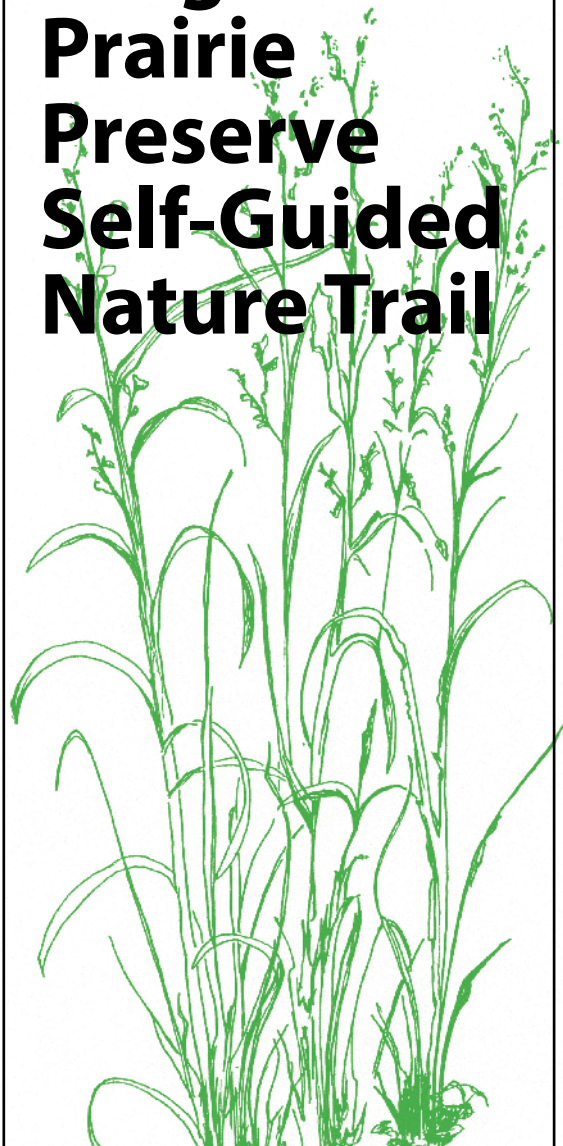


Joseph H. Williams

Tallgrass Prairie Preserve Self-Guided Nature Trail



The Nature
Conservancy



Protecting nature. Preserving life.

The Nature Trail

The nature trail consists of three interconnected loops which pass through all of the major habitat types found on the preserve. The trail is mowed and graveled, with benches and boulders scattered along the route to serve as resting spots for hikers. It is a self-guided trail with numbered markers that coincide with information in this trail brochure. Take your time – smell the fresh air, listen and watch for wildlife, feel the life around you.

Bottomland Trail

This short trail is only about half a mile long and is an easy hike. It loops around the Sand Creek bottomland, staying on level terrain.

