search of Balance (Prairie Wildlife): Dr. Paul D. Ohlenbusch – Emeritus Professor, Extension Grazing Land Management, Kansas State University**
The prairies are a unique vegetation ecosystem created and maintained by weather, use (grazing), and fire. The original prairies were wide expanses of grassland, without significant woody vegetation. Wildlife such as bison, antelope, deer, coyote, prairie dogs and insects supplied the "use" part of the ecosystem. Today, the prairies are disappearing at a rapid rate. Many wildlife species are adapting to the changes or declining. The recent factors linked to these changes include people, urban expansion, agriculture, and misinformation. How we came to today's situation and what the future may hold will be explored.
- 10:00 – 10:15 am** **BREAK**
- 10:15 – 11:00 am** **Landscaping with Prairie Plants and Attracting Wildlife: Flo Oxley – Director of Conservation and Education, Lady Bird Johnson Wildflower Center**
Want to attract hummingbirds and other birds, butterflies and other pollinators, and more wildlife to your garden? Would you like to see native prairie flowers bloom in the spring, and entice songbirds with native grasses in the fall and winter? Learn about native prairie plants, and how to use them in wildlife and native plant friendly landscaping.

- 11:00 – 11:30 am** **NPSOT Annual Membership Meeting: Led by outgoing President Melissa Miller**
Election of State Officers and Annual Financial Report. All NPSOT members are encouraged to participate.
- 11:30 – 1:00 pm** **LUNCHEON – SALAD & SANDWICH BAR** (*There is an extra cost for this option, please refer to the registration form*) – We will have Caesar Salad, Fresh Fruit Salad, Mixed Greens Salad and your choice of Grilled Lemon Pepper Chicken Wraps, Turkey-Bacon Club on Croissant, or Veggie Sandwich on Sweet Wheat choice. In addition, there will be Herb Roasted New Potatoes, Brownies & Lemon Bars, Water, and Iced Tea w/ sugar, Sweet 'n' low, and lemon.
- 1:00 – 1:45 pm** **Native Grasses of the Tallgrass Prairie: Dr. Barron Rector – Extension Range Specialist at Texas A&M University, Texas Agricultural Extension Service in the Department of Rangeland Ecology and Management**
Little Bluestem. Indiangrass. Big Bluestem. Switchgrass. Eastern Gamagrass. Side-oats Grama (the state grass of Texas). Silver Bluestem. Native grasses make up approximately 70% of the vegetation of native prairies, with the other 30% consisting of prairie flowers and other plants. Learn about native grasses, their lifecycles, and their importance to the plant communities and wildlife of Texas.
- 1:45 – 2:00 pm** **We Can Make A Difference: Jason Spangler – Board Member, Native Prairies Association of Texas (NPAT)**
Pieces of beautiful virgin Texas tallgrass prairie still remain. However, plowing, development, and improper management are threatening many of these natural treasures of Texas. We can save these special places and restore prairie where it once flourished to protect the native plants, grassland birds, butterflies and other pollinators, and other prairie wildlife. Together we can make a difference.

Breakout Session 1

- 2:10 – 3:00 pm** **SOCIAL CENTER BALLROOM: The Restoration of Hill Country Grassland at Selah: J. David Bamberger, Selah, Bamberger Ranch Preserve – Co-founder and former CEO, Church's Fried Chicken**
After his success in the business world, J. David Bamberger bought "the sorriest piece of land in Blanco County" and restored it to ecological health. Brush removal, replanting of native grasses, and good land management practices returned water to the springs and restored 5,500 acres of the Hill Country that had been almost destroyed by decades of misuse. David will discuss the restoration of Selah and the new book by Jeffrey Greene about the story of Bamberger Ranch Preserve. In addition, David will discuss the Texas Snowbell (*Styrax texana*), an endangered plant species endemic to the Edwards Plateau, and the recovery effort they have led since 1994 for this beautiful native understory tree.
- 2:10 – 3:00 pm** **ACTIVITY CENTER ATRIUM: The Prairie/Grassland Birds of Central Texas and Williamson County: Tim Fennell – Travis Audubon Society**
Prairie birds, along with the prairies that support them, are declining at alarming rates. The populations of two-thirds of North American grassland bird species are declining and their decline is steeper, more consistent and more widespread than any other ecological grouping of North American birds. This presentation will consist of an overview of the identification and natural history of prairie/grassland birds. Special emphasis will be given to the birds of Central Texas, and Williamson County in particular.
- 2:10 – 3:00 pm** **ACTIVITY CENTER MEETING ROOM 1&2: Grasses and Gases, Impacts of Atmospheric CO₂ Enrichment on Grasslands: Dr. Wayne Polley – United States Department of Agriculture (USDA), Agricultural Research Service**
The concentration of carbon dioxide (CO₂) gas in the atmosphere has increased by 37 percent since the beginning of the Industrial Revolution 200 years ago and is predicted to reach double the pre-Industrial concentration within the next 50 years. CO₂ enrichment may alter the plant

species composition and functioning of grassland ecosystems. Scientists with the USDA Agricultural Research Service have been studying CO₂ effects on grasslands in central Texas for more than a decade, first on formerly-grazed pasture dominated by an introduced grass and more recently on plots with tallgrass prairie species.

2:10 – 3:00 pm

ACTIVITY CENTER MEETING ROOM 3&4: Wildlife Habitats and Global Warming: Alice Nance – National Wildlife Federation

Learn how global warming will impact native wildlife and plants, and what you can do to make a difference. Attract wildlife to your garden and landscape by planting a Wildlife Habitat with native prairie flowers and grasses.

Breakout Session 2

3:10 – 4:00 pm

SOCIAL CENTER BALLROOM: Tallgrass Prairie Restoration: Bob Burleson, Attorney at Law – Former Texas Parks and Wildlife Commissioner

How do you go about large-scale native prairie restoration? This presentation will cover site selection, size, location, site preparation, how to deal with troublesome invaders, management issues and options, and the long-term consequences of decisions made early in the process.

3:10 – 4:00 pm

ACTIVITY CENTER ATRIUM: Restoring and Managing Grassland Habitats, Landowner Assistance from Texas Parks and Wildlife Department: Linda S. Campbell – TPWD Wildlife Division Program Director, Private Lands and Public Hunting

Through the Private Lands program, TPWD's goal is to provide practical information on ways to manage wildlife resources consistent with other land use goals, ensure plant and animal diversity, provide aesthetic and economic benefits, and conserve soil, water and related natural resources. Restoration and management of native grasslands is a priority for TPWD as described in the Land and Water Resources Conservation and Recreation Plan, State Wildlife Action Plan, and the Texas Quail Conservation Initiative. Programs such as Pastures for Upland Birds and assistance to landowner-driven wildlife management associations focused on grassland restoration will be discussed. Learn how assistance programs offered by TPWD and partners can assist landowners in restoring native grassland habitat for a diversity of wildlife.

3:10 – 4:00 pm

ACTIVITY CENTER MEETING ROOM 1&2: Comparing Revegetation Methodologies for Brush Pile Burn Sites: Scott Gardner (presenter), Mark Simmons, and Steve Windhager

Brush pile burning is the most common method to dispose of Ashe Juniper (*Juniperus ashei*) in central Texas land reclamation projects. Due to the intense heat and long duration of pile burns, the upper soil is often heated to extreme temperatures, resulting in soil crusts forming and reduced microbial activity. The result is typically very slow revegetation, or slight revegetation from invasive herbaceous weeds. Unassisted revegetation of burn sites often takes several years, sometimes decades. While other research has looked into the degree of sterilization based on soil moisture and temperature levels, this project tested different post-burn treatments aimed to revegetate the sites with a sustainable colony of native species.

3:10 – 4:00 pm

ACTIVITY CENTER MEETING ROOM 3&4: Prescribed Fire in the Balcones Canyonlands National Wildlife Refuge: Carl Schwope – Fire Management Officer, Balcones Canyonlands National Wildlife Refuge

Prescribed fire is a restoration tool used to restore native prairie, grassland, and savanna habitat for native wildlife such as black-capped vireo and grassland birds and the native plant communities our wildlife depends upon. An overview of the use of prescribed fire on Balcones Canyonlands National Wildlife Refuge will be presented, including a summary of planning, precautions, conditions, execution, and results of prescribed fire on the refuge.

Breakout Session 3

4:10 – 5:00 pm **SOCIAL CENTER BALLROOM: Anything But Plain: The Rich Cultural Legacy of the Prairie (Ethnobotany): Dr. Matt W. Turner – University of Texas at Austin**

What fed the buffalo, the animal on which entire nations rose and fell? What was the most widely used medicinal plant of the Plains Indians and currently sits at the center of a culture war between medical traditions? What is a primary source of honey in Texas which doubled as a natural antiseptic to heal soldiers in WWI? What did one of America's foremost poets call "the finger of God" on account of its ability to help lost settlers find their way? All of these questions refer to plants that grow partly if not predominantly on the tallgrass prairie. This talk will chart the twists and turns of the ethnobotanical and cultural history of seven well-known prairie plants found in our state: blue and side-oats grama, compass plant, horsemint, Osage orange, purple coneflower, rattlesnake master and sunflower.

