

The Grand Prairie of Arkansas

Past Present Future



Arkansas Natural Heritage Commission
U.S. Fish and Wildlife Service
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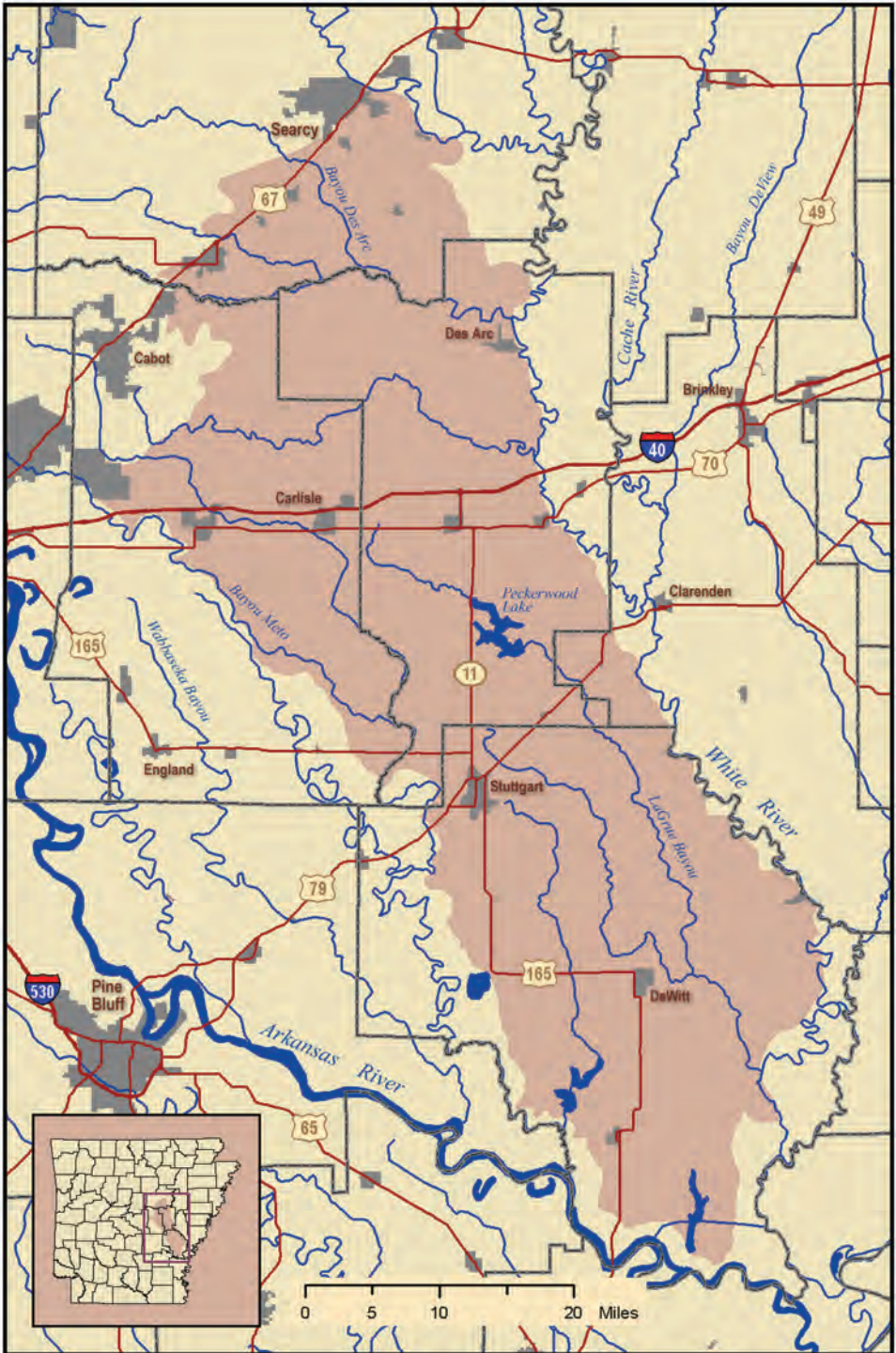
THE GRAND PRAIRIE OF ARKANSAS

Located in the Mississippi River Delta of eastern Arkansas is an area known as the Grand Prairie. Prior to settlement, the Grand Prairie ecosystem covered approximately 900,000 acres, with 400,000 acres consisting of tallgrass prairie dominated by grasses and flowers rather than trees. The Grand Prairie is an unusual feature within the Mississippi River Delta as prairies are considered to be more typical of dry climates. The Grand Prairie, by contrast, is abundantly watered, receiving an average of just over 50 inches of rainfall per year.

In the Delta, trees are typically the dominant vegetation; however, conditions are different on the Grand Prairie. The soils of the Grand Prairie do not allow rainwater to penetrate far and do not provide much water to plants. As a result, woody plants, which require greater amounts of water, do not grow as well here, giving grasses, which require less water by comparison, a bit of an edge. Periodic fires also played an important historic role on the Grand Prairie, further limiting the invasion of trees onto the prairie.

Although prairies flourished within the Grand Prairie for thousands of years, very few remain today. As land was cleared for rice production in the early 20th century, much of the original Grand Prairie landscape was lost. Tallgrass prairies and a variety of other natural communities are now very rare and limited to small fragments. Even though much has been lost, the potential exists for large areas of prairie to be restored to some locations across the region. By reading this booklet, it is hoped that you will come away with a better understanding of what the Grand Prairie was, is, and could be again.

WHERE IS THE GRAND PRAIRIE?



Map Courtesy of Jim Besley (USFWS)

WHY GRASSES INSTEAD OF TREES?

A partial answer to this question lies in the thick mantle of clay underlying the surface of the Grand Prairie. Often referred to as a “hardpan”, it is more properly called an impervious subsoil. This type of soil does not allow rainwater to penetrate very deeply and tends to become extremely dry during the summer months. As a result of these growing conditions, certain plants tended to fare better than others. On the Grand Prairie, grasses dominated certain areas because they were much more efficient than trees at using what little water was available during dry periods.

Further augmenting the dominance of grasses on the Grand Prairie were periodic fires. Prairie grasses, like trees, are perennials and are typified by relatively long life spans. Unlike trees, however, grasses die back to the ground each winter leaving only their brown leaves and seed heads as reminders of their life over the previous summer. The grass plant itself is still alive, lying dormant just below the surface of the ground. When a fire raged through the prairie, the grasses themselves suffered little damage, but woody plants might be severely damaged or even killed. Timing of fires played an important role in shaping the type of prairie vegetation present. Fires during the fall tend to favor many spring wildflowers, whereas spring burns created conditions more conducive to grasses.



