

NATIVE GRASSLAND PRAIRIES, WHERE HAVE THEY GONE?

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A prairie is described as a kind of rangeland that is nearly level to rolling, is a treeless plain, grows mainly grasses and is characterized by having a fertile soil. Looking around the state of Texas today, we are asking, “where have the prairies gone?”. By 1845, Texas was noted to have 90.7% of the state’s land as rangeland where only 9.3% of the state was classified as forestland. Historically, Austin County was basically 100% rangeland.

The area of Austin County contains a wide array of prairie types as the northern portion of the county is representative of the Blackland Prairie, with the middle of the county represents the Post Oak Savannah and the southern end of the county is noted to be in the Gulf Coast Prairie and Marshes vegetation area. Early accounts from the area talk about large expanses of prairie interspersed or bisected by streams and rivers supporting large amounts of timber. The county is noted as having an average annual rainfall of 42.04 inches with a bimodal rainfall pattern. The general feature of the land is level to hilly and is drained by the San Bernard and Brazos Rivers. Soils vary from blackland to sandy uplands. The principal industry of the area has been diversified farming and livestock ranching.

As you drive around the Austin County and surrounding areas today, things have changed from what we are told was originally here. The sea of grass pictured by many also had holes in it, holes created by a continual disturbance from natural fire, bison and other herbivores grazing and the occurrence of tornadoes, hurricanes, hail storms and drought. Folk lore states that early landowners noted that we would never bring enough cattle to Texas to eat all of the grass. For the sake of a detailed explanation of land change, I will limit further details to the dominant land type known as the Post Oak Savannah and general conclusions.

POST OAK SAVANNAH

Land Area: The Post Oak Savannah was originally referred to as the “Post Oak Timber Belt”. Early writings declared the Post Oak Savannah to be an open grassland dotted with stately, individual oak trees or with scattered clusters of oaks. It is an ecoregion located entirely within the state of Texas and one of the smallest ecoregions within the Temperate Broadleaf and Mixed Forests in the Northern Hemisphere. Early passer-bys noted that this region was wedged between the Pine Belt on the east, Blacklands on the west and coastal prairies on the south (Texas Almanac, 1986-1987). Upland soils are gray, slightly acid sandy loams, commonly shallow over gray, mottled or red, firm clayey subsoils. Soils are generally droughty and have claypans at varying depths, restricting moisture percolation. The bottomland soils are reddish brown to dark gray, slightly acid to calcareous, loamy to clayey alluvium. Short oak trees occur in association with tall grasses. Thicketization occurs in the absence of recurring fires or other methods of

woody plant suppression. Restriction of naturally occurring fires in conjunction with overgrazing by livestock, often continuous for prolonged periods and periodic droughts of various durations are largely responsible for creation of dense thickets over much of the area. Associated trees are elms, junipers, hackberries and hickories. Characteristic understory vegetation includes shrubs and vines such as yaupon, American beautyberry, coralberry, greenbriar and grapes. Climax grasses are little bluestem, yellow Indiangrass, switchgrass, longspike silver bluestem, Florida paspalum, Texas wintergrass, purpletop, narrowleaf woodoats and beaked panicum. Lower successional species include brownseed paspalum, threeawns, broomsedge bluestem, splitbeard bluestem, rosette grasses and several lovegrasses. Densities of yaupon, winged elm and others have increased along with an extensive group of invasive grasses, forbs and tree species.

CHANGE AND DISAPPEARANCE OF THE PRAIRIE

Current Land Change: Today feral hogs are abundant in the area and have become a pest in many land situations. The major livestock enterprise is mixed cow-calf-yearling operations with many small herds on small land holdings. Small acreage land holdings are becoming numerous throughout this region (Hatch, Gandhi and Brown, 1990). In a publication titled “Terrestrial Ecoregions of North America: A Conservation Assessment”, authors stated that this area is being heavily altered through both ranching and farming practices. They noted that “approximately 75 percent of the natural vegetation of this ecoregion has been converted to agriculture. There are no large portions of intact habitat left in this ecoregion. A majority of the remaining habitat exists in small blocks of 100-200 acres, and the quality of habitat in these blocks is quite variable.” They also noted that “the original habitat is highly fragmented, and while the original floral component of the ecoregions still exists, the fragmented nature of the ecoregion has severely limited the flow of natural ecological processes.” In relation to the degree of natural land protection, they stated that “there are no national forests located in this ecoregion, and similarly the level of protection is extremely minimal. The only partially protected piece of land, outside of state parks, is the Attwater Prairie Chicken National Wildlife Refuge”. They further stated that “the major threats to the ecoregion are the conversion of lands to agriculture. In addition, the suppression of fire in the remaining blocks of habitat may threaten their biological integrity in the future.”