4:10 – 5:00 pm **ACTIVITY CENTER ATRIUM: Native Grasses of the Texas Hill Country: Brian and Shirley Loflin – Authors, *Grasses of the Texas Hill Country***

In their well-received publication, *Grasses of the Texas Hill Country*, Brian and Shirley Loflin provide an in-depth photographic look at the more important grass species of this popular natural area of central Texas. While identification of grasses can be difficult for some, this presentation will introduce a proven method for easy identification of 40 important species found in the Hill Country and elsewhere.

4:10 – 5:00 pm **ACTIVITY CENTER MEETING ROOM 1&2: NPSOT Chapter Leaders' Meeting – Led by VP Chapter Liaison Helena van Heiningen**

All NPSOT Chapter Representatives are encouraged to attend.

4:10 – 5:00 pm **ACTIVITY CENTER MEETING ROOM 3&4: NPAT Members Meeting – Led by Kunda Lee Wicce**

All NPAT members are encouraged to attend. Non-members are welcome.

SATURDAY NIGHT

5:15 – 6:00 pm **ACTIVITY CENTER MEETING ROOM 1&2: NPSOT Board Meeting – Led by Incoming President**

Open to all NPSOT members.

5:15 – 6:00 pm **ACTIVITY CENTER MEETING ROOM 3&4: NPAT Board Meeting – Led by President Kunda Lee Wicce**

Open to all NPAT members. Non-members are welcome.

Sun City Social Center Ballroom:

5:15 pm **Silent Auction ENDS**

5:30 – 6:15 pm **Pick Up Silent Auction Items**

6:00 – 7:00 pm **Informal Social Hour in lobby of Social Center Ballroom**

7:00 – 9:00 pm **SATURDAY NIGHT NPSOT/NPAT AWARDS BANQUET** (*There is an extra cost for this option, please refer to the registration form*) – You will have a choice of Chicken Marsala, Herb Breaded Tilapia, or Vegetarian Stuffed Bell Peppers. Your entrée will be served with Wild Rice, Steamed Asparagus, and a Winter Salad of Mixed Field Greens with cucumbers, Halved Cherry Tomatoes, Dried Cranberries, Walnuts, Crumbled Blue Cheese and Vinaigrette Dressing. Included will be French Bread with butter and for dessert, Cheesecake with Fruit Topping. Beverages included are Water and Iced Tea with sugar, sweet 'n' low, and lemon. You may BYOB; no setups will be provided.

Sunday, October 21, 2007

8:00 – 1:00 pm

Field Trips – Sunday is devoted to field trips all over Central Texas. Stop on your way home for a welcome break at one or more of our recommended prairie restorations, prairie remnants, and parks with natural areas. Details and maps will be provided at the symposium.

11. Perz Property, Georgetown TX (10 miles), Leaders: Marilyn & Dennis Perz (Easy – Garden trails, Difficult – If do optional 11 acres at Perz property)

Marilyn and Dennis Perz's 16 acre property of mixed grassland and woodland includes two limestone lined spring fed creeks. Although they have added native and adapted plants and built their home there, they have strived to protect and enhance the diverse flora which was originally present. There is a historic low-water wagon crossing, cabin foundation and spring on their back creek which they keep clear and preserve. The five acres near the Perz's home contains mowed paths and is an easy walk through meadows, woods and along a creek. The remaining 11 acres are rugged; a guide is required and access is weather-dependent.

12. Granger Lake Prairie Remnants and Grassland Birds, Granger Lake (near Taylor, 27 miles), Leader: Tim Fennell (Moderate - Trails in most areas)

Visit prairie restoration, original prairie remnants, and other grassland bird habitat around Granger Lake. Learn about grassland birds and their habitat including native prairies. We will mainly search for the newly arriving (hopefully!) wintering prairie species for which the area is well-known. Most of the Granger area is former tallgrass prairie that has been converted to agricultural fields that many grassland bird species utilize for over-wintering habitat.

The trip will include a visit to the Granger Lake Gene Bank which contains samples of native plants from around the area to preserve genetics that could be lost due to habitat destruction. A gene bank is an area of land that is planted with various local samples of plants. See Big Bluestem, Little Bluestem, Indiangrass, Switchgrass, Eastern Gamagrass, and many other great native plants. Afterward, take an optional trip to Taylor Park Prairie which contains several examples of mollisol (chalk) prairie.

13. Traci Wyrick's Wildscape, Bell County near Killeen (27 miles), Leader: Traci Wyrick, (Easy)

Visit Traci Wyrick's National Wildlife Federation certified Texas Backyard Wildlife Habitat. Her ½ acre wildscape is filled with Central Texas native plants, with paths throughout the garden, a pond fed by rainwater harvesting and 1500 gallon tank which is located inside the garden shop built by her husband, and her composting. Large populations of wildlife-friendly Eve's Necklace (*Sophora affinis*) and Flame-leaf Sumac (*Rhus lanceolata*) occur on the property.

14. Balcones Canyonlands National Wildlife Refuge – Doeskin Ranch, Lago Vista (45 miles), Leaders: Jean Nance & Diane Sherrill (Easy – Short trails near entrance, & Difficult – Hiking on trails, steep hills and rocks)

Hike trails through great native grassland with Little Bluestem, Indiangrass, native orchids, and a wide variety of other native plants. When Spanish explorers first saw the terraced hills northwest of what is now Austin, Texas, they named the land Balcones. These limestone hills and spring-fed canyons make up most of the Balcones Canyonlands National Wildlife Refuge. The primary purpose of the refuge is to conserve the nesting habitat of the endangered Golden-cheeked Warbler and Black-capped Vireo. The vegetation found in this area, known as the Texas Hill Country, includes various oaks, elm, and Ashe juniper trees and native grasslands. The Golden-cheeked Warbler and Black-capped Vireo depend on different successional stages of this vegetation. Both of these birds nest in Central Texas, the warbler exclusively.

15. McKinney Falls State Park, Travis County near Austin (45 miles), Leaders: Dr. Billie Turner & Dr. Matt Turner (Moderate – Trails)

McKinney Falls State Park in Travis County, in south Austin, is a 744.4-acre park acquired in 1970 from private donation and opened to the public in 1976. Hike along Onion Creek and visit the impressive McKinney Falls that give the park its name. (Fee: An entrance fee of \$4 per person must be paid when entering the park.)

**16. Indiangrass Preserve, east side of Austin near Decker Lake (35 miles), Leader:
Jason Spangler (Moderate – Basic to no trails)**

The 200 acres of Indiangrass Preserve protects a piece of our rapidly vanishing tallgrass prairies and their inhabitants, including little bluestem, Indiangrass, prairie larkspur and prairie foxglove, within its 20 acres of tallgrass prairie remnants. Late summer brings spectacular expanses of Texas bluebells followed by acres of purple gayfeather. Indiangrass and little bluestem are main native grasses on the uplands, with eastern gamagrass and big bluestem near the lake. NPAT and NPSOT members have been actively involved in prairie restoration at the preserve. Threats to the prairie include brush invasion due to lack of prescribed fire and invasive non-native KR bluestem grass.

**17. Burleson Prairie, Near Temple (50 miles), Leaders: Bob and Mickey Burleson,
(Moderate – Mown trails)**

This field trip is occurring both Friday and Sunday. See information from Friday field trip.

**18. Brodie Wild, Southwest Austin (40 miles), Leaders: Sirpa, Bob, & Kirsti Harms
(Moderate – No trails)**

Brodie Wild, a 4.4 acre water quality protection property at the corner of Slaughter Lane and Brodie Lane, is a cooperative project between the Austin chapter of NPSOT, NPAT, and the City of Austin Water and Wastewater Department Wildlands Conservation Division. The project's goals are protecting water quality, restoring native vegetation and habitat, and educating the public about how to garden with native plants to protect water quality and reduce water usage. Come tour the site and see native grasses such as Little Bluestem, Texas Wintergrass, Indiangrass, Big Bluestem, and many other fascinating native plants present at such a small and urban site. Almost 150 species of native plants have been recorded at Brodie Wild.

**19. Lady Bird Johnson Wildflower Center, Southwest Austin (40 miles), Leader:
Andrea DeLong-Amaya (Easy – Paved walkways and trails, handicapped accessible)**

The Lady Bird Johnson Wildflower Center exists to introduce people to the beauty and diversity of wildflowers and other native plants. Every day, the Wildflower Center brings life to Mrs. Johnson's vision in its public gardens, its woodlands and sweeping meadows as well as in internationally influential research. In 2006, the Center became an Organized Research Unit of the University of Texas at Austin. Tour the Wildflower Center's native plant gardens and hike the trails through the natural areas and research areas on this field trip.

**20. Tanglewood Prairie, Lee County south of Tanglewood (68 miles), Leaders:
Mark Steinbach & Kerry Olenick (Difficult – No trails)**

Tanglewood Prairie is a high diversity sand prairie remnant of the Post Oak Savanna, and a great example of a little conserved ecosystem. The grassland is dominated by the little bluestem (*Schizachyrium scoparium*) and brownseed paspalum (*Paspalum plicatulum*). Hoary milkpea (*Galactia canescens*), a species endemic to open areas on sandy substrates in South Texas, is an unusual plant found at the prairie. Tanglewood Prairie is protected by the Natural Area Preservation Association with a grant from the Magnolia Charitable Trust, with a conservation easement held by NPAT.

