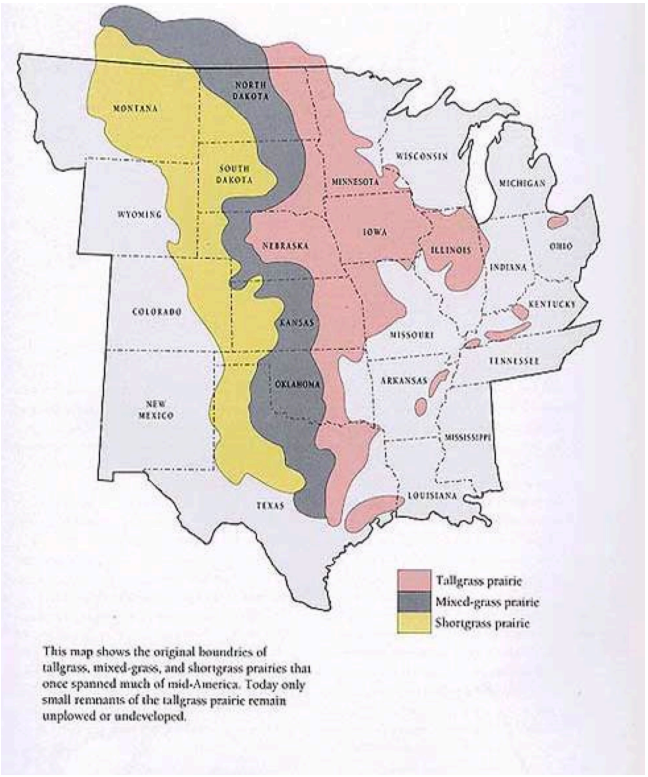
Shortgrass Prairie

At 2.8 million km2 (1.1 million sq mi), grasslands are the largest vegetation formation in North America. About 22% of the grassland is shortgrass prairie. The shortgrass prairie is located between the Rocky Mountains and the mixed-grass prairie and covers approximately the western third of Kansas. It is the driest and warmest of the Great Plains grasslands, with cool winters and warm summers. Precipitation in western Kansas is low, between 15 and 19 inches per year, with 2/3 of the precipitation occurring during the growing season. Water in an underground layer of sand and gravel, called the Ogallala Aquifer, is the main source of ground water in western Kansas.



This map shows the original boundries of tallgrass, mixed-grass, and shortgrass prairies that once spanned much of mid-America. Today only small remnants of the tallgrass prairie remain unplowed or undeveloped.

Shortgrass flora is much like that of mixed grass prairie, but blue grama (*Bouteloua gracilis*) or buffalo grass (*Buchloe dactyloides*), or a mixture of the two, dominates these areas in Kansas. Blue grama is more common in the northern prairie while buffalograss is more abundant in the southern portion. Buffalo grass is not as resistant to low rainfall as blue grama, but both have the ability to repeatedly go dormant and then recover quickly, even after a long dry spell.

While blue grama and buffalo grass comprise 70-90% of the shortgrass prairie by weight, they make up less than 20% of the diversity present. In any one area, flowering plants may number up to 250 different kinds. The vast majority of plants growing on the High Plains bloom in spring, with a lesser number flowering in fall. Riparian areas are the most diverse with 80% of the species in the shortgrass prairie found only in riparian areas.

Common shrubs and forbs include yucca (*Yucca glauca*), pricklypear cactus (*Opuntia humifusa*), sand sage (*Artemisia filifolia*), broomweed (*Gutierrezia sarothrae*), wild alfalfa (*Psoralea tenuiflora*),and sunflower (*Helianthus sp.)*. Cholla cacti (*Opuntia imbricata*) is a striking, and sometimes painful, example of desert plants that influence the flora in the Cimarron valley and the western reaches of the Arkansas River drainage. Poisonous plants of the shortgrass prairie include broadleaf milkweed (*Asclepias latifolia*), locoweed (*Oxytropis lambertii*), and prairie larkspur (*Delphinium carolinianum)*.

The Sandsage Shrubland habitat is a unique habitat located within the shortgrass prairie conservation area. This habitat is located primarily in the southwestern portion of Kansas, along the valleys of the Cimarron and Arkansas rivers. Sandsage and grasses such as Sand Bluestem (*Andropogon hallii*) and Sandreed Grass (*Calamovilfa longifolia*) are dominant here. In this habitat, sandsage functions as an important soil stabilizer by breaking surface winds. Were it not for this plant, much of western sand prairie would be shifting dunes. Sandsage provides forage, shade and shelter for smaller kinds of wildlife when all other plants succumb to the intense heat of a High Plains summer.

ANIMALS

Large herbivores include pronghorn (*Antilocapra americana*), elk (*Cervus elaphus*) which is locally extirpated, mule deer (*Odocoileus hemionus*) and American bison (*Bison bison*), also locally extirpated. Other mammals include the black-tailed prairie dog (*Cynomys ludovicianus*), swift fox (*Vulpes velox*), badger (*Taxidea taxus*) and black-footed ferret (*Mustela nigripes*), which is endangered. Birds include the Burrowing Owl (*Athene cunicularia*), Mountain Plover (Charadrius montanus), Golden Eagle (*Aquila chrysaetos*), Lesser Prairie Chicken (*Tympanuchus pallidicinctus*), and Horned Lark (*Eremophila alpestris*).