Study trail

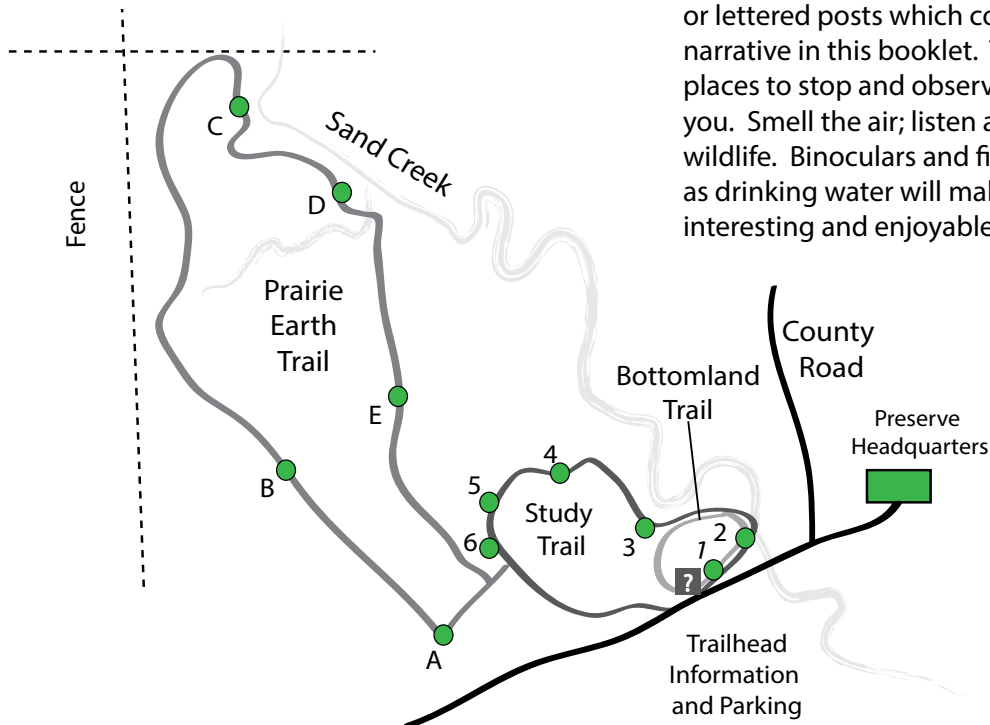
The second loop is approximately 1 mile long and is a fairly easy hike. It can be walked in about one hour at a leisurely pace with stops along the way. However, there are some loose rocks and uneven ground so appropriate footwear is necessary. Some spots may be muddy during wet weather

Prairie Earth trail

This loop is approximately 2 miles long and covers rough terrain with steep hills. This loop is recommended for those who want a vigorous hike and seclusion; allow at least 1 1/2 to 2 hours. Muddy spots are present on this trail during wet weather.

Numbered stops

Along both trails you will find numbered or lettered posts which coincide with the narrative in this booklet. These are good places to stop and observe nature around you. Smell the air; listen and watch for wildlife. Binoculars and field guides as well as drinking water will make the trail more interesting and enjoyable.



The Bottomland Trail

1. Loamy Bottomland

This relatively flat, bottomland area has very deep, rich soil. Over thousands of years, sediments from the flooding and meandering stream in the valley have been deposited on this bench. Loamy bottomlands such as this are some of the most productive sites on the prairie, and are often plowed for farm land. Big bluestem (*Andropogon gerardii*) has grown over 9 feet tall in this area during summers with good rainfall. From here the trail winds down to Sand Creek. The bank is steep so stay back from the edge. There is also a lot of poison ivy in this area so stay on the mowed trail.



2. Sand Creek

Sand Creek is the major stream on the preserve. It winds from the northwest corner to the southeast corner of the preserve. If you look closely you may see largemouth bass, spotted bass, green sunfish or possibly a longnose gar cruising the creek. Several species of turtles are commonly seen in the creek. These include Mississippi map turtles with a knobby ridge down their shell and bright yellow markings on their head and legs, and the leathery shelled spiny softshell turtle.

The timid red eared turtle is commonly seen basking on the bank, a log, or on the surface of the water. The existence of this perennial stream greatly adds to the overall diversity on the preserve.



3. The Study Trail

The strip of forest which grows along prairie streams is sometimes called a gallery forest. This is a band of woody vegetation which is made possible, here in the midst of prairie, by the permanent source of water provided by Sand Creek. Along much of Sand Creek the gallery forest supports many large trees as well as a thick understory. Canopy species which dominate include bur oak (*Quercus macrocarpa*), Shumard oak (*Q. shumardii*), Chinquapin oak (*Q. muehlenbergii*), American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), and hackberry (*Celtis* sp.). Understory plants include roughleaf dogwood (*Cornus drummondii*), and redbud (*Cercis canadensis*), the state tree of Oklahoma which puts on its show of bright pink blooms in early spring, but can be recognized at other times by its dark green heart-shaped leaves. Also found on the forest floor are blackberry (*Rubus* sp.), leafy elephant-foot (*elephantopus carolinianus*), wild grape (*Vitis* sp.), and Virginia creeper (*Parthenocissus quinquefolia*).