**21. Bastrop State Park, Bastrop County near Bastrop (68 miles), Leaders: Bill Carr &
Jason Singhurst, (Difficult – No trails)**

Bastrop State Park is 5,926 total acres, approximately 30 miles southeast of Austin in Bastrop County. It is home of the famous "Lost Pines," an isolated timbered region of loblolly pine (*Pinus taeda*) and hardwoods in the Post Oak Savanna, separated by about 100 miles from the pine forests of East Texas. Species in the Lost Pines are particularly adapted to the drier conditions in the area, and provide unique habitat for varied flora and fauna which can be seen in the park and other nearby natural areas. (Fee: An entrance fee of \$4 per person must be paid when entering the park.)

22. Simpson and Steward Prairies, Valley Mills (near Crawford) (95 miles), Leaders: Mike Williams & Lisa Spangler, (Moderate – No trails)

Come hear Mike Williams talk about conserving and restoring native prairie and see the diverse Simpson and Steward Prairies, original tallgrass prairie remnants of the Grand Prairie. Little Bluestem, Indiangrass, Big Bluestem, and many other native plants (including native prairie flowers) are present on these prairies. Mike Williams purchased Simpson Prairie after it had been overgrazed for 10 years, and has been restoring the native grasses and flowers with great results. Mike has used seed hay to restore native prairies at other locations in the area.

23. Falls County Prairies, Falls County (99 miles), Leaders: Kunda Lee Wicce & Jim Eidson, (Moderate – No trails)

Visit rare native tallgrass prairie in Falls County. Leonhardt Prairie is a 40-acre tallgrass prairie protected by the Nature Conservancy. Corrine (Lehmann) Dragoo's family conserved the family hay meadow for several generations, and she protected the Lehmann Prairie permanently for future generations via a conservation easement with NPAT. Lehmann Prairie is a tallgrass prairie remnant of the Blackland Prairie. Texas' Blackland Prairie is part of the imperiled prairies of North America, of which less than 1% remains due to conversion to agriculture and development. Gilgai, natural depressions in the prairie, harbor different native plant species and increase biodiversity. Dr. Paul and Virginia Mezynski protected Riesel Prairie permanently for future generations by donating the prairie to NPAT. Little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), and Indiangrass (*Sorghastrum nutans*) are dominant native grasses on this great little prairie remnant.

24. Wolf Ranch Town Center, Georgetown TX (7 miles), Self-Guided (Easy – Shopping Center Parking Lot & Sidewalks)

This field trip is occurring both Friday and Sunday. See information from Friday field trip.

SPEAKER BIOS

David Bamberger

Founder of Selah, the Bamberger Ranch Preserve, long recognized as the largest habitat restoration project on private land in Texas. Selah has been a model for other area landowners to emulate. The educational stewardship message of the ranch has influenced literally thousands of landowners and subsequently thousands of acres of land. David, along with his wife Margaret, has received numerous awards over the years. He has served on a variety of boards such as the Texas Nature Conservancy, Bat Conservation International, and the San Antonio Area Foundation.

Don Beaumont

A retired geologist for a large oil company in Houston, Don is a Sun City favorite in the Georgetown Senior University, covering the subject of Williamson County geology. The county's diversity makes this a difficult subject but Don organizes his lectures in an understandable and entertaining manner.

David Bezanson

Northeast Texas Program Manager for the Nature Conservancy. He was previously Executive Director for the Natural Area Preservation Association (NAPA), a Texas land trust that conserves 40,000 acres in Texas. David is co-author of "Conservation Priorities for Texas: A Guide to Ten Threatened Areas in the Lone Star State" which identifies Texas tallgrass prairies as a conservation priority. He has also worked at the Texas General Land Office as a cartographer.

Bob Burleson

Bob and his wife Mickey own one of the oldest restored prairies in our area. Mr. Burleson is an attorney based in Temple, Texas, whose passion for exploration and conservation has taken him from early float and canoe trips down the Big Bend Canyons, to efforts to create a national park in the Guadalupe Mountains, to service on the Texas Parks and Wildlife Commission, and to work on restoring native tallgrass prairie.

Linda Campbell

Linda is a Florida native with degrees in Wildlife Ecology/Range Science from the University of Florida and Rangeland Ecosystem Management from Texas A&M. She spent 11 years working with landowners in Florida and Texas as a range/wildlife specialist with the USDA Natural Resources Conservation Service. She also has worked in the private sector as an environmental consultant. Linda has been with TPWD for 14 years, serving as Diversity Biologist for Central Texas and statewide Nature Tourism Coordinator. Linda authored *Endangered and Threatened Animals of Texas* in 1995, a book describing the life history and management guidelines for federally-listed animals in Texas. Linda is responsible for completion of the Great Texas Coastal Birding Trail and additional wildlife viewing driving trails - the Heart of Texas, Panhandle Plains, and Prairies and Pineywoods Wildlife Trails. In 2003 she became Program Director for the Private Lands and Public Hunting Program. In that position, she directs the agency's activities concerning the full spectrum of conservation matters affecting private lands as well as management of the TPWD public hunting program.

Jim Eidson

Jim has worked for conservation in Texas for almost two decades. Jim received his Masters of Science in Rangeland Ecology and Management from Texas A&M University where his research interests were prairie restoration and management. Serving The Nature Conservancy almost 12 years as Ecoregional Manager for the Crosstimbers and Southern Tallgrass Prairie, he is happy to now be focusing exclusively on prairie preserve management as a Land Steward. He is also an adjunct professor at Texas A&M University in Commerce, Texas, where he currently teaches a course on plant diversity and conservation. Jim is a 4th generation Texan, with old roots in the Blackland and Grand Prairies, and serves on the Native Prairies Association of Texas (NPAT) board of directors.

Tim Fennell

Tim Fennell teaches Advanced Placement Environmental Science at the Liberal Arts and Science Academy of Austin at LBJ High School. He has been an active birder in Central Texas for 15+ years and has taught classes on shorebird identification for the Travis Audubon Society since 1999. Many prairie birds breed in Central Texas, while others only overwinter or migrate through the area. Tim has been particularly interested in these prairie birds since he moved to Round Rock in 1997 and has published articles on the Mountain Plover, a prairie species that is a candidate for the endangered species list and a winter specialty of eastern Williamson County. He has also led many field trips in Central Texas for such groups as the Texas Ornithological Society, the Travis Audubon Society, and the Houston Ornithology Group.

Scott Gardner

Since 2002, Scott Gardner has managed the C.L. Browning Ranch in Blanco County, Texas to offer selected institutions, organizations, and government agencies opportunities to collaborate with the Browning Ranch on studio projects and research studies that promote good land planning and environmentally sound management practices in the Texas Hill Country and elsewhere.

Brian and Shirley Loflin

The Loflins are independent writers, photographers and naturalists based in Austin, Texas. Their new book, *Grasses of the Texas Hill Country*, has been termed a "grass book for the normal person".

Alice Nance

Educator, National Wildlife Federation

Bill Neiman

Co-Owner, Native American Seed, Junction, Texas. Bill's work includes restoration projects and prairie plant seed collecting.

Paul Ohlenbusch

Professor Emeritus, Grazingland Management, Kansas State University, and owner of Grass by Design consulting service.

Flo Oxley

Director of Education and Conservation, Lady Bird Johnson Wildflower Center. Flo has a degree in Botany, a Masters in Mycology, and is currently working on her Ph.D. in aquatic resources at Texas State University. Flo has been a staff member of the Lady Bird Johnson Wildflower Center for 14 years. She manages the Center's education programs, onsite interpretations and exhibits, and docent training. She also oversees the seed bank and herbarium programs as well as writing for the Center's and other publications.

Wayne Polley

USDA-ARS Grassland, Soil & Water Research Lab. Dr. Polley performs primary research on Water Balance and Forb-Grass Ratios on Mesic Grasslands.

Barron Rector

Extension Range Specialist at Texas A&M University, Texas Agricultural Extension Service in the Department of Rangeland Ecology and Management. Recognized nationally and internationally for his plant identification skills and training workshops regarding poisonous plant issues, exotic, noxious weed management and plant materials important to agriculture and urban interests in native plants.

Carl Schwope

Fire Management Officer, Balcones Canyonlands National Wildlife Refuge in Marble Falls, Texas. Carl is responsible for planning and executing prescribed burns in a safe and effective manner and for managing fire programs that benefit two critically endangered birds – the Golden-cheeked Warbler and Black-capped Vireo.

Fred Smeins

Professor of Ecology in the Department of Rangeland Ecology and Management, Texas A&M University. His research focuses on understanding the structure and dynamics of rangeland (grassland, wetland, savanna) ecosystems as influenced by herbivory, soil, fire and weather. Current research includes life history and successional studies of Ashe Juniper, habitat features of Golden-cheeked Warblers, influence of summer burning on Edwards Plateau rangelands and Blackland Prairie restoration. Dr. Smeins is also the scientific advisor to the Native Prairies Association of Texas (NPAT).