The vast western prairies are home to a nice diversity of Kansas reptiles, including the Texas horned lizard (*Phrynosoma cornutum*), prairie rattlesnake (*Crotalus viridis*), ornate box turtle (*Terrapene ornata*), common lesser earless lizard (*Holbrookia maculata*), Plains hog-nosed snake (*Heterodon nasicus*), gophersnake (*Pituophis catenifer*), and Plains black-headed snake (*Tantilla nigriceps*). Amphibians include Plains spadefoot (*Spea bombifrons*), and barred tiger salamander (*Ambystoma mavortium*).

The shortgrass prairie that we know today developed following the retreat of the last Wisconsin glaciers approximately 10,000 years ago. Seventy percent of the North American shortgrass prairie still remains in natural vegetation. In Kansas, as elsewhere, large areas of this grassland have been converted to irrigated agriculture and crops such as wheat, corn, soybeans, and grain sorghum are grown on large farms. Much of the grain produced is used to feed cattle for the production of beef . Another economically important industry in the area in Kansas is petroleum production. In the south there is the large Hugoton gas field with oil resources scattered over the whole region. Grazing is the dominant use of the shortgrass prairie's natural vegetation. It is a sustainable practice at light to moderate stocking rates for cattle. In general, continuous grazing systems are superior to rotational grazing in terms of vegetative productivity and individual livestock performance. The amount and seasonality of precipitation and temperature result in fluctuations in annual net production. Soils and plant types also influence production.

Historically, the shortgrass prairie was grazed by large herds of bison, pronghorn, deer, and elk along with colonies of prairie dogs. Except for prairie dogs, these species were migratory, continuously searching for green forage and responding to environmental variables such as precipitation, drought, and fire. This resulted in rotational grazing that allowed vegetation to recover in the absence of the herbivores. It also caused repetitive seasonal grazing pressures to which the vegetation adapted in the process of natural selection. Prairie dogs affect the ecosystem through burrowing and grazing activities and consist of colonies that may cover tens to hundreds of hectares.

As with all grasslands, fire was another important factor that shaped the shortgrass prairie. Fire occured in level prairies every 5-10 years but only every 15 to 30 years in prairies cut by steep breaks and streams. Historical fires burned across vast distances but are now limited by cultivated lands, roads, and fire suppression techniques.

INVASIVE SPECIES

Invasive species exploit disturbances caused by excessive grazing and trampling, insufficient grazing, and fire. They can reduce forage quality and quantity, decrease biodiversity, and alter ecosystem function. However, the shortgrass prairie is highly resistant to invasion, and cattle grazing is an effective means of controlling spread of some invasive plants. Common invasives include Eastern red cedar (*Juniperus virginiana*), cheatgrass (*Bromus tectorum*), Russian thistle (*Salsola iberica*), saltcedar (*Tamarix spp*.), old world bluestems (*Bothriochloa spp.*), Japanese brome (*Bromus japonicus*), and yellow sweetclover (*Melilotus officinalis*).

URBANIZATIONS/SUBURBANIZATION

Due to a myriad of land management practices, the shortgrass prairie is extremely fragmented. For example, cultivation only uses 42% of the Great Plains area but fragments 100% of the area. Fragmentation reduces habitat quality and quantity, impedes the fire regime, and is severely detrimental to biodiversity. Population growth results in exurban development which causes habitat loss and increases the number of domestic predators, such as dogs and cats. It also facilitates the spread of exotic species.

WATER QUALITY

Water in the shortgrass prairie region suffers from both quality and quantity issues. Pollution from agriculture, confined animal feeding operations (CAFOs), oil development, and other sources impair water quality. Reservoirs, channelization, impoundments, and withdrawal threaten flow regimes and riparian habitats. Grazing livestock also contribute to riparian area degradation. The falling water table and urbanization may reduce irrigation in favor of urban water demands.

THREATENED AND ENDANGERED SPECIES

KS Threatened
Eastern Spotted Skunk (*Spilogale putorius*)
Piping Plover (*Charadrius melodus*)
Snowy Plover (*Charadrius alexandrinus*)
New Mexico Threadsnake (*Rena dissectus*)
Chihuahuan Green Toad (*Anaxyrus debilis*)
Plains Minnow (*Hybognathus placitus*)
Flathead Chub (*Platygobio gracilis*)

KS Endangered
Black-footed Ferret (*Mustela nigripes*)
Arkansas River Shiner (*Notropis girardi*)
Peppered Chub (*Macrhybopsis tetranema*)
Scott Optioservus Riffle Beetle (*Optioservus phaeus*)

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Check out the On TRACKS from KDWPT website https://ksoutdoors.com
Black-Footed Ferrets are Back (Vol. 23, No. 1) (PDF 4.53 MB)