Switchgrass is one of the characteristic grasses of the Grand Prairie
(ANHC)



Fall burn on the Grand Prairie
(ANHC)

WHAT DID THE GRAND PRAIRIE LOOK LIKE BEFORE SETTLERS ARRIVED?

Knowledge of what the Grand Prairie looked like during the early to mid-1800s, as Arkansas moved from a territory to statehood, is extremely limited as few records and maps exist from that time. Some of the best information comes from early land and soil surveys, and the diaries of early settlers and explorers. Based upon such resources, an image of the Grand Prairie during this time period can be pieced together. It is thought that by the time European settlers were arriving, the Grand Prairie consisted of about two-thirds forests and woodlands, and about one-third grasslands. So, in essence, the Grand Prairie was more than just “prairie” in the early part of the 19th century. What actually greeted settlers to the region was a diverse and varied landscape composed of prairie, wetlands, and a mix of forest and woodland types.

I. Prairie Grasslands

Presettlement area: 400,000 acres

Current area remaining: 430 acres

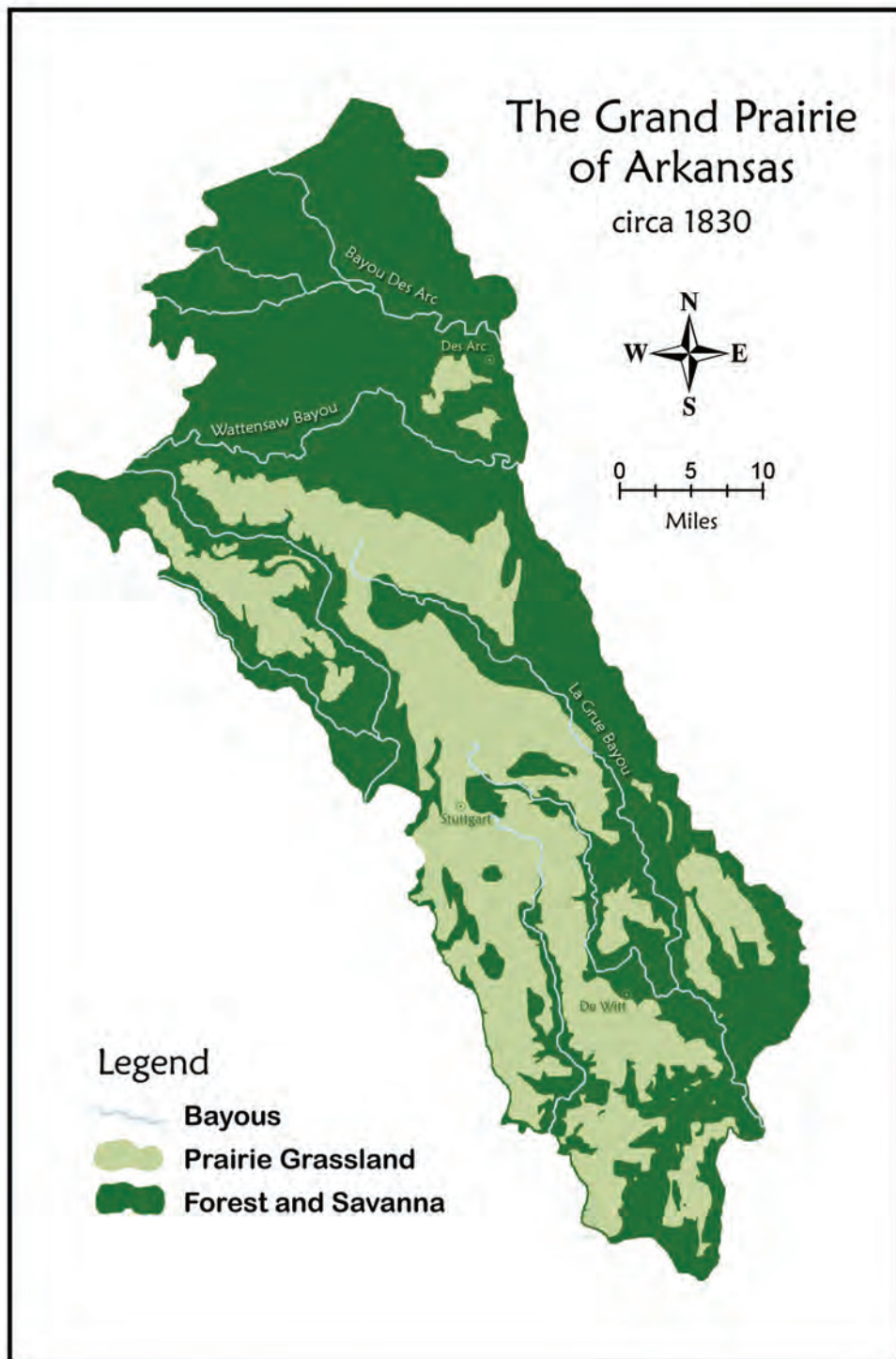
Overall, the prairies of the Grand Prairie were similar to those found in the Great Plains. Like the tallgrass prairies of neighboring Oklahoma and Missouri, the prairies of the Grand Prairie are dominated by four native grass species. The “Big Four” include big bluestem, little bluestem, Indiangrass, and switchgrass. Grasses such as prairie cordgrass and eastern gamma grass could be found in wetter areas. Although similar to the Great Plains, the prairies here were likely an extension of southern coastal prairies. These southern prairies extended to the northwestern edge of the Gulf Coast and were interspersed with forests in the Delta.



Down's Prairie
(ANHC)

The two largest areas of prairie in the Grand Prairie lay on each side of LaGrue Bayou. Another large area of prairie was located just west of Bayou Two Prairie. Several isolated patches were also present south of Carlisle, northeast of Dewitt, and areas towards the southern tip of the Grand Prairie. It is estimated that in the mid-1800's, the largest block of prairie was nearly 150,000 acres.

GRAND PRAIRIE NATURAL COMMUNITIES PRIOR TO SETTLEMENT



Map Courtesy of Tom Foti (ANHC) and Jim Besley (USFWS)

II. Bottomland and Terrace Hardwood Forests

Presettlement area: 438,000 acres

Current area remaining: 200,000 acres

Bottomland hardwood forests comprise a group of forest types present in or near floodplains of rivers and streams. Prior to European settlement, bottomland hardwood forests covered about 358,000 acres and occurred along all drainages and floodplains of the Grand Prairie. The bottomland hardwood forests of the Grand Prairie represented the invading outer edge of bottomland forests found throughout the Mississippi River Delta.



Bottomland hardwood forest
(ANHC)

Terrace hardwood forests occupied a small portion (80,000 acres) of the Grand Prairie and can be considered a combination of both bottomland hardwood and upland hardwood forests. Tree species associated with both forest types occurred in these areas, however, terrace forests differed hydrologically from bottomland hardwood forests. Bottomland forests were subject to frequent flooding while terrace forests were not. Fires from the adjacent prairies may have thinned some of these terrace forests to woodlands with a more open canopy and abundant grasses and flowers at ground level.