Jason Spangler

Treasurer and board member, Native Prairies Association of Texas (NPAT), Webmaster, Austin and Williamson County NPSOT Chapters, Secretary, Austin Chapter NPSOT. In addition to his regular job as a software engineer, Jason is passionately devoted to helping preserve native prairies and restoring the land. Jason speaks to organizations about native Texas prairies and the need for their conservation and protection. Jason has also arranged and led prairie and native plant field trips, organized advocacy for protecting and restoring native prairie, contributed native prairie and plant articles to the newsletters of NPAT, NPSOT, and other conservation organizations, and searched for and recorded native prairie remnants.

Matt Turner

Matt Turner is a market researcher at the University of Texas, McCombs School of Business, as well as a teacher, naturalist, and free-lance writer. Armed with a Ph.D. in Comparative Literature and having a botanist for a father, he approaches the natural world from a humanities perspective. His first book (coming soon from UT Press), *Remarkable Plants of Texas: Natural and Cultural History*, explores the little-known facts – historical, medicinal, culinary, and cultural – behind our everyday botanical landscape. He has published several articles on botany in scientific journals, has given talks at the Lady Bird Johnson Wildflower Center, and has contributed pieces to their magazine, as well as to NPSOT News. He is currently the President of the Austin Chapter of the Native Plant Society of Texas.

Matt White (Plenary Speaker)

Matt is author of *Prairie Time: A Blackland Portrait* which helps us understand what a native prairie is and how to appreciate its beauty and importance. Matt teaches American and Texas history at Paris Junior College and studies and grows prairie plants on his land near Campbell, Texas. In addition, Matt also authored *Birds of Northeast Texas*. Matt is also a board member of the Native Prairies Association of Texas (NPAT).

In anticipation of the Joint Symposium, we are encouraging everyone to read *Prairie Time: A Blackland Portrait* by symposium speaker Matt White. You can order a copy directly from the publisher. Texas A&M University Press is offering a 30% NPSOT discount (Discount Code is JJNPS) either online (www.tamu.edu/upress) or by calling 800-826-8911.

SPIRIT OF THE PRAIRIE PHOTO CONTEST

Purpose

To share the beauty of native Texas prairie plants, flowers, grasses, animals, and landscapes and have some friendly competition.

Categories

1. Prairie plants (includes forbs and grasses as individual photos or small groupings)
2. Prairie landscapes
3. Prairie critters (includes birds, butterflies, bunnies, snakes)

Rules

1. Open to anyone wishing to enter the contest.
2. Limit of one photo per person per category.
3. Black-and-white or color photos need to be unedited. (No digital enhancements or touchups allowed.)
4. Size: up to 8 x 10 matted or unmatted. (A number of 8 x 10 and smaller stand-alone Lucite frames belonging to NPSOT will be available to be used for display purposes.) Even though some frames will be available, you are encouraged to bring your photos ready for display in a standalone Lucite frame or support. Please label each with your name on back. If we run out of available standalone frames, photos will be displayed placed flat on table.
5. Photo must include printed, legible name of person on back.
6. Include a 3 x 5 white or colored index card with each entry. This card will be placed in front of photo. (Only the photo will be judged - not the description, matting, etc.) . The card information needs to include:
 - o Date and location photo was taken
 - o Botanical/common name if possible and description for the education of all
 - o Please indicate on your card whether you would like to donate your photo to NPSOT. All donated photos will be displayed at the NPSOT state office in Fredericksburg (320 W. San Antonio St.).
7. Photos need to be brought to symposium and picked up before you leave.
8. For judging purposes, photos need to be turned in by 9:00 a.m., Saturday, October 20. After 9:00 a.m., photos ineligible for contest will be welcome for display.
9. Judges' discretion as to whether photo meets intent of photography contest.
10. HAVE FUN PHOTOGRAPHING!

Prizes

- Ribbons for First, Second, and Third place plus the most coveted of all - PEOPLE'S CHOICE.

Notes

- Any buying or selling of photos is strictly between individuals. A note may be included on card stating whether or not photo is for sale, price, contact person, etc.



NPSOT-NPAT 2007 Joint Symposium

Updates

Symposium Ad in Texas Parks and Wildlife Magazine October Issue

See the [symposium advertisement](#) on page 9 in the October issue of Texas Parks and Wildlife Magazine!

Motel Comparison Chart

The [special rate motel comparison chart](#) was accidentally left out of the registration brochure. Click here to see the [special rate motel comparison chart](#).

Sun City Friday Field Trips

The information emailed to NPSOT chapters about Friday field trips #1 Sun City Native Plant Landscapes and #2 Sun City Nature/Walking Trails was not correct and has been revised.

[Click here](#) to download the [revised Sun City Garden and Native Areas Tour information](#).

A full list of landscapes and trails for these field trips will be provided at symposium registration.

- Home
- Proceedings
- T-shirt
- Registration
- Updates
- Schedule
- Speakers
- Regions
- Events
- Contests
- Location
- Lodging
- Sponsorships
- Vendors
- Contact



Come celebrate a natural treasure.



NPSOT
NPAAT
2007
JOINT
SYMPOSIUM
TEXAS
PRAIRIES
CELEBRATE
A NATURAL
TREASURE

Join us in Georgetown for the 2007 Joint Symposium of the Native Plant Society of Texas and the Native Prairies Association of Texas, October 18-21, as we discuss efforts to identify, restore and conserve the prairies of the region. Presentations and field trips with an emphasis on native prairie plants, birds, geology, butterflies, gardening and more. Registration open to the public.



www.npsot.org/symposium2007
or call 830-997-9272 for a registration packet



NPSOT-NPAT 2007 Joint Symposium

Motel Comparison

	Comfort Suites	Quality Inn	Holiday Inn Express	La Quinta
Reservations and Rates				
Regular rate	129.00	90.00	89.00	86.00
NPSOT "special" block rate	105.00	79.95	79.00	64.00
Number of "special" block rooms	30	30	20	20
Cancellation date	10/17	10/07	10/18	10/17
Non-smoking room	yes	yes	yes	yes
Pets allowed	no	yes	no	yes
Breakfast				
Hot, deluxe	yes	no	no	no
Deluxe continental	no	no	yes	no
Continental	no	yes	no	yes
In-Room Amenities				
Coffee maker, Hair Dryer, Iron/Board	yes	yes	yes	yes
TV, H.S. Internet, Free Local Calls	yes	yes	yes	yes
Microwave and Refrigerator	yes	yes	no	no
Other Amenities				
Indoor pool and hot tub	yes	no	no	no
Outdoor pool	no	yes	yes	yes
Exercise room	yes	no	no	no
Guest laundry	yes	no	no	no
Motel Facility and Location				
Age of motel (years)	2	22	7	25
Size (approx. number of rooms)	64	54	79	100
Adjacent to San Gabriel River Walk	yes	no	yes	no
Miles from Sun City Social Center	7.6	9.5	7.4	7.1



Sun City Garden and Native Areas Tour

2007 Annual Symposium of the Native Plant Society of Texas

Friday, October 19, 2007 - 1-5 p.m.

Enjoy this tour of gardens that feature water-saving, deer-resistant native plants. As you drive around, please note the care that homeowners put into their landscapes and the native areas set aside by our developer, Del Webb Corporation. Sun City Nature Club wishes to welcome our visitors from around the state who are here for the symposium.

Map number	Neighborhood	Address or location	Tour notes	Name(s)
1	11A	100 Ranch House Cv.	Enormous collection of deer resistant natives in a naturalistic setting.	Joanne (owner Don Stacey)
2	11A	167 Great Frontier	Good example of less turf grass and more native grasses mixed with a variety of native shrubs. Lovely trellis covered with coral honeysuckle surrounds the patio in back.	Tom & Judy
3	11A	177 Great Frontier	Native grasses interspersed with a fabulous rock and fossil collection. Owner promises to display his locally found Native American artifact collection also. Nice variety of wildflowers, sedges, yucca and agave Potted natives and Russian sage is nice next to a small water feature. Note the Barbados Cherry and buffalo gourd.	Dan & Nancy
4	11A	Native Plant Demonstration Garden	<i>Park near intersection of (2nd) Great Frontier (near the bridge) and Sun City Blvd. Walk down the sidewalk (away from the bridge) to view the Native Plant Demonstration Garden planted by the Sun City Nature Club.</i>	
5	11A	Berry Creek Trail on Barn Dance Cove	<i>Berry Creek Trail access - note large grassy field, previously Native American cornfield, now earmarked for prairie restoration.</i>	
6	16	101 Orion Rd	Home is surrounded by native areas which have been nicely preserved - features two lovely ponds with native water plants , buffalo grass lawn and a sand dune, owner a retired biology professor who loves to talk about reptiles and amphibians.	Jim & Sarah
7		Model Home Park - Intersection of Del Webb & Sun City	<i>Park in the Model Home parking lot and walk through the sales office to the back - features a lovely pond and a wildflower garden planted by Lady Bird Johnson Wildflower Center personnel, and stunning views to boot, best in Sun City. <u>(NOTE: Del Webb sales office informed us that this area may be under renovation by the time this tour occurs)</u></i>	
8	15A	115 Lubbock Dr.	Don't miss this one! More than 75% native - nice variety of wildflowers and shrubs including Carolina Buckthorn, lacey oaks, Mexican and Texas redbuds, Texas Barberry, and lots of interesting succulents. Recently certified as a backyard wildlife habitat.	Charlie & Mardy
9	15A	Undeveloped Karst Land - Intersection Dawson & Texas Dr	<i>Intersection of Dawson & Texas Drive - undeveloped karst land, full of caves and native plants. Left untouched by the developer.</i>	