Where Did the Change Come From?: The major change in the land reflects a history of human impact, decisions and desire for happiness in the human life. The majority of early settlers to the area were farmers. Before oil, cotton was “King” and exported cotton was partially the source of revenue to even fund the “War Between the States”. Prior to the invention of soil testing and fertilization, long-term farmlands just played out and did not produce the kinds and amounts of crops once noted. Not all of the prairie was farmed as some lands had unsuitable shallow soils, rainfall impervious claypans, lack of suitable plant rooting depth and of course rocks. Lands not farmed soon became the grounds for the emergence of the “Texas ranching industry” after the War Between the States. With a lack of suitable technology, the decline in the profitability of

farming and the emerging threat of drought and the dust bowl era, plants like King Ranch bluestem were found and planted to promote soil and water conservation. Many of the grasses used in this era to hold the soil in place and improve water infiltration and holding capacity, could also be consumed by a growing livestock industry. As row crop farming declined, livestock farming allowed a family and heirs to hold on to property and see an income maintain from their efforts. Only since the late 1970's has the price of land been an issue or the need to produce something on the land that would pay for and maintain an agricultural exemption with lower land taxes than urban land taxes. Beginning in the era after World War II, mom and dad got jobs in town to be able to hold onto the family place. It is kind of like "water", as I grew up it was just free. Now we pay by the gallon or spend over a dollar for 20 ounces of spring water or municipal water that has been filtered.

Occurring at the same time, land ownership has led to fragmentation and has resulted in rural parcel land sizes generally too small to maintain the economy-of-scale for traditional farming, ranching and forestry. Impacts of ownership fragmentation have included the loss of open space, localized loss of farm, ranch and forest production, a higher demand for public services from rural areas and a reduction in effective wildlife habitats. As land parcels have become smaller, a suitable economic income has had to be derived from the farming of grazing and haying grasses such as bermudagrasses, dallisgrass, bahiagrasses and cool season forage plants such as oats, wheat and ryegrass. Under fertilization and cultural practices, these grasses can make more forage tonnage when it rains than any native grass stand. Maintaining these monoculture grass species in pastures helped smaller acreage landowners find a threshold for profit, holding on to the family land or even just getting the land taxes paid today. Our human view of the value of land, purposes for the land and a general lack of a land stewardship ethic have led to the change. After humans have gotten rich from jobs in town, many have forgotten the value of our natural prairies for making clean air and water, for serving as the habitat for many species of wildlife and the value of the land in correcting the problems we make. The human population produces waste and the prairie ecosystem is and was involved with cleaning the toxic by-products we produce.

Where Did It Begin? The change in original lands and in this cases the prairie, is closely tied to the needs, desires and passions of the human being. The Acting Director of the United States Department of Agriculture Division of Agrostology wrote the following on August 6, 1895:

"Twenty years ago the whole prairie region west of the Missouri was given over to great herds of cattle. But the days of the cattle kings are past, and the lands that were then cattle ranges given up to the support of a few head to the square mile, are now divided up into farms. The native western grasses are being rapidly driven out to make way for the worthless weeds that civilization and scanty cultivation bring with them. Already the buffalograss and the mesquite have disappeared from a large section of Kansas and Nebraska. Acres that were once covered

with these most important nutritious species are now occupied by weedy kinds and their value as pasture and hay lands is constantly diminishing. Similar destruction of grasses has followed the cultivation of cotton in the South, and of tobacco and hoed crops generally in all sections of the country. The American has been a grass-killer everywhere.”