Terrace hardwood forest
(ANHC)

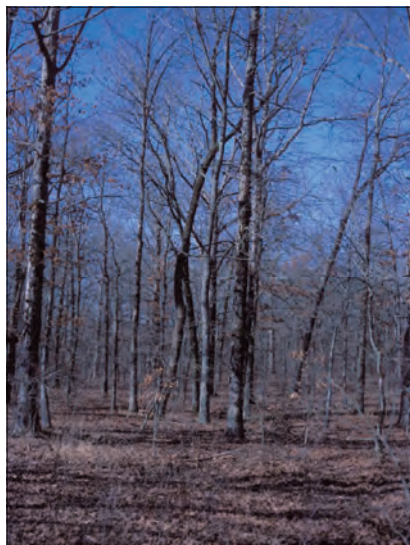
In addition, bottomland hardwood forests were generally connected to one another along floodplains, while terrace hardwoods tended to be isolated from one another. These forests occurred in flats or depressions near bottomland hardwood forests and were often viewed by settlers as "islands" of forest in an otherwise continuous prairie. The city of Stuttgart is located in just such a "forest island."

III. Upland Hardwood Forests

Presettlement area: 90,000 acres

Current area remaining: 40,000 acres

Most upland hardwood forests in the mid-1800s occurred along the hills and bluffs of the northern and eastern edges of the Grand Prairie. In contrast to the bottomland forests, these upland hardwood forests were not prone to flooding and remained relatively dry. As with the terrace forests, fires encroaching from the prairies opened some of these forests to woodlands. Most upland hardwood forests of the Grand Prairie were connected to other upland forests along the White River and its tributaries northward and to adjacent upland forests of the Ozark and Ouachita Mountains.



Upland forest
(ANHC)

IV. Savanna

Presettlement area: 30,000 acres

Current area remaining: 700 acres

Prior to settlement, the edges of prairie terraces in the Grand Prairie contained some “savanna” habitats. By definition, savanna habitats contain at least 50 percent open grassland. Patches of savanna in the Grand Prairie contained varying amounts of grass versus trees, depending upon soils, drainage, and elevation. Savannas were present in broken bands around the prairie and represented the zone of active competition between forest and prairie. The expansion of trees into the prairie was kept in check by drought, fire, and herbivores, as well as soil composition and condition.



Savanna
(Jerry Farm)

V. Slash

Presettlement area: 16,000 acres

Current area remaining: 400 acres

Slash represented a transitional habitat from prairie to bottomland hardwood forest. Slash habitats are narrow, linear wooded areas that occur along the very upper ends of drainages that extend into the prairie. Slash was limited by fire and herbivores on the prairie end and by encroaching bottomland hardwood forests on the other. Slash was mostly confined to the upper reaches of drainages such as Clearpoint Hurricane and Oak creek, and LaGrue, Lost Island and King bayous.



Slash
(ANHC)

VI. Seasonal Herbaceous Wetlands

Presettlement area: 6,000 acres

Current area remaining: 300 acres

Seasonal herbaceous wetlands on the Grand Prairie had small watersheds and generally occupied small, isolated depressions. Most of these wetlands were no bigger than 10 acres. Areas that had slightly rolling topography, such as areas northwest of Stuttgart, may have contained large numbers of these wetlands.



Seasonal herbaceous wetland
(ANHC)

LIFE ON THE GRAND PRAIRIE: PLANTS

By definition, prairie is a type of habitat dominated by herbaceous plants, especially grasses. In addition to the dominant grasses, tallgrass prairies of the Grand Prairie hosted an exceptionally diverse array of wildflowers including compass plant, prairie gayfeather, blazing star, American aloe, black-eyed susan, prairie evening primrose, Indian paintbrush, and Oklahoma grass-pink, among many others. Some woody plants were present on the prairie, primarily sumac and sassafras.



Blazing star
(John Pelton)

Unlike prairie, bottomland hardwood forests of the Grand Prairie were dominated by woody plant species. Since these forests were subject to frequent flooding, tree species with varying tolerances to inundation were common and included overcup oak, Nuttall's oak, sweetgum, sugarberry, red maple, water oak, and swamp chestnut oak. Thick stands of giant cane, a type of native bamboo, could be found growing along ridges and terraces in some of these forests.



Flooded bottomland hardwood forest
(ANHC)

Dominant tree species in the drier, upland hardwood forests of the Grand Prairie included white oak, mockernut hickory, Shumard oak, southern red oak, black oak, post oak, and flowering dogwood. Deciduous holly, winged elm, and farkleberry contributed to the understory component of these forests. Just as on the prairie, fire likely played an important role in shaping the vegetation of upland hardwood forests.



White oak
(Paul Wray)

LIFE ON THE GRAND PRAIRIE: PLANTS

Savannas of the Grand Prairie were the transitional zone between upland hardwood forests and tallgrass prairie. Savannas were characterized by widely spaced trees, usually oaks, with prairie vegetation growing beneath them. Both savannas and prairies were partially maintained by periodic fires. As a result, trees found in savannas included fire-tolerant species such as post and black oak. Narrow-leaved sunflower, pale purple coneflower, and wooly ragwort are just a few of the prairie wildflowers that were also residents of Grand Prairie savannas.



Post oak
(Paul Wray)

In terms of characteristic vegetation, slash habitats represented the transition between bottomland hardwood forests and tallgrass prairie. Plant communities in slash were often quite diverse and generally included pioneer species that could tolerate severe conditions. Dominant tree species included sugarberry, green hawthorn, stiff dogwood, deciduous holly, and American elm. Herbaceous perennials included calico aster, Virginia dayflower, and bluestar. Sedges were common in wet areas within slash, including opaque prairie sedge, a species known only from the Grand Prairie.



Opaque prairie sedge
(ANHC)



Spider lily
(Tom Dunn)

Seasonal herbaceous wetlands could be found on prairie terraces. These areas were dominated by plant species that generally are adapted to seasonal cycles of wet and dry, such as sedges, rushes, cattail, buttonbush, spider lily, powdery thalia, prairie cordgrass, and eastern gama grass.

LIFE ON THE GRAND PRAIRIE: ANIMALS

Because of its smaller size and isolation from other prairie regions, the Grand Prairie probably did not historically support large numbers of resident grazing herbivores. Although elk and bison were present very early in its history, the primary large herbivore was the white-tailed deer, which moved between forest and prairie habitats.