10	13A	332 Rio Grande	More than 75% native, possibly the largest variety in Sun City, lovely beds designed by David Heberling of Prairiewood Landscaping. The twinleaf senna, oaks, sullcap groundcover, retama and grasses are there to enjoy. Don't miss the two gorgeous huisache trees on the right.	Betty & Ben
11	13A	110 Llano Court	Two incredibly well designed ponds, front & back, surrounded by natives.	Noel & Karen
12	7	103 Red Oak Circle	This is a project in progress. The owners cleared all the beds and yard of numerous invasives and non-natives and landscaped the back and side beds themselves. Now beautiful stone walkways and a lovely variety of native shrubs, trees and grasses is being added to the front beds and rest of the yard by David Heberling of Prairiewood Landscaping.	Randy & Phil
13	6	234 Lone Star	Lots of lovely native trees and grasses – indigo spire – coral berry.	Lynn
14	5A	134 Enchanted	Marian is our biggest Native Plant fan - check out her 2 Eve's necklaces, a huge Mexican buckeye and a host of other wildflowers and shrubs.	Marian
15	5A	124 Bronco Drive	Corner house Bronco & Enchanted (across from 134 Enchanted) - look at these lovely native plantings	Joan
16	9	282 Trail of the Flowers	Linda was president of the Sun City Garden Club and it shows - well tended yard featuring desert willow, mountain laurel, trumpet vine, cutleaf daisy, gaura and a whole bed full of kidneywood.	Linda & Richard
17	9	108 & 110 Winecup	Two neighbors - variety of natives interspersed with non-natives and each has a lovely water feature.	Kay & Jerry Jerry & Shirley
18	12A	115 Sandpiper	Prettiest lot in Sun City - lots of green space at edge of creek - buffalo grass lawn, desert willow, retama, copper canyon daisy, Eve's necklace, agarita, lantana, volunteer Carolina buckthorns, turk's cap, rock rose, boneset, Texas pistache, and blue mistflower.	Lynn & Jim

NOTE: For additional Native Areas, please refer to the 'Sun City Nature Trails & Walking Paths' pamphlet for trail details. Use the information below in conjunction with the Sun City street map to locate trail heads and additional access points.

Berry Creek Trail — Easiest access is from the Legacy Hills Park off of Del Webb Blvd.

- Other end of the trail is accessible by parking on Great Frontier off Sun City Blvd. in Neighborhood 11A. (Note that Great Frontier has two entrances off Sun City Blvd. You want the Great Frontier intersection by the bridge near White Wing Golf Club.)
- Trail is also accessible from Barn Dance Cove in Neighborhood 11A.

Blue Herron Trail — Easiest access is from the Legacy Hills Park off of Del Webb Blvd.

- Trail is also accessible from Golden Rod Way in Neighborhood 9.

Tranquility Trail — Trail head is found on Lone Star Drive in Neighborhood 5A/6.

Quarter Moon Trail — Trail head is found at the intersection of Sun City Blvd. and Rio Grande Loop in Neighborhood 13.

Legacy Hills Park — A beautiful lake setting with access to Berry Creek and Blue Herron Trails. These trails follow the lake and creek - lots to enjoy in both directions or just relax on a bench and enjoy the lake. If you registered for it, the **evening party is here in the park pavilion.**



NPSOT-NPAT 2007 Joint Symposium

Schedule

The schedule is included in the [symposium pamphlet](#).

[Click here](#) to download the [revised Sun City Garden and Native Areas Tour information](#) for field trips #1 and #2.

The pamphlet and registration form are in PDF format. If you can not view the documents, [download and install Adobe Reader](#) by [clicking here](#) and following the directions.

Registration

The symposium has already occurred. Thank you for your interest!

- [Symposium Pamphlet](#) including schedule

If you wish to join NPSOT and/or NPAT and receive member-only registration rates, please see the membership information on the following web sites:

- [NPAT online membership form](#)
- [NPSOT membership form](#)

All current NPSOT and NPAT members automatically received a registration brochure via postal mail around September 1st.

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NPSOT-NPAT 2007 Joint Symposium

Speakers

- Plenary: [Matt White](#)
- [David Bamberger](#)
- [Don Beaumont](#)
- [David Bezanson](#)
- [Bob Burleson](#)
- [Linda Campbell](#)
- [Jim Eidson](#)
- [Tim Fennell](#)
- [Scott Gardner](#)
- [Brian and Shirley Loflin](#)
- [Bill Neiman](#)
- [Paul Ohlenbusch](#)
- [Flo Oxley](#)
- [Dr. Wayne Polley](#)
- [Barron Rector](#)
- [Carl Schwoppe](#)
- [Fred Smeins](#)
- [Jason Spangler](#)
- [Matt Turner](#)

Speaker Bios

Plenary: Matt White

Matt is author of [Prairie Time: A Blackland Portrait](#) which helps us understand what a native prairie is and how to appreciate its beauty and importance. He also increases our awareness of prairies, past and present, so that we might champion their survival in the prairie remnants that remain. Matt teaches American and Texas history at Paris Junior College and studies and grows prairie plants on his land near Campbell, Texas. In addition, Matt also authored [Birds of Northeast Texas](#). Matt is also a board member of the Native Prairies Association of Texas (NPAT).

In anticipation of the Joint Symposium, the organizers are encouraging all members to read [Prairie Time: A Blackland Portrait](#) by Matt White. You can order a copy directly from the publisher, Texas A&M University Press is offering a 30% NPSOT discount (Discount Code is JUNPS) either online (<http://www.tamu.edu/upress>) or by calling 800-826-8911.

David Bamberger

Founder of Selah, the Bamberger Ranch Preserve, long recognized as the largest habitat restoration project on private land in Texas. Selah has been a model for other area landowners to emulate. The educational stewardship message of the ranch has influenced literally thousands of landowners and subsequently thousands of acres of land. J. David, along with his wife, Margaret, has received numerous awards over the years. He has served on a variety of boards such as the Texas Nature Conservancy, Bat Conservation International, and the San Antonio Area Foundation.

David will introduce the new book, [Water from Stone: The Story of Selah, Bamberger Ranch Preserve](#), by award-winning author Jeffrey Greene and discuss the status of, and current conservation efforts, at Bamberger Ranch Preserve.

Don Beaumont

A retired geologist for a large oil company in Houston, Don is a Sun City favorite in the Georgetown Senior University, covering the subject of Williamson County geology. The county's diversity makes this a difficult subject but Don organizes his lectures in an understandable and entertaining manner.

David Bezanson

Northeast Texas Program Manager for the Nature Conservancy. He was previously Executive Director for the Natural Area Preservation Association (NAPA), a Texas land trust. David is co-author of [Conservation Priorities for Texas: A Guide to Ten Threatened Areas in the Lone Star State](#) which identifies Texas tallgrass prairies as a conservation priority.

Bob Burleson

Owner (along with wife Mickey) of one of the oldest restored prairies in our area. Mr. Burleson is an attorney based in Temple, Texas, whose passion for exploration and conservation has taken him from early float and canoe trips down the Big Bend Canyons, to efforts to create a national park in the Guadalupe Mountains, to service on the Texas Parks and Wildlife Commission, and to work on restoring native tallgrass prairie.

Linda Campbell

Linda is a Florida native with degrees in Wildlife Ecology/Range Science from the University of Florida and Rangeland Ecosystem Management from Texas A&M. She spent 11 years working with landowners in Florida and Texas as a range/wildlife specialist with the USDA Natural Resources Conservation Service. She also has worked in the private sector as an environmental consultant. Linda has been with TPWD for 14 years, serving as Diversity Biologist for central Texas and statewide Nature Tourism Coordinator. Linda authored Endangered and Threatened Animals of Texas in 1995, a book describing the life history and management guidelines for federally-listed animals in Texas. Linda is responsible for completion of the Great Texas Coastal Birding Trail and additional wildlife viewing driving trails - the Heart of Texas, Panhandle Plains, and Prairies and Pinewoods Wildlife Trails. In 2003 she became Program Director for the Private Lands and Public Hunting Program. In that position, she directs the agency's activities concerning the full spectrum of conservation matters affecting private lands as well as management of the TPWD public hunting program.