The gallery forest supports many species of wildlife. Watch for reptiles such as three-toed box turtles and five-line skinks crossing the trail. Many songbirds can be seen and heard here especially early in the morning. Commonly seen birds include indigo and painted buntings, tufted titmouse, Carolina chickadee, eastern wood peewee, downy woodpecker, yellow warbler and blue grosbeak. You might even see a Coopers hawk or sharpshinned hawk hunting songbirds among the trees.

4. Crosstimbers

You are now in an upland forest, commonly called “crosstimbers”, that is dominated by post oak (*Quercus stellata*) and blackjack oak (*Q. marilandica*). These trees naturally occur on rocky hillsides and in areas with sandy soils derived from underlying sandstone. In these types of soils the trees can become established and compete successfully with the grasses. The frequency and intensity of fire is what largely determines if a crosstimbers site will be a savannah with a few trees in prairie, or a closed canopy forest. The term “crosstimbers” was first coined by pioneers traveling west that had to cross this timbered belt of upland forest that runs from central Texas, through much of central Oklahoma, and up into southeastern Kansas.



5. Bison and Fire

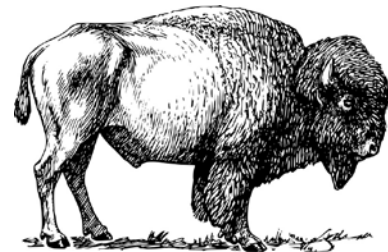
The ecological goal of the Tallgrass Prairie Preserve is the preservation of the natural communities and species native to this area. Restoration of a functioning tallgrass ecosystem is the only way to achieve this goal. A functioning ecosystem is one that is still driven and controlled by the primary forces of nature that acted upon it in presettlement times. Two ingredients are essential to restoring the tallgrass prairie ecosystem: grazing and fire. They are the primary natural forces, along with climate, that shaped and sustained the Great Plains of North America. The interaction between these forces was also critical.

Historically, fires set by Native Americans and lightning strikes probably burned the prairie

every few years. Bison and other grazers were strongly attracted to the lush green regrowth of the prairie following a fire. Concentrated bison grazing on this regrowth would have reduced fuel loads, making the grazed areas less likely to burn—even allowing them to function as firebreaks.

In contrast, unburned areas would have been ungrazed or lightly grazed, thereby increasing fuel loads and the probability of burning. When those areas eventually burned, their lush regrowth would attract bison, and the cycle would be repeated. Thus, a constant interaction between bison and fire influenced where and when grazing and burning occurred. The result was a complex ecosystem in which an evershifting prairie mosaic supported a rich diversity of flora and fauna.

To replicate these natural conditions, The Nature Conservancy uses controlled or prescribed burning, and has reintroduced American bison to the Tallgrass Prairie Preserve, supporting a herd of over 2,000 animals. Because bison influence which areas are burned, the location of fire units is constantly changing. A randomly shifting “quilt” of fire units is used, selected according to fuel load, resulting in some prairie patches being burned more frequently and others less frequently. The resulting diversity of patches provides habitat for the widest possible variety of native plants and animals.



6. Prairie Birds and Grasses

This is a good spot to stop and listen for grassland dwelling birds. Look and listen for dickcissels with their characteristic “dick-dick cissel-cissel” call. Also listen for grasshopper sparrows whose call consists of two chips followed by a brief, grasshopper-like buzz. You may also see lark sparrows, upland sandpipers and greater prairie chickens. You are more likely, however, to see a “chicken” while driving through the preserve. High overhead, turkey vultures and red-tailed hawks are commonly seen.

The largest component of a grassland, as the name implies, is grasses. On the tallgrass prairie there are four dominant grass species. These include big bluestem, also called turkeyfoot for the resemblance of its seed head to a bird’s foot, little bluestem (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). These are all warm season grasses; they begin growth in the spring, but do not reach full growth and seed production until the warm days of late summer and early fall. The earliest to bloom is switchgrass which begins to head out in early July.