White-tailed deer
(USFWS)



Prairie vole
(Ryan Rehmeier)

Small mammals, especially herbivorous rodents, were abundant. Those typical of grassland habitat included the plains pocket gopher, prairie vole, fulvous harvest mouse, and least shrew. These species, in turn, represented an important food base for predators such as hawks and long-tailed weasels.

Many birds used the Grand Prairie, and diversity was greater here than in the drier, northern prairies because of its wetter nature and interspersed with forest. Grassland birds included short-eared owls, northern harriers, greater prairie-chickens, horned larks, grasshopper sparrows, Smith's longspurs, eastern meadowlarks, and dickcissels. Some species more commonly associated with wetlands were present, such as the sedge wren and sora. Waterfowl could also be found on the prairies, generally in poorly drained low areas.



Eastern meadowlark
(USFWS)

LIFE ON THE GRAND PRAIRIE: ANIMALS

With their diverse vegetation, most North American prairies are characterized by an equally diverse insect fauna. Although little information exists regarding what insects originally occurred on the Grand Prairie, the fauna was likely a mix of midwestern and coastal species. Herbivorous insects, such as grasshoppers, were certainly abundant, feeding on grasses and other herbaceous perennials. The community of pollinators, from butterflies and bees, to flies, was probably quite species-rich as well. Along with pollination services, the insect fauna of the Grand Prairie provided an important food base for other species, especially the many breeding birds present during the summer months.



Monarch butterfly
(John Pelton)

In bottomland hardwood forests, frequently abundant water and diverse vegetation created conditions attractive to a number of species. Waterfowl, adapted to feeding on acorns, seeds, and tubers of woody plants, were present in these forests. Other birds included a variety of neotropical migrants such as the Mississippi kite, yellow-billed cuckoo, white-eyed vireo, and Kentucky warbler. Year-round residents included the barred owl and pileated woodpecker. The ivory-billed woodpecker was also once a resident of these bottomland hardwood forests.



Kentucky warbler
(USFWS)

Mammals in the bottomlands consisted of mostly arboreal species, or wetland-associated species, such as the red bat, silver-haired bat, swamp rabbit, marsh rice rat, southern flying squirrel, beaver, muskrat, and river otter. Large predators, such as the red wolf and cougar, could be found in these forests, though their populations were small and dependent upon seasonal prey in nearby habitats.



Red wolf
(USFWS)

LIFE ON THE GRAND PRAIRIE: ANIMALS

Animal communities in the savannas of the Grand Prairie included species found in both prairie and forest habitats, such as the northern flicker, northern rough-winged swallow, Lincoln's sparrow, least shrew, eastern chipmunk, and long-tailed weasel. Birds such as the eastern kingbird and scissor-tailed flycatcher would have taken advantage of the trees and shrubs in savanna habitats for nesting spots and foraged out into the prairie for insects to feed their developing young.



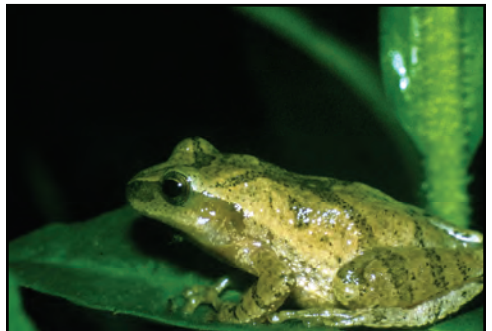
Least shrew
(Ryan Rehmeier)

Like savannas, slash habitat is used by species of both prairies and forests. Some birds, such as the willow flycatcher, were unique to slash habitats but their populations were small in accordance with the small, disjunct nature of slash. Breeding birds using the habitat included the yellow-billed cuckoo, common yellowthroat, and northern oriole. Mammals were those typical of forested areas such as the big brown bat, eastern fox squirrel, white-footed mouse, and woodland vole. Animal communities in upland forests were probably more diverse than in prairie or savanna habitats yet less so than in bottomland hardwood forests. White-tailed deer frequented these forests along with predators such as coyote, fox, and bobcat.



Common yellowthroat
(USFWS)

Vertebrate animals found in the seasonal herbaceous wetlands of the Grand Prairie relied on the correspondingly seasonal food resources, especially seeds and smaller aquatic animals such as insects and snails. Most bird species were migrants that were present in late-winter to spring, such as the American bittern, northern harrier, Lincoln's sparrow, king rail, and various species of waterfowl. Amphibians and reptiles were also abundant in, and around, these wetlands including spring peepers, smooth softshell turtles, and eastern hognose snakes.

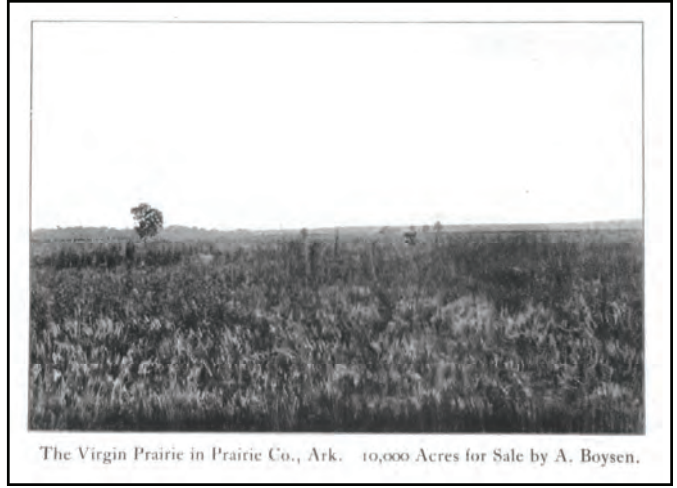


Spring peeper
(USFWS)

SETTLEMENT OF THE GRAND PRAIRIE

The Grand Prairie area was one of the earliest areas of Arkansas to be settled. The *Arkansas Gazette* reported in May 1830, that 1,500 immigrants had crossed the Mississippi River on the Memphis ferry since the spring, with most of them coming from Tennessee, Alabama, North Carolina, South Carolina, and Georgia. During this time, most prairie lands were not farmed due to the difficulty of growing most crops on the clay hardpan.

Small patches of forest were cleared and farmed near towns, but the total area of cleared agricultural land was relatively small. Up until the late 1800s, the major industries on prairie lands were grazing and haying. But even this “light” use was not without effect.



The Virgin Prairie in Prairie Co., Ark. 10,000 Acres for Sale by A. Boysen.

Virgin prairie, early 20th century
(AHC)

“The native grasses, from long pastureage and cutting, are beginning to fail, and it is believed that some of the tame grasses could be successfully substituted.”

J.E. Lapham, 1902

Then, toward the end of the 19th century, the Grand Prairie saw an influx of prairie farmers from Illinois, Missouri, Iowa, and Indiana. These farmers included many Czech and German peoples, and many of the prairie remnants left today are still owned by the same families. They brought with them a “prairie agriculture” based on oats, corn, and dairying, and began to plow the grassland.