Jim Eidson

Jim has worked for conservation in Texas for almost two decades. Jim received his Masters of Science in Rangeland Ecology and Management from Texas A&M University where his research interests were prairie restoration and management. Serving The Nature Conservancy almost 12 years as Ecoregional Manager for the Crosstimbers and Southern Tallgrass Prairie, he is happy to now be focusing exclusively on prairie preserve management as a Land Steward. He is also an adjunct professor at Texas A&M University in Commerce, Texas, where he currently teaches a course on plant diversity and conservation. Jim is a 4th generation Texan, with old roots in the Blackland and Grand Prairies, and serves on the Native Prairies Association of Texas (NPAT) board of directors.

Tim Fennell

Tim Fennell teaches Advanced Placement Environmental Science at the Liberal Arts and Science Academy of Austin at LBJ High School. He has been an active birder in Central Texas for 15+ years and has taught classes on shorebird identification for the Travis Audubon Society since 1999. Many prairie birds breed in Central Texas, while others only overwinter or migrate through the area. Tim has been particularly interested in these prairie birds since he moved to Round Rock in 1997 and has published articles on the Mountain Plover, a prairie species that is a candidate for the endangered species list and a winter specialty of eastern Williamson County. He has also led many field trips in Central Texas for such groups as the Texas Ornithological Society, the Travis Audubon Society, and the Houston Ornithology Group.

Scott Gardner

Since 2002, Scott Gardner has managed the C.L. Browning Ranch in Blanco County, Texas to offer selected institutions, organizations, and government agencies opportunities to collaborate with the Browning Ranch on studio projects and research studies that promote good land planning and environmentally sound management practices in the Texas Hill Country and elsewhere.

Brian and Shirley Loflin

Independent naturalists, photographers and writers, teach seminars and workshops and have led nature and photography tours throughout the world. Authors of "Grasses of the Texas Hill Country".

Bill Neiman

Native American Seed, Junction, Texas. Bill will discuss his restoration projects and prairie plant seed collecting.

Paul Ohlenbusch

Professor Emeritus, Grazingland Management, Kansas State University. Owner, Grass by Design (consulting service).

Flo Oxley

Director of Education and Conservation, Lady Bird Johnson Wildflower Center, will focus on landscaping with prairie plants.

Dr. Wayne Polley

USDA-ARS Grassland, Soil & Water Research Lab

Barron Rector

Extension Range Specialist at Texas A&M University, Texas Agricultural Extension Service in the Department of Rangeland Ecology and Management. Recognized nationally and internationally for his plant identification skills and training workshops regarding poisonous plant issues, exotic, noxious weed management and plant materials important to agriculture and urban interests in native plants.

Carl Schwoppe

Fire Management Officer, Balcones Canyonlands National Wildlife Refuge in Marble Falls, Texas. Carl has been Fire Management Officer for Balcones Canyonlands National Wildlife Refuge and is responsible for planning and executing prescribed burns in a safe and effective manner. Carl is responsible for managing fire programs that benefit two critically endangered birds, the golden-cheeked warbler and black-capped Vireo.

Fred Smeins

Professor of Ecology in the Department of Rangeland Ecology and Management, Texas A&M University. His research focuses on understanding the structure and dynamics of rangeland (grassland, wetland, savannah) ecosystems as influenced by herbivory, soil, fire and weather. Current research includes life history and successional studies of Ashe Juniper, habitat features of Golden Cheeked Warblers, influence of summer burning on Edwards Plateau rangelands and Blackland Prairie Restoration. Dr. Smeins is also the scientific advisor to the Native Prairies Association of Texas (NPAT).

Jason Spangler

Treasurer and board member, Native Prairies Association of Texas (NPAT), Webmaster, Austin and Williamson County NPSOT Chapters, Secretary, Austin Chapter NPSOT. In addition to his regular job as a software engineer, Jason is passionately devoted to helping preserve native prairies and restoring the land.

Jason speaks to organizations about native Texas prairies and the need for their conservation and protection. Jason has also arranged and led prairie and native plant field trips, organized advocacy for protecting and restoring native prairie, contributed native prairie and plant articles to the newsletters of NPAT, NPSOT, and other conservation organizations, and searched for and recorded native prairie remnants.



Matt Turner

Matt Turner is a market researcher at the Univ. of Texas, McCombs School of Business, as well as a teacher, naturalist, and free-lance writer. Armed with a Ph.D. in Comparative Literature and having a botanist for a father, he approaches the natural world from a humanities perspective.

His first book (coming soon from UT Press), *Remarkable Plants of Texas: Natural and Cultural History*, explores the little-known facts historical, medicinal, culinary, and cultural-- behind our everyday botanical landscape. He has published several articles on botany in scientific journals, has given talks at the Lady Bird Johnson Wildflower Center, and has contributed pieces to their magazine, as well as to NPSOT News. He is currently the President of the Austin Chapter of the Native Plant Society.



NPSOT-NPAT 2007 Joint Symposium

Regions

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- [Maps](#)
- [The Blackland Prairies](#)
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- [The Edwards Plateau](#)

Maps

- [Vegetational Areas of Texas Map](#) (from the Illustrated Flora of East Texas)
 - The Blackland Prairies are marked #4 in turquoise
 - The Grand Prairie is inside of the Cross Timbers and Prairies, which is marked #5 in light green
 - The Edwards Plateau is marked #7 in light purple
- [Vegetational Areas of North Central Texas Map](#) (from the Illustrated Flora of North Central Texas)
 - The Blackland Prairies are marked as **Bp**
 - The Grand Prairie is marked as **Fp** (Fort Worth Prairie) and **Lp** (Lampasas Cut Plains)

The Blackland Prairies

The Blackland Prairies stretch approximately three hundred miles along the Red River from Sherman to east of Paris, and south down through Austin to San Antonio. It also includes the outlying San Antonio and Fayette Prairies near Bryan and Huntsville. This area represents about 6.5% of the land area of Texas.

Much of this area possesses the characteristic black, heavy clay, "black waxy" soil for which the region is famous.

Before settlement, the Blackland Prairies were an expanse of tallgrass prairie with diverse native grasses, flowers, and other plants growing and blooming in succession throughout the year. Bison, pronghorn, grassland birds, black bears, mountain lions, butterflies, and other wildlife was abundant within the rich Blackland Prairies.



Dr. John Brooke, in 1848, described the region as he entered the area: "It was the finest sight I ever saw, immense meadows 2 or 3 feet deep of fine grasses and flowers. Such beautiful colors I never saw..."

Now very little of the native Blackland Prairies remain due to the destruction of the prairie by plowing for agriculture, abusive overgrazing, and development. The lack of management with natural or prescribed fire has also allowed native prairie to be destroyed by brush invasion.

Today, it is believed less than 1% (and possibly less than 0.1%) of the native Blackland Prairies remain. The [World Wildlife Fund](#) states that the Blackland is critical/endangered ecosystem. [NatureServe](#) and the [Texas Natural History Survey](#) rank most of the native plant communities of the Blackland Prairies with the highest conservation status: critically imperiled (G1), imperiled (G2), or vulnerable to extirpation or extinction (G3). A comprehensive survey of native prairie remaining within the Blackland Prairies is sorely needed.

The few remaining pieces of beautiful native Blackland Prairie are in dire need of permanent protection and conservation. Much of the Blackland Prairies lie within the highest projected population growth area of the state for the near future. If we do not protect the remaining native tallgrass prairie remnants within the Blackland Prairies soon, they could be destroyed by development, or even destroyed by continued plowing or overgrazing.

In addition to the threats to the native plants and plant communities of the Blackland Prairies, grassland birds, whose home is the prairie, are the most declining group of birds in North America and in need of help. Restoration of native prairie to recreate additional habitat for the grassland birds and the native plant communities they depend on will be a vital component in stabilizing their populations.

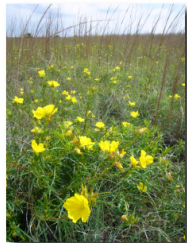
[Click here to learn more about the Blackland Prairie.](#)



The Grand Prairie

The Grand Prairie consists of the Fort Worth Prairie and the Lampasas Cut Plains within the Cross Timbers and Prairies.

The Fort Worth Prairie is an open prairie about 10 to 30 miles wide, reaching from the Red River in Cooke County south through Fort Worth to Johnson and northwest Hill County 110 miles to the south. The Lampasas Cut Plains extends from the Fort Worth Prairie south and west to the Llano Basin and the Colorado River, and east almost to Waco, Temple, and Georgetown. The Lampasas Cut Plains has strong similarities with the Edwards Plateau, and some authorities consider it a northern extension of the Edwards Plateau.



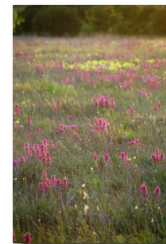
Like the Blackland Prairies, much of the Grand Prairie was a vast prairie with limited trees mostly along waterways, hilltops, mesas, and buttes. Vegetation ranged from tallgrass prairie, to shorter prairies in the west along with savanna and woodlands in the topographically complex Lampasas Cut Plains

Greer described the Grand Prairie in the second half of the 1800's as an "... indescribably beautiful prairie where lush grass swept at my mount's sides..."

Wildlife was very similar to the Blackland Prairies, and more wildlife may survive today since more of the Grand Prairie has survived human settlement. Greer described prairie chickens as a common occurrence.