All of these species are relatively tall when mature, thus giving this region its name of “tallgrass prairie”. Big bluestem is the largest of the “big four” commonly reaching heights of over six feet on upland sites. All of the “big four” grasses are excellent food for grazing animals. They are the reason the prairie once

supported millions of bison, as well as the reason cattle ranching has been so prosperous in this area.

At this point the Prairie Earth Trail forks off to the west. This 2 mile loop offers seclusion and some very good views of high quality prairie and woodlands. If you choose to take the Prairie Earth Trail, remember that it covers rough terrain with loose rock and steep inclines. Please allow plenty of time to get back before dusk.

The Prairie Earth Trail

A. Bison Wallows

The depressions you see here are called bison wallows. They were formed before the native bison were extirpated from the prairie. Bison create these depressions when they roll in the mud or dust to fight off insects and to help shed their heavy winter fur coats. They carry off mud and send dust blowing in the wind leaving a depression. The soil is packed down by the heavy weight of the animals. This disturbance creates the noticeably different plant composition of the wallows compared to the surrounding prairie.

These depressions are important to the tallgrass prairie ecosystem in several ways. In the spring, frogs, toads, and salamanders use the short-lasting pools of water as nurseries for their young. In spring you may hear American toads, western chorus frogs, or the nasal bleat of a great plains narrowmouth toad. The wallows also greatly add to the plant diversity of the prairie by providing habitat for sedges (*Carex* sp.) and rushes (*Juncus* sp.) which grow directly in the water.

Bison were the premier large grazer of presettlement North America, estimated to have numbered from 30 to 60 million. These animals traveled in large herds and were very gregarious. However, old bulls were sometimes solitary. "Bison" is the correct term for this animal, the scientific name being *Bison bison*. The word "buffalo" is more properly used in reference to several other ungulate species found in Asia, Africa and Australia.

B. Prairie Vista

This is a good spot to sit down and soak in the view. From this point you can get a good view of the wide open prairie to the west, and the gallery forest along Sand Creek to the east. The bison pasture is visible to the west. Imagine how the vastness of the landscape has influenced people through the years, helping form the spirit of the American west.



Some spring blooming plants of interest in this area include the bright red or orange butterfly milkweed (*Asclepias tuberosa*), black samson (*Echinacea pallida*) with its drooping purple petals, and purple and white prairie clovers (*Dalea* sp.). In late spring look for wild hyacinth (*Camassia scilloides*), with its rounded inflorescence of bright purple flowers. In August and September look for tall gayfeather (*Liatris aspera*) with its spike of bright purple flowers. These are just a few of the wildflowers which can be seen here.

If you look far to the west you will see some oil and natural gas wells. These are some of the 200 wells producing on the preserve. Oil and gas production has been a very important part of the history of Osage County. First discovered in the early 1900s, huge oil fields were developed, like the Burbank field west of Pawhuska. Many men including James Chapman, of the Chapman-Barnard Ranch, made their fortunes in the Osage oil fields. The mineral rights of Osage County are entirely owned by the Osage Indian Nation, and it has been a tremendous financial asset to the Osage people over the years.

C. Area Geology

Above you is an impressive outcropping of bedrock above Sand Creek. The Tallgrass Prairie Preserve lies over alternating layers of sandstone, shale and limestone. These rocks were formed between two hundred million and three hundred million years ago during the Pennsylvanian and Permian periods of geological time. These rocks were formed from sediment deposited in shallow seas which covered this area during that time. The geological formations found here are named the Osage cuestas and the Flint Hills. The preserve lies near the boundary of these two formations. The Flint Hills lie more to the west and differ from the Osage cuestas in being older and containing bands of flint within the limestone. Both of these formations contain abundant oil and gas reserves at a fairly shallow depth. This has allowed the petroleum industry to flourish in Osage County.



D. Indian History

This stretch of the trail parallels the Sand Creek valley. The bottomlands along Sand Creek were a favorite camping area for Native American tribes which inhabited this area. Sand Creek provided a permanent water supply as well as abundant game. Native American use of this region has changed through time, shifting from the Caddo and Wichita to the Osage. Archaeological discoveries of Caddo tools have been dated to 800-1000 B.C. The Osage Indians were permanently relocated from Kansas to Osage County in 1872. They farmed some of the bottomlands and hunted bison and prairie chickens. Eventually, as oil, gas and ranching industries developed in the area, the surface ownership shifted from small plots owned by the Osage to large ranches, some larger than 100,000 acres.