“The climate is in all respects all that can be required, and the health among the settlers is better than anywhere in Illinois. I can thus cheerfully advise everybody to go down and examine this beautiful country, and in fact, I think that everyone that intends to buy a home owes it to himself to see this magnificent prairie before he purchases a home anywhere else.”

A. Boysen, 1908

RICE AND THE GRAND PRAIRIE

Around the turn of the century, experiments in rice production were also starting on the Grand Prairie. Prior to this, most prairie was not tilled because the hard clay subsoil made tillage difficult and crop production poor.

However, the same deep clay that made farming difficult, did provide a waterproof bottom for rice fields and allowed the fields to remain flooded throughout the growing season.

The first successful rice crop in the Grand Prairie was grown in 1904 near Lonoke. In 1905, some 450 acres had been planted in Lonoke County. By 1906, this figure jumped to nearly 4,500 acres. After rice production began on the Grand Prairie, more farmers moved to the area and extensive tilling of the prairie and small herbaceous wetlands occurred from around 1905 to 1920. By 1915, over 100,000 acres of rice were planted. Even as early as 1914 the impact of rice production on the original landscape was noted.

“Newspaper accounts had given me the impression that the whole area was about to be given over to that industry [rice production], with the consequent destruction of the native vegetation.”

R. Harper, 1914



Early 1900s rice processing
(MAGP)



Harvested rice field
(ANHC)

By 1930, almost all original tallgrass prairie on the Grand Prairie had been plowed under to make way for rice fields.

RICE AND WATERFOWL

As rice proved to be an economic boon for settlers, it also proved to be a fortuitous event for waterfowl, at least for a short time. Parts of eastern Arkansas are renowned for their duck hunting, an enterprise that owes much of its current existence to rice farming. Populations of many waterfowl, notably mallard, northern pintail, and green-winged teal, greatly expanded during the early 1900s when seasonally flooded rice fields replaced prairie.



Mallards in a flooded forest
(USFWS)

Prior to the advent of rice production, waterfowl could be found foraging for food in the numerous scattered prairie wetlands, seasonal herbaceous wetlands, and nearby bottomland hardwood forests of the White and Arkansas Rivers. Once rice came to the Grand Prairie, a new super-abundant food source became available, altering the dynamics of waterfowl habitat use.

Early rice fields not only contained waste rice grain, but seeds from other plants growing in the fields as well. It is estimated that as much as 20-30 percent of early 1900s rice crops were lost when fields were harvested by inefficient machinery or manual labor. During this time, many waterfowl species moved from their traditional foraging areas out into rice fields to exploit this new food source.

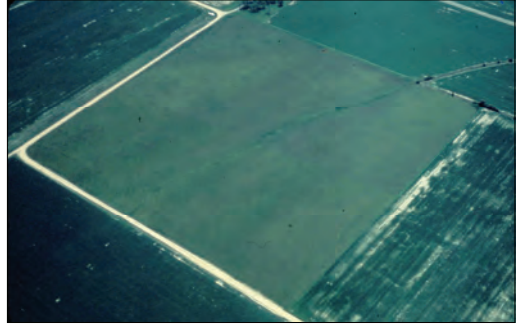
Early accounts of hunters and records from duck clubs suggest waterfowl populations increased greatly during the early 1900s, probably to their highest levels ever in the region. Peak duck populations during the 1920s have been estimated at two to three million birds. By the mid-1900s, duck populations on the Grand Prairie began to decline as rice production became more intense and efficient, bottomland hardwood forests were cleared, use of pesticides reduced aquatic invertebrate populations, and hunting pressure increased. Duck populations on the Grand Prairie during the 1990s have been estimated at between 100,000 to 200,000 birds.



Ducks darken the Grand Prairie sky (early 1900's)
(AHC)

STATUS OF GRAND PRAIRIE NATURAL COMMUNITIES

Native habitats on the Grand Prairie have declined dramatically between the mid-1800s and present day. Currently, 99.9 percent of the prairies that occurred across the area have been lost. The largest remaining, contiguous block of undisturbed prairie grassland is just under 50 acres in size.



Remnant prairie
(Susan Barnhart)

Savanna, slash, and seasonal herbaceous wetlands have suffered similar losses. Savanna habitats were more easily converted to cropland than dense forests, and most savanna was gone by the early 1900s. Slash habitats were never as abundant as other Grand Prairie habitats and often occurred in drainage locations unsuitable for rice production. Declines in slash may have occurred later in the 20th century when many drainages were dammed for reservoirs, stream channels were modified for irrigation water sources, and ditches and canals were constructed to move water to rice fields.

Most bottomland hardwood forests in the Grand Prairie are now confined to narrow corridors along primary drainages. Fragmented terrace hardwood forests occur in scattered, isolated flats, usually on duck clubs, where the forests are managed as greentree reservoirs. Upland forests are present along hills and bluffs of the north and east sides of the Grand Prairie. This habitat is the least disrupted, compared to its status in the mid-1800s. Almost all remaining forests have been cut and logged at least once since the late 1800s.



Fragmented bottomland hardwood forest.
(ANHCC)

Remnant natural communities are scattered throughout the region in tiny, isolated patches. The cumulative loss of native vegetation in the Grand Prairie is among the highest for any ecosystem in North America. Most of the native vegetation that once occurred across this region has now been replaced with agricultural cropland. Over 97 percent of this cropland is irrigated, mostly in a rice-soybean crop rotation. As a result, the hydrology has been altered through a combination of capturing surface water during most of the year, followed by the release of water before harvest.

IMPACT OF GRAND PRAIRIE HABITAT LOSS: PLANTS

As prairies were plowed and forests cleared, habitat for an array of native plants was also reduced or completely destroyed. Today, 33 plant species are of conservation concern have been documented in the Grand Prairie, many clinging to the few, relatively undisturbed, remnants of suitable habitat that remain.



Sand cherry
(ANHC)

Sand cherry is one of the rarest plants in Arkansas, known only from two prairie remnants in Prairie County. A small thicket-forming shrub, sand cherry is adapted to life on the prairie, rapidly sending up new stems from underground roots following fire. The Arkansas populations are removed from the main range of this species, which is the upper Midwest and Northeastern United States.

Prairie evening primrose represents yet another rare plant largely confined to the Grand Prairie. Its range greatly reduced through habitat destruction, most populations of this plant are now restricted to small prairie fragments. Other rare prairie plants include such species as downy gentian and Oklahoma grass-pink.



Prairie evening primrose
(John Pelton)



Downy gentian
(John Pelton)

IMPACT OF GRAND PRAIRIE HABITAT LOSS: ANIMALS

Exactly how many animal species were present in the Grand Prairie during the early to mid-1800s is unknown. It is evident, though, that the tremendous loss of native habitats has caused many animal species to disappear or persist as very small, isolated populations. Today, more than 20 Grand Prairie animal species are considered as being of conservation concern.