We must ask, “didn’t we know what we were doing?”. We continue to toy and explain the changes in lands like prairies. The human has long noted the change in land use and the value of having a healthy landscape or environment. With the creation of the American Society for Range Management in 1947, A.L. Hafenrichter wrote an article in the first volume and issue of the Journal of Range Management concerning the planting of the “magic grass” that would stop our woes and the deterioration of our prairies. He stated in the article the following.

“Perhaps the easiest way to get people to reseed range land is to claim that you have discovered, produced or introduced a plant that is the perfect panacea. It should have universal adaptation, no limitations, and require little more than casual broadcasting. It should, of course, be grazed the first season and stringently thereafter with very little management.” No “magic grass” has been found.

ARE THE PEOPLE CONFUSED?

Our loss of native prairies can be related to many things, but usually it is the lack of an understanding of how a prairie functions, the lack of knowledge related to natural processes of the prairie (there are many natural processes) and the acceptance that the health of the prairie relates to all other lands and bodies of water around it.

Fred Walker wrote in his 1953 Master of Science thesis that ranchers in the DeWitt County area actually and on purpose grazed little bluestem out of their pastures. They stated that they could not afford the winter supplementation and feeding of cattle necessary to get them to eat dead and dormant little bluestem. The junk and introduced grasses that came up from this disturbance and the process of secondary succession were noted to cure out better after the first frost. The winter dead leaves of little bluestem are around 1.8% crude protein and the stems are around 1.0% crude protein. Phosphorus levels of dead leaves and stems averages around 0.03% P. Weedy grasses like King Ranch bluestem have often been shown to have crude protein values after frost and dormancy in the early winter of 4.0% crude protein. Supplementation should only be used to bring deficient nutrients in the grass up to the requirement of the kind and class of animal being grazed. This decision and transfer of one plant community to another changed the value and production potential of the little bluestem dominated prairie producing from 7,000 to 11,000 pounds of dry matter per acre per year to a pasture complex of plants producing only 1,000 to 3,000 per acre annually. But the landowner did not have to go to the feed store and buy nutrients in a box or bag and lowered the number of livestock animals that he could successfully

raise. For a livestock producer, little bluestem is best utilized by grazing animals when it is green and growing in the months of April, May and June.

Not only do the natural prairies continue to change under natural events such as weather, drought and natural fire, but the prairie is always trying to come back through the process of secondary succession. Think about the farmer who planted a field of corn. He notes that a little bluestem grass has come up in the field. Naturally, the farmer would call the little bluestem grass plant a “weed” merely because it is not what he planted. Wind, rain, wildlife, livestock movement, dirt on the pickup tires from another location and contaminated hay are always bringing native plant seeds into other areas. To keep what we planted as a monoculture requires that we spend money to get rid of any plant that comes up and is not what we want to be there or planted there. We literally fight “Mother nature” and natural processes that are working to bring the prairie back.

The prairie probably will not come back as soon or as quick as the human desires. Blackland Prairie research demonstrates that major soil properties of farmed lands may not come back to levels or functions of unplowed land for up to 200 years. Who can wait that long? As we work with parcels of land to once more become a healthy prairie, please remember the following stumbling blocks that management must overcome on changed lands. First because of soil loss through wind and water erosion, a site might not have a true A horizon. Secondly, because of past management, the site may have a poor water cycle. Third, recognize that in the soil where we can not see, the soil organic carbon may be one-half or less of that required to grow naturally occurring grasses from the past. Fourth, on almost all lands, we now have competitive invasive species to contend with such as King Ranch bluestem, bahiagrass, rattail smutgrass, deep-rooted sedge, Chinese tallow trees, Macartney rose, kudzu and many more. Fifth, there is a soil seed bank of weed seeds and invasive plant seeds waiting to germinate and come up after you toil with the soil surface preparing something you hope will make the situation better. Sixth, you must acknowledge that building a long-term preserve of no fire, no grazing, no grazing deferment or no management by knowledgeable humans can and usually leads to less productive, less healthy prairie. Natural native grass prairies were grazed by herbivores, had a less than 25 year frequency of natural fire and were tolerant of both drought and above normal rainfall. In the final assessment, human activity and human decisions have led to the major changes and disappearance of native grass prairies in Texas.

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