Ahead on the trail a steel foot bridge will take you across a spring-fed tributary of Sand Creek. Make sure you maintain a good grip on the handrail as you cross the bridge. Children should be especially careful.

E. Chapman-Barnard Ranch

Off to the east you can see the historic headquarters of the Chapman-Barnard Ranch. The main headquarters building, also called the Bunkhouse, was built in 1919-1920. It served as the operating center of the ranch which once covered 125,000 acres. At one time, as many as forty cowboys worked this ranch on horseback. Cattle were brought in from other areas to be fattened on the lush tallgrass species and then shipped to market. Horace Barnard and James Chapman were excellent managers of the land. The land was not overgrazed, and this ranch became a model of good stewardship.



Today, Osage County remains one of the most important areas of cattle production in the world. Well-managed cattle ranches surround the Tallgrass Prairie Preserve. The Nature Conservancy is proud to add the Tallgrass Prairie Preserve to the already rich history and traditions of Osage County.

This is the last stop along the Prairie Earth Trail. From here, the trail rejoins the beginning of this loop. From there, backtrack to rejoin the Study Trail and follow it to the parking area.

We hope you have enjoyed the Tallgrass Prairie Preserve nature trail and hope this information has made your hike more interesting and enjoyable. If you do not wish to keep this guidebook, please leave it at the parking area information station so that someone else can use it. Thank you.

About The Nature Conservancy

The Nature Conservancy is a private, nonprofit, conservation organization. The mission of the Conservancy is to conserve the lands and waters on which all life depends. The Nature Conservancy is science-based and takes a non-confrontational, collaborative approach to conservation. The Nature Conservancy works in all 50 United States and 69 countries. The Nature Conservancy has over 1 million members and supporters, and owns and manages more than 1,400 preserves – the largest private system of nature sanctuaries in the world. Contributions are tax-deductible.

The Tallgrass Prairie Preserve

In the fall of 1989, The Nature Conservancy purchased the 29,000 acre Barnard Ranch. This project, with a total fundraising goal of \$15,000,000 was one of the most ambitious projects ever undertaken by The Nature Conservancy. The goal of the Tallgrass Prairie Preserve is to preserve the native biodiversity by recreating a functioning tallgrass prairie ecosystem. The Nature Conservancy plans to seize this last chance to save this grand ecosystem so characteristic of North America's natural landscape.

For additional information, please visit the preserve headquarters. For a scenic overview, drive the county road system that passes through the heart of the preserve and the bison pasture.

Tallgrass Prairie Preserve

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Preserve Regulations

For your safety and enjoyment, and to protect the sensitive ecology of the area, please note:

- **WARNING:** Bison and cattle are dangerous and unpredictable. For your personal safety do not approach these animals. Stay in your vehicle and view them from afar.
- **HAZARDS:** The tall grasses often conceal hazards such as venomous snakes, biting or stinging insects, ticks, poison ivy, rocks and holes. For these reasons, please confine your hiking to the established nature trail where these hazards will be more obvious. Exercise caution and dress appropriately.
- Respect the land. Do not remove any natural features or artifacts, including plants, animals, rocks, fossils, and arrowheads.
- Hiking only. No bicycles, motorcycles or other vehicles allowed on the trail.
- Do not feed or disturb any wildlife.
- Be alert for rattlesnakes. They are found on the preserve, but are uncommon.
- NO SMOKING outside of vehicles due to danger of wildfires.
- No dogs, horses or other domestic animals are allowed.
- Please do not litter. Pack out all trash.
- The preserve is open dawn to dusk only.
- No hunting, camping or fishing on the preserve. Visit the preserve headquarters for information on area camping sites and other area attractions.
- Restrooms are available at the preserve headquarters; picnicking allowed nearby.
- No flying of drones (unmanned aircraft) without prior written permission.