Only a few prairie birds remain and most are generalist species that can adapt to pastures and hayfields, such as the eastern meadowlark and dickcissel. Although the expansion of rice farming initially attracted large numbers of bird species, changes in production practices have caused populations of many birds to decline. Birds such as the sedge wren have declined in numbers. Another species, the king rail, has not been observed on the Grand Prairie in a number of years.



Sedge wren
(CLO)



Ornate box turtle
(ANHC)

The impact habitat loss had on other vertebrates is less well known. However, the decline of the ornate box turtle, a species dependent on open grasslands and savannas, can be tied to loss of appropriate habitat from the Grand Prairie. Only one ornate box turtle has been reported on the Grand Prairie in the last 25 years.

Insects dependent upon prairies and other natural communities found in the Grand Prairie have also declined as a result of habitat loss. The prairie mole cricket, an insect found only in tallgrass prairies, is today limited to a handful of small, isolated patches of prairie across the Grand Prairie.



Prairie mole cricket
(Thomas Walker)

GHOSTS OF THE GRAND PRAIRIE: PLANTS

Today, native plant species still survive in scattered remnants of natural habitat across the Grand Prairie. However, for some species, habitat destruction meant wholesale demise of entire populations. As a result, some native plants have disappeared completely from the Grand Prairie.

Slender Marsh Pink

A plant widely distributed across the southeastern United States, the slender marsh pink was collected on the Grand Prairie in 1941 near Carlisle. It has not been seen on the Grand Prairie since. Associated with savannas and wet meadows, the slender marsh pink is now considered to be threatened across its entire range.



Slender marsh pink
(John Pelton)

Snowy Orchid

Its common name derived from its snow-white flowers, the snowy orchid could once be found in wet areas on the prairie. The only known Arkansas record of this plant was collected in 1883, somewhere in Arkansas County. Like the slender marsh pink, the snowy orchid has not been observed on the Grand Prairie, or in Arkansas for that matter, since.



Snowy orchid
(Carl Slaughter)

GHOSTS OF THE GRAND PRAIRIE: ANIMALS

Loss of critical habitat also affected a number of Grand Prairie animal species. As habitat was plowed under and fragmented, some animals were simply unable to survive in the rapidly changing landscape of the Grand Prairie.

Greater Prairie-chicken

One of the largest and most impressive bird species to be eliminated from the Grand Prairie ecosystem was the greater prairie-chicken. A true resident of the tallgrass prairie, greater prairie-chickens are dependent upon large areas of relatively undisturbed prairie. This species was reported as being abundant around Stuttgart in the late 1800's. However, as the prairies disappeared, populations of the birds also drastically declined. The last greater prairie-chicken reported in the Grand Prairie was one shot in Prairie County in 1938.



Greater prairie-chicken
(CLO)

Willow Flycatcher

Willow flycatchers typically relied upon shrubby habitats, such as wooded thickets and clumps of small trees within patches of prairie, for nesting. Unfortunately, much of that habitat no longer exists due to conversion to agriculture. The last known breeding occurrence for this species in the Grand Prairie was in a small slash woodland. No willow flycatchers have been observed on the Grand Prairie since 1983. The willow flycatcher is notable in terms of Arkansas history in that it was first discovered and described on the Grand Prairie at Arkansas Post in 1822 by John James Audubon.



Willow flycatcher
(CLO)

PRESERVING THE LAST FRAGMENTS OF PRAIRIE: ARKANSAS NATURAL HERITAGE COMMISSION NATURAL AREAS

Approximately 430 acres of tallgrass prairie remain on the Grand Prairie today. Without the concern and sacrifice of private landowners, what remains would not exist. Of that total, just over 300 acres are currently protected within the Arkansas Natural Heritage Commission's (ANHC) System of Natural Areas. These remnant prairies range in size from 24 acres to over 50 acres. Some areas are owned outright by the ANHC, while others are easements by generous private landowners. As fragments of the last tallgrass prairie remaining in eastern Arkansas, these natural areas serve as critical refugia for a number of rare plant and animal species.

Railroad Prairie Natural Area

Size: 250.7 acres

Location: Located on the north side of U.S. Highway 70 just east of Carlisle and extending nearly to DeValls Bluff.

Description: Railroad Prairie Natural Area occupies portions of the abandoned right-of-way of the former Chicago, Rock Island, and Pacific railroad. Its long, linear shape encompasses a variety of habitats and communities from prairie to forest. A large portion of the natural area consists of tallgrass prairie. Parts of the prairie have been relatively undisturbed and are dominated by grass species typical of tallgrass prairie. Along with grasses, the area boasts a diverse succession of wildflowers from spring into fall.



Railroad Prairie Natural Area
(ANHC)

Roth Prairie Natural Area

Size: 41 acres

Location: Just south of Stuttgart, take U.S. Highway 79B to Highway 276. Travel south 1 mile onto South Buerkle Road. After 1 mile, turn right onto Roth Prairie Road and continue 0.8 mile to the natural area.

Description: Roth Prairie Natural Area is a tract of tallgrass prairie formerly managed for hay production. Prairie mounds, generally an indication that the land has not been plowed or leveled, occur across Roth Prairie, with some rising up to three feet in height.



Roth Prairie Natural Area
(ANHC)

PRESERVING THE LAST FRAGMENTS OF PRAIRIE: ARKANSAS NATURAL HERITAGE COMMISSION NATURAL AREAS

Downs Prairie Natural Area

Size: 24 acres

Location: Located approximately 1.5 miles west of DeValls Bluff on U.S. Highway 70.

Description: Downs Prairie Natural Area functions as an extension of Railroad Prairie Natural Area. The flat topography and thin soils favor vegetation dominated by tallgrass prairie grasses and showy forbs such as large coneflower, rattlesnake master, Indian paintbrush, and compass plant.. The area also supports the largest documented remaining population of prairie mole crickets in the Grand Prairie.



Downs Prairie Natural Area
(ANHC)

Konecny Prairie and Konecny Grove Natural Areas

Size: 70.7 acres (prairie) 22.17 (grove)

Location: From Hazen, travel south on U.S. Highway 63 for 10 miles to its junction with State Highway 86. Turn right on State Highway 86 and travel for 1.2 miles, at a sharp curve, turn on to a gravel road that goes straight and travel one mile. Turn left on a dirt road and go 0.5 miles to the grove. The prairie is 0.5 miles to the east.

Description: Konecny Prairie Natural Area is relatively flat with three ridges of very low relief on the northern half. Prairie mounds are located on these low ridges. The diversity of forbs is high, including compass plant, rattlesnake master, white false indigo, foxglove beardtongue, and yellow coneflower.