Less of the Grand Prairie was plowed than the Blackland Prairies and probably survives today, but widespread ranching that swept across the region between 1850 and 1860 and subsequent droughts and overstocking, along with fire suppression, has severely impacted the native prairies of the region. A comprehensive survey of native prairie remaining within the Grand Prairie is highly needed.

[Click here to learn more about the Grand Prairie.](#)



The Edwards Plateau

The Edwards Plateau ranges from Austin in the east to Pecos County in the west.

The Edwards Plateau, unlike the other regions, is a geological unit with the region's boundaries determined by geology rather than biology. As a result, the vegetation of the Edwards Plateau is highly variable. Prairie and savanna grasslands, woodlands, forest, and rivers and streams occur within the region.

Edwards Plateau savanna is typically distinguished by Juniper-Oak savanna and Mesquite-Acacia savanna with an understory of mid to short grasslands, including Little Bluestem (*Schizachyrium scoparium*). Generally grasses are shorter as one moves west and precipitation decreases.



Wildlife was similar to the Blackland and Grand Prairies, including the presence of bison. The region ranks among the top ten ecoregions for reptiles and birds. The Golden-cheeked Warbler (*Dendroica chrysoparia*) and Black-capped Vireo (*Vireo atricapillus*), endangered bird species, live in this region. Some of the world's largest groups of cave dwelling bats roost in the caves of the region.

The [World Wildlife Fund](#) ranks Edwards Plateau Savanna as a critical/endangered ecosystem. Overgrazing, erosion, fire suppression, and now development have destroyed and still threaten Edwards Plateau grasslands. A comprehensive survey of native grasslands remaining within the Edwards Plateau is greatly needed.

[Click here to learn more about the Edwards Plateau.](#)



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- [World Wildlife Fund Ecoregions](#)

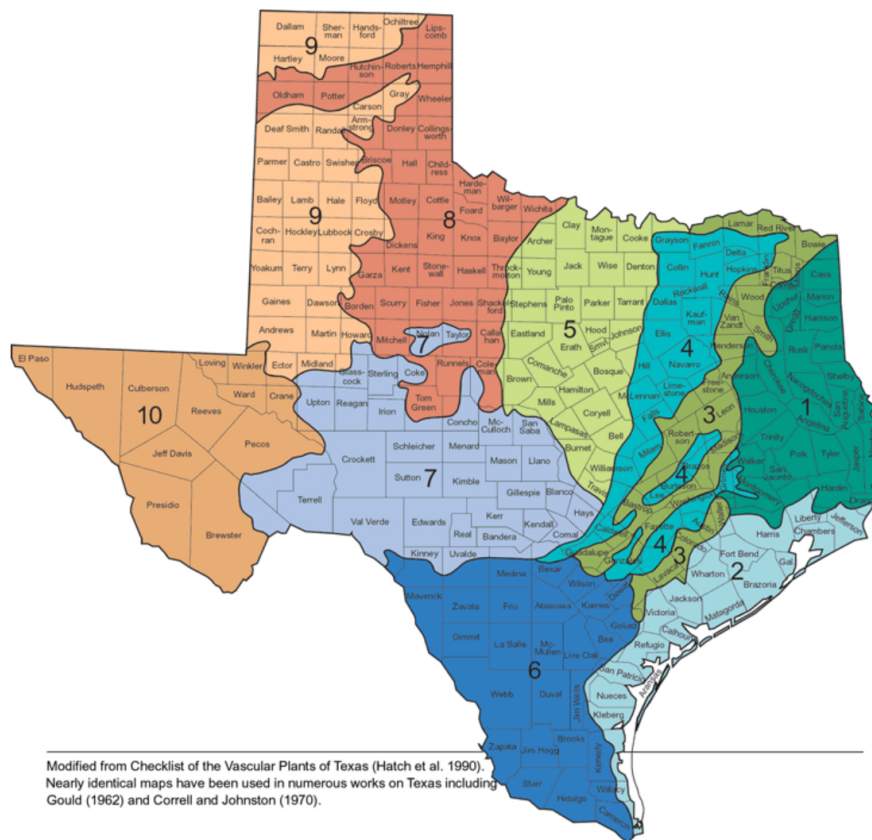
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VEGETATIONAL AREAS OF TEXAS



Modified from Checklist of the Vascular Plants of Texas (Hatch et al. 1990).
Nearly identical maps have been used in numerous works on Texas including
Gould (1962) and Correll and Johnston (1970).

- 1 PINEYWOODS
- 2 GULF PRAIRIES AND MARSHES
- 3 POST OAK SAVANNAH
- 4 BLACKLAND PRAIRIES
- 5 CROSS TIMBERS AND PRAIRIES
- 6 SOUTH TEXAS PLAINS
- 7 EDWARDS PLATEAU
- 8 ROLLING PLAINS
- 9 HIGH PLAINS
- 10 TRANS-PECOS, MOUNTAINS AND BASINS

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(Fonts altered for web)

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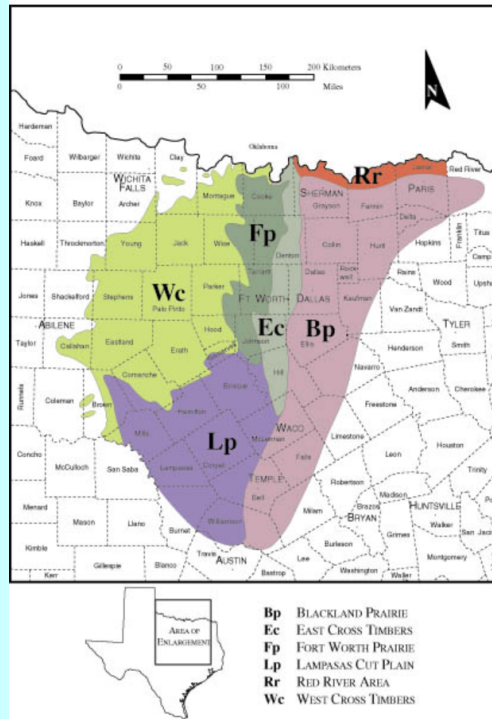
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VEGETATIONAL AREAS OF NORTH CENTRAL TEXAS



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**AUSTIN
COLLEGE**



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Thursday, October 18

Meet at the shelter in Booty's Park mid-afternoon. The City of Georgetown's newest park is strategically located near the beautiful **San Gabriel River Trail**, completed by the city in 2006. Enjoy guided and self-guided walks along the trail, a unique combination of open areas, wooded and riparian areas with original native vegetation, unusual geologic features (including a native American shelter) and a lovely natural spring. In October the native grasses are outstanding.

Welcome and overview of the trail by **Randy Morrow**, Director of Community Services, City of Georgetown, at the shelter at 5:00. Light snacks and water. Assemble at City Lights, the new movie theater in the Rivery, for the showing of the PBS documentary "[Last Stand of the Tall Grass Prairie](#)", and scheduled speaker: **Penny Burt** "Cattle Ranching and the Prairies in Texas: Personal Memories".

Friday, October 19

Continental breakfast in Sun City ballroom. Afternoon field trips and home garden tours (see [revised Sun City Garden and Native Areas Tour information](#)). Great speakers and presentations in the morning, with field trips in the afternoon. Evening meal and entertainment at the Sun City Pavilion overlooking Berry Creek Lake, near the start of Berry Creek Nature Trail. Local chefs, Three Amigos, will smoke briskets and other meats on location and serve with all the trimmings. BYOB. Music by the Teresa Garner Band. Try dancing under the stars, or just relax and enjoy the music after supper. Welcome: **Jim Rodgers**, Parks and Rec Director, Williamson County.

Saturday, October 20

Continental breakfast in Sun City ballroom. More great speakers and presentations in the morning and afternoon. Luncheon (salad & sandwich bar) and evening Awards Banquet will also be served in the ballroom. Break-out speaker sessions will accommodate a variety of interests and allow for greater participation.

Sunday, October 21

Field trips, including native plant landscaping home tours.



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NPSOT-NPAT 2007 Joint Symposium

Spirit of the Prairie Photo Contest

Purpose

To share the beauty of native Texas prairie plants, flowers, grasses, animals, and landscapes and have some friendly competition.

Categories

1. Prairie plants (includes forbs and grasses as individual photos or small groupings)
2. Prairie landscapes
3. Prairie critters (includes birds, butterflies, bunnies, snakes)

Rules

1. Open to anyone wishing to enter the contest.
2. Limit of 1 photo per person per category.
3. Black and white or color photos need to be unedited. (No digital enhancements or touchups allowed.)
4. Size: up to 8 x 10 matted or unmatted. (A number of 8 x 10 and smaller stand alone lucite frames belonging to the NPSOT will be available to be used for display purposes.) Even though some frames will be available, you are encouraged to bring your photos ready for display in a stand alone lucite frame or support. Please label with your name on back. If we run out of available stand alone frames, photos will displayed placed flat on table.
5. Photo must include printed, legible name of person on back.
6. On 3 x 5 white or colored post card, information needs to include date taken, location photo was taken, botanical/common name if possible and description for the education of all. This card will be placed in front of photo. (Only the photo will be judged - not the description, matting, etc.)
7. Photos need to be brought to symposium and picked up before you leave.
8. For judging purposes, photos need to be turned in by 9:00 a.m., Saturday, October 20
9. Judge(s) discretion of whether photo meets intent of photography contest.
10. HAVE FUN PHOTOGRAPHING!