Konecny Grove Natural Area is one of the few remaining examples of slash woodlands in the Grand Prairie. It is a transition zone from prairie to bottomland hardwood forest.



Konecny Prairie Natural Area
(ANHC)



Konecny Grove Natural Area
(ANHC)

THE FUTURE OF THE GRAND PRAIRIE: RESTORATION EFFORTS

A number of federal and state agencies, municipalities, and private citizens, are currently working to restore portions of the original, natural Grand Prairie landscape. Restoration of such natural communities as tallgrass prairie not only have the potential to benefit native plant and animal communities, but to restore ecological functions to the Grand Prairie ecosystem as a whole.

Arkansas Natural Heritage Commission

Even though the Arkansas Natural Heritage Commission (ANHC) protects most of the remnant prairie that remains, there is actually very little of the original landscape left. The ANHC has been the pioneer organization in terms of recognizing the importance and value of conserving and restoring the natural communities of the Grand Prairie. The agency is actively involved in a number of cooperative restoration efforts with several federal and state agencies, universities, and private organizations.

Restoration of tallgrass prairie to this region will often require planting suitable areas with native prairie grass seed. The seeds of such native grasses as big bluestem and Indian grass can be obtained from a variety of commercial sources. However, based upon detailed knowledge of the Grand Prairie ecosystem, ANHC staff recognized that a regionally specific source of seed was especially critical given the Grand Prairie's unique history.

The big bluestem, little bluestem, Indian grass, and switchgrass that grow on the Grand Prairie are known to be genetically different from the same plants that grow on the Great Plains. Their uniqueness lies in the fact that the grasses of the Grand Prairie have been isolated from midwestern prairie grasses for thousands of years and have evolved in response to different climatic and environmental conditions. Consequently, subtle differences in environmental conditions might make big bluestem plants from Nebraska seed not fare as well on the Grand Prairie as big bluestem plants grown from local Arkansas seed.



Indian grass flowers
(ANHC)

THE FUTURE OF THE GRAND PRAIRIE: RESTORATION EFFORTS

University of Arkansas at Pine Bluff

Stepping up to meet the challenge of providing Arkansas prairie grass seed has been the job of researchers from the University of Arkansas at Pine Bluff (UAPB). In cooperation with the ANHC, university staff collected grass seed from plants growing on several natural areas. Seed collected from these areas was used to establish plants in greenhouse facilities on the UAPB campus. Once hardy, seedlings were transplanted to production plots on UAPB's Lonoke farm facility. Seeds from these production plots will be used in prairie restoration efforts across the Grand Prairie. Funding for this project was provided by the White River Irrigation District, U.S. Army Corps of Engineers, Arkansas Soil and Water Conservation Commission, and Bayou Meto Irrigation District.



Prairie grass seed
(USACOE)

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service's Arkansas Field Office has been working with the ANHC, the Arkansas Game and Fish Commission (AGFC), and others to identify potential prairie restoration sites, develop prairie restoration grant proposals, and to further public education of prairie values. The Service's Partners for Fish and Wildlife Program is also providing technical and financial assistance to private landowners who want to restore valuable wildlife habitat on their property, primarily wetlands, riparian areas, and native prairie. The Service is also working with the AGFC, the ANHC and Audubon Arkansas to improve prairie habitats for grassland birds. Staff from the White River National Wildlife Refuge have assisted with the Stuttgart Airport prairie restoration project as well as cooperative management projects on certain ANHC natural areas in the Grand Prairie.



National Wildlife Refuge staff remove woody vegetation from Railroad Prairie Natural Area
(ANHC)

THE FUTURE OF THE GRAND PRAIRIE: RESTORATION EFFORTS

U.S. Army Corps of Engineers/Natural Resource Conservation Service

The ANHC, the U.S. Army Corps of Engineers and the Natural Resource Conservation Service, with funding from the White River Irrigation District and the Arkansas Soil and Water Conservation Commission, recently tested the efficacy of an innovative technique to salvage prairie.

The experiment was conducted on a small remnant prairie that was to be plowed under for construction of a reservoir. At the site, prairie sod was removed much the same way commercial growers cut lawn sod from their farms. Once cut, the sod was rolled, transported to UAPB's Lonoke farm facility, and then unrolled onto a plowed field.



Unrolling prairie sod
(ANHC)

During the following summer, a large number of tallgrass prairie plants, from common species such as ashly sunflower and big bluestem to rare plants such as savanna milkweed and prairie evening primrose were recorded as growing on the salvaged prairie sod. The plants growing from this sod will serve as an additional seed source for future restoration efforts. More importantly, this project demonstrates a potentially effective technique for saving some elements of remnant prairies.



Wildflowers bloom on salvaged prairie sod
(ANHC)



Savanna milkweed
(ANHC)

THE FUTURE OF THE GRAND PRAIRIE: RESTORATION EFFORTS

Arkansas Game and Fish Commission



Raft Creek Wildlife Management Area (AGFC)

Located on the northeastern edge of the Grand Prairie, the Arkansas Game and Fish Commission's (AGFC) Steve N. Wilson Raft Creek Bottoms Wildlife Management area (WMA) maintains 380 acres of tall grass prairie restored by WMA personnel using seed they collected from the Railroad Prairie and Downs Prairie Natural Areas.

AGFC staff have also restored 277 acres of tallgrass prairie on the Mike Freeze Wattensaw WMA near Hazen, using native prairie seed collected from Raft Creek WMA. In addition to its prairie restoration work on state-owned lands, the AGFC continues to be a strong partner in the Stuttgart Airport Prairie Restoration Project.

Arkansas State Parks

At the southern end of the Grand Prairie, the Arkansas Post Museum displays the cultural and biological heritage of Arkansas's Mississippi Delta and Grand Prairie. Museum staff, working with the ANHC and the Natural Resources Conservation Service, collected prairie grass seed from Railroad Prairie and Roth Prairie Natural Areas and used them to develop a seed propagation plot. The plot provides visitors with an easily accessible introduction the major native grasses of the Grand Prairie.



Native prairie grass plot at Arkansas Post Museum (ANHC)

THE FUTURE OF THE GRAND PRAIRIE: RESTORATION EFFORTS

City of Stuttgart

The City of Stuttgart has partnered with the U.S. Fish and Wildlife Service (USFWS), the ANHC, the AGFC, Audubon Arkansas, and Arkansas Forestry Commission to restore over 300 acres of native prairie on the Stuttgart Municipal Airport. Funds from the USFWS's Partners for Fish and Wildlife Program have been used to restore approximately 147 acres on the airport to native prairie species. Once completed, the city of Stuttgart would own the largest single block of tallgrass prairie in the Grand Prairie.



Stuttgart Municipal Airport
(USFWS)

The values of this project for Stuttgart, and the rest of Arkansas are multifold, touching education, economics, and regional ecology. The restored prairies of the Stuttgart Airport will serve as an outdoor classroom where students can learn about the natural history of the Grand Prairie and it will also become a prime ecotourism destination. Even now, the Stuttgart Airport attracts large numbers of birders due to the presence of several rare grassland bird species, including Smith's Longspur.



Smith's Longspur
(*Calcarius pictus*)

Audubon Arkansas and the ANHC are also working on a Partners for Fish and Wildlife project at the airport to collect seed and propagate grasses that comprise preferred habitat of these grassland birds to enhance this resource at the airport.



Surveying vegetation at the Stuttgart Municipal Airport
(ANHC)

THE FUTURE OF THE GRAND PRAIRIE: RESTORATION EFFORTS

Audubon Arkansas

Audubon Arkansas is addressing the need for more Grand Prairie genotype grass seed through the NATIVE (Native Agricultural to Invigorate Ecosystems) Project.



The NATIVE Project was first funded by the US Department of Agriculture's (USDA) Outreach Assistance to Socially Disadvantaged Farmers and Ranchers (OASDFR) program in 2010. NATIVE provides financial incentives and technical assistance to qualified farmers in Arkansas and Mississippi to grow a new cash crop - native warm season grass seed of the Grand Prairie genotype. This local seed is needed for prairie restoration projects in the Delta by the U.S. Army Corps of Engineers (USACOE). Participating farmers will sell their harvested seed to UAPB for resale to conservation buyers such as the USACOE.

As a collaborator in the project, UAPB provides NATIVE with expertise and starter seed. Alcorn State, another collaborator, provides expertise in business planning and growing native warm season grasses. NATIVE is also enhancing on-farm habitat for birds and wildlife by helping farmers enroll in USDA Farm Bill conservation programs. Audubon will assist farmers with forming a native grass seed cooperative and developing private market opportunities parallel to government agency needs.



Grass production workshop on the Grand Prairie
(Audubon Arkansas)

Museum of the Arkansas Grand Prairie

Along with on-the-ground work, another critical component of habitat restoration is educating Arkansans about both the natural and cultural history of the Grand Prairie. Located in Stuttgart, the Museum of the Arkansas Grand Prairie serves as both a repository of archival materials and objects related to the Grand Prairie and an invaluable educational outlet for anyone interested in this unique region of Arkansas.



Museum of the Arkansas Grand Prairie
(ANHC)

THE FUTURE OF THE GRAND PRAIRIE: RESTORATION EFFORTS

Private Landowners

For habitat restoration efforts to ultimately succeed on the Grand Prairie, private land-owners must play an active role. Concerned residents of the Grand Prairie have already proven their dedication to prairie conservation through the careful management of the small number of prairie remnants that still exist today. It will also be private landowners that provide many of the opportunities for tallgrass prairie and other natural communities to return to this region.



Privately owned prairie remnant
(ANHC)



“...I recognized more species of plants in this prairie in one day than I have in the prairies of Long Island in three summers. The flora is evidently very rich, and it is reasonably certain that a careful taxonomic study of it would reveal at least 150 species, a few of them probably as yet undescribed.”

Roland M. Harper
writing on visiting the Grand Prairie in 1911
published in *The Plant World*, vol. 17, No. 2, 1914

VISION FOR THE FUTURE

Although only small fragments of the original Grand Prairie landscape remain, this should not be considered the end of the story. Today, substantial interest exists for restoring the natural landscape. Plans are already underway to restore tallgrass prairie to a number of sites across the region. Along with these efforts, additional restoration opportunities will undoubtedly present themselves in the future. To achieve maximum benefit, such efforts must be guided by a vision for what is needed.



Aerial view of restoration area at Downs Prairie Natural Area (ANHC)

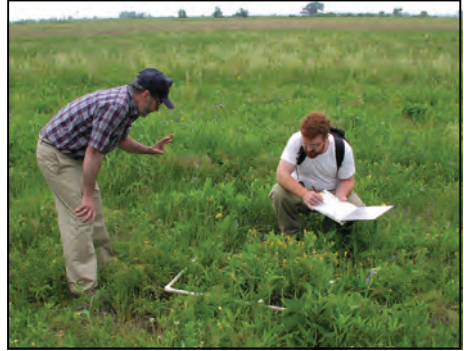
The most practical and least expensive approach to restoration is to begin by restoring moderate-sized blocks of prairie of a hundred acres or so. Ideally, restoration efforts would be carried out on land with lower economic value so as to minimize cost. Restoration efforts should also be strategically targeted in close proximity to existing remnant prairies. Instead of scattering a few of these blocks across the expanse of former prairie, they will have greater value if they are clustered into a fairly small area where they are no more than a few miles apart. By aggregating prairie restoration efforts into a limited area (~10,000 acres), birds, insects, pollen, and seeds will be able to move between restored blocks and remnant prairie, allowing these areas to develop into a functional prairie landscape.



Savanna milkweed, the rarest of the ten milkweeds native to the Grand Prairie (ANHC)

VISION FOR THE FUTURE—CONTINUED

Creating or restoring other natural communities within these areas, such as seasonal herbaceous wetlands, could further augment habitat diversity. Along watercourses within the Grand Prairie landscape it may even be possible to restore or manage other natural communities that once existed here: slash on the upper ends of small tributaries, bottomland hardwood forests on the larger streams, and savanna on the margins of prairie and forest.



ANHC botanical survey in the Grand Prairie
(ANHC)

Even though such an area is beginning to function as a prairie landscape, most of its area will remain in agriculture and be available for other economic uses. However, there are species and processes that cannot be accommodated without a large block of prairie. An important example is the greater prairie-chicken, which would require a 2,000 acre block of prairie within the larger landscape of smaller restored and remnant prairies. The USFWS, the ANHC and AGFC are actively trying to create such a landscape and re-establish greater prairie chickens in their former habitat. With such an overall vision, even small actions can become parts of a coordinated effort that leads to great results in the effort to restore the Grand Prairie of Arkansas.



Greater prairie-chicken
(Christian Artuso)





Big bluestem
Andropogon gerardii



Indian grass
Sorghastrum nutans



Switchgrass
Panicum virgatum



Indian paintbrush
Castilleja coccinea



Sensitive briar
Mimosa quadrivalis var. *nuttallii*



Foxglove beard-tongue
Penstemon digitalis



Rattlesnake master
Eryngium yuccifolium



Compass plant
Silphium laciniatum



Pale purple coneflower
Echinacea pallida



Black-eyed susan
Rudbeckia hirta



Oklahoma grass-pink
Calopogon oklahomensis



Butterfly milkweed
Asclepias tuberosa

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