Prizes

Ribbons for First, Second, and Third Places plus the most coveted of all - PEOPLE'S CHOICE.

Notes

- Any buying or selling of photos is strictly between individuals. A note may be included on card stating whether or not photo is for sale, price, contact person, etc.



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[Click here for directions using Google Maps.](#)

Georgetown is 35 miles north of Austin on I-35. Sun City is 5 miles west of I-35, just off Williams Drive.

From the north on I-35, use Exit 262 (RM 2338/Williams Drive). From the south on I-35, use Exit 261A (RM 2338/Williams Drive). The first stoplight is RM 2338/Williams Drive.

If you are arriving on **Friday morning**, go to Sun City. Drive northwest on Williams Dr. for 5 miles. Turn right on Del Webb Blvd. for 1.6 miles to Texas Drive. Turn right. Signage reads "Village Center". Look for Recreation-Social-Fitness on the left. Registration is in the Social Center.

If you are arriving on **Thursday afternoon**, go to Booty's Park. Drive northwest on Williams Dr. for 1.3 miles. Turn left on Booty's Rd./Lakeway Dr. (at the Walgreen's store). Turn left and drive 1.6 miles to the entrance (on your left) to Booty's Park and Hiking Trail. If you get to the dam you went too far: turn around and look to your right for park entrance.



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- [More information](#)

Motels with Special Rates

We have NPSOT "special" blocked room rates at four motels up until Monday, October 1. After that date, the rates will revert to "regular season" rates. All four of these motels are either "on" or 1/2 block "off" I-35. A comparison chart of these four motels is [available here](#).

Comfort Suites

11 Waters Edge Circle, Georgetown, 78628 512-863-7544

Plus features—The newest and best in Georgetown. All rooms include a sofa (with pull down sofa-bed). Next to Chili's and Appleby's. 1/2 block from Luby's. Just off San Gabriel River Walk.

Quality Inn

1005 Leander Road, Georgetown, 78628 512-863-7504

Plus features—Previously a Comfort Inn. Completely refurbished several years ago with all new furnishings.

Holiday Inn Express

600 San Gabriel Village Dr., Georgetown, 78626 512-868-8555

Plus features—Relatively new. Next to Luby's; 1/2 block from Chili's and Appleby's. Just off San Gabriel River Walk.

La Quinta

333 North I-35, Georgetown, 78628 512-869-2541

Plus features—Remodeled twice in last 25 years.

Other Motels

There are 2 additional motels available:

Historic San Gabriel Motor Courts

103 North Austin Ave., Georgetown, 78626 512-819-9374

Plus features—Historic tourist court built in 1930's; each room has been restored to either an early Texas or Sante Fe style. Park-like ambience located between North and South San Gabriel Rivers. Easy to explore river, or enjoy abundant wildlife on property. Regular rates range between \$60 and \$120.

Days Inn

209 North I-35, Georgetown, 78628 512-863-5572

Plus features—This 30+ year motel has had several refurbishings. Old style "larger" rooms. Regular rates range between \$49 and \$70, with Fri. and Sat. nights slightly higher.

Bed and Breakfast

There is a very nice Bed and Breakfast located across the street from Southwestern University. Visit <http://www.sangabrielhouse.com/>. If interested, reserve room immediately as the location becomes fully booked early in the spring.

San Gabriel House Bed and Breakfast

1008 East University Ave., Georgetown 512-930-0070

Approx 9.9 miles from Sun City via Hwy. 29 and D.B. Woods Rd.

Campgrounds and RV Parks

Lake Georgetown

For the more serious angler or water enthusiast, this 1200 acre U.S. Army Corps of Engineers lake is located off Williams Drive/Andice Rd and offers boating, skiing, fishing, four separate camping areas, a wildlife preserve and 16 miles of hiking trails. Cedar Brooks Park and Jim Hogg Park have boat ramps and camping facilities with RV hook-ups and restrooms with showers. Russell Park has both a camping and swimming area in addition to a boat ramp and restrooms with showers. Tejas Park offers primitive camping and picnic areas. Fishing is some of the best in the region, with small and largemouth bass, white bass, flathead and channel cat.

On-line Reservations <http://www.reserveusa.com/> or call 512.930.5253 for more information.

Berry Springs County Park

Simple campground on CR152. tents only. beautiful setting. the old John Berry Estate, recently opened as a county park with huge pecan grove, walking trails and restrooms.

New Life RV Park

Located in historic Georgetown. 2 miles off I-35. Peaceful country setting, close to Sun City, Lake Georgetown and San Gabriel Park/River. Landscaped sites include 2 car concrete parking & patio, low level lighting, 20/30/50 amps and sewer. Showers, Rec. Hall, Pool, Horseshoes and Washers. Daily, Weekly or Monthly. On CR152 (near Berry Springs Park) (512) 931-2073 E-mail: newlifervpark@wmconnect.com or go to <http://www.newlifervpark.com/>

Live Oak at Berry Creek RV Park

2800 North I-35 Georgetown, 512-863-3829 or 512-864-2724

Approximately 6.5 miles from Sun City via Hwy. 195. Approximately 11.7 miles from Sun City via RM 2338/Williams Drive. From the intersection of I-35 and Williams Drive, go north on I-35 to Exit 265 (Toll 130 South to Austin). Stay on Access Road headed north. As you pass under Toll 130 continue 3.6 miles to Market St. Turn right. RV park is .2 miles on the left.

San Gabriel River RV Camp Resort

40005 Heritage Hollow, Georgetown 512-868-1401

Approximately 10.2 miles from Sun City via RM 2338/Williams Drive.

From the intersection of I-35 and Williams Drive, go northeast on Hwy. 971 about 3.2 miles (past NE Inner Loop, Toll Road 130, Settlers Road) to Heritage Hollow. Turn right.

Sunshine RV Park

CR 269, Leander, TX 512-259-7200

Approximately 15 miles from Sun City. From I-35, go west on 2243 to Hwy. 183. Turn right. Located just north of Chandler Rd.

More Information

See the [Lodging information on the VisitGeorgetown.com website](#) for more information.





NPSOT-NPAT 2007 Joint Symposium

Sponsorships

Thank you for your interest in the NPSOT-NPAT 2007 Joint Symposium in Georgetown (Sun City), Texas, October 18-21. Both NPSOT and NPAT are non-profit state-wide organizations. The NPSOT and NPAT websites are <http://www.npsot.org/> and <http://www.texasprairie.org/> if you would like more information.

Comprised of 30 chapters, the Native Plant Society of Texas (NPSOT) is the ONLY organization that gives you direct access to two thousand active members of native plant societies from all over the state. We offer educational programs, field trips, demonstration gardens, community outreach and other activities to both members and the general public.

The Native Prairies Association of Texas (NPAT) is a non-profit membership organization and land trust dedicated to the conservation, restoration, and appreciation of native prairies in Texas. NPAT sponsors similar activities in addition to actively working to preserve and restore native prairies.

Many symposium attendees hold positions of leadership. You will have direct personal exposure to an estimated statewide audience of 500 professionals and non-professionals interested in native plant gardening, community outreach and conservation issues. Speakers for this event are very strong academically and are geared for the diversity and interests of NPSOT and NPAT members. Non-members are welcome to register also.

The speakers will begin Friday October 19 and continue until 6:00 p.m. Saturday October 20 with breaks for field trips on Friday afternoon. During this time, the auditorium will be set up so that all guests must walk by your table each time they enter or exit.

A \$1000 sponsorship of the symposium will provide promotional exposure throughout the year and special recognition during the symposium and Awards Banquet. Statewide the entire membership of both organizations will be repeatedly reminded up to the date of this event.

A \$600 sponsorship of the Friday night catered dinner will also allow direct contact with the audience at the large outdoor pavilion.

A \$400 sponsorship of Friday's box lunch will provide a 5-minute speaking presentation to all those in attendance.

A \$350 sponsorship of the Thursday night's social event at Booty's Park shelter on the San Gabriel River Trail and at City Lights will provide maximum direct contact with those who attend, in a cozy and friendly environment.

Please contact us at symposium2007@npsot.org regarding this great opportunity to promote your company or organization.



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To contact us:

Email: symposium2007@npsot.org

Phone: 830-997-9272

Mail: NPSOT, P.O. Box 3017, Fredericksburg, TX 78624



NPSOT-NPAT 2007 Joint Symposium

Vendors

Areas 10 feet square inside the convention hall will lease for \$150 and be furnished with table and chairs.

A more economical arrangement is an unmanned 3-square-foot table for brochures or handouts, leasing for \$75 in the same 10-square-foot space.

Please contact us at symposium2007@npsot.org regarding this great opportunity to promote your products and services. We will be glad to send you an application form which you can return by mail with your check. If you have any questions please call 830-997-9272.

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