CENTRAL MIXEDGRASS PRAIRIE

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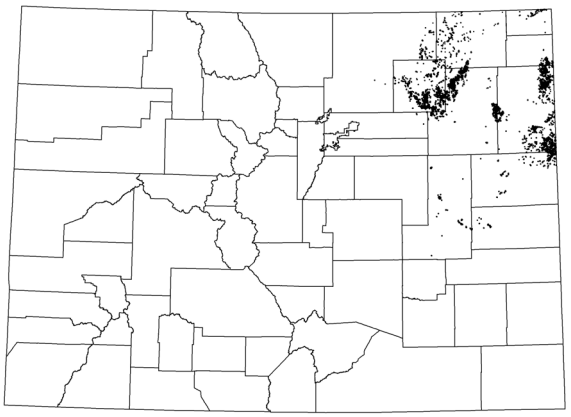

extent exaggerated for display

(COMPLEX)
Blacktailed Prairie Dog Town Grassland Complex
ARTEMISIA TRIDENTATA SSP. WYOMINGENSIS SHRUB HERBACEOUS ALLIANCE
Artemisia tridentata ssp. *wyomingensis* / Mixed Grasses Shrub Herbaceous Vegetation
HESPEROSTIPA COMATA - BOUTELOUA GRACILIS HERBACEOUS ALLIANCE
Hesperostipa comata - Bouteloua gracilis - Carex filifolia Herbaceous Vegetation
Hesperostipa comata - Carex filifolia Herbaceous Vegetation
Hesperostipa comata - Carex inops ssp. *heliophila* Herbaceous Vegetation
Hesperostipa comata Colorado Front Range Herbaceous Vegetation
KRASCHENINNIKOVIA LANATA DWARF-SHRUB HERBACEOUS ALLIANCE
Krascheninnikovia lanata / Bouteloua gracilis Dwarf-shrub Herbaceous Vegetation
PASCOPYRUM SMITHII HERBACEOUS ALLIANCE
Pascopyrum smithii - Bouteloua gracilis Herbaceous Vegetation
Pascopyrum smithii - Hesperostipa comata Central Mixedgrass Herbaceous Vegetation
Pascopyrum smithii Herbaceous Vegetation
POA PRATENSIS SEMI-NATURAL HERBACEOUS ALLIANCE
Poa pratensis - (Pascopyrum smithii) Semi-natural Herbaceous Vegetation
SARCOBATUS VERMICULATUS INTERMITTENTLY FLOODED SPARSELY VEGETATED ALLIANCE
Sarcobatus vermiculatus / Sporobolus airoides Sparse Vegetation
SCHIZACHYRIUM SCOPARIUM - BOUTELOUA CURTIPENDULA HERBACEOUS ALLIANCE
Schizachyrium scoparium - Bouteloua (curtipendula, gracilis) - Carex filifolia Herbaceous Vegetation
Schizachyrium scoparium - Bouteloua curtipendula Loess Mixedgrass Herbaceous Vegetation
Schizachyrium scoparium - Bouteloua curtipendula Western Great Plains Herbaceous Vegetation
YUCCA GLAUCA SHRUB HERBACEOUS ALLIANCE
Yucca glauca / Calamovilfa longifolia Shrub Herbaceous Vegetation

Overview: The mixedgrass or midgrass prairie system ranges from South Dakota to northern Texas and is bordered by the shortgrass prairie on the western edge and the tallgrass prairie to the east. The loessal regions in west-central Kansas and central Nebraska, the Red Hills region of south-central Kansas and northern Oklahoma are all included in this system. Although the greater part of the mixedgrass prairie lies to the east of Colorado, the western extent of this system has probably moved in and out of what is now eastern Colorado during much of the Holocene, as climatic conditions alternated between wetter and drier. In the sandhills of eastern Colorado, midgrass prairie dominated large areas in the early years of the 1900s. By the late 1940s, most of these communities had been replaced by shortgrass or sandsage communities, due to the effects of grazing and drought (McGinnies et al. 1991). Due to its position on the periphery of the range of the midgrass prairie ecological system, Colorado has probably never supported extensive tracts of this type.

Characteristic species: The majority of mixedgrass associations in this system are dominated by *Pascopyrum smithii* or *Schizachyrium scoparium*, although other grass species such as *Bouteloua curtipendula, Andropogon gerardii, Hesperostipa comata, Sporobolus heterolepis*, and *Bouteloua gracilis* are often present. Numerous forb and sedge species (*Carex* spp.) can also occur within the mixedgrass system in the Western Great Plains. Although forbs do not always significantly contribute to the canopy, they can be an important part of the community. Some dominant forb species include *Ambrosia psilostachya, Echinacea angustifolia*, and *Lygodesmia juncea*. Shrubland associations can occur in areas protected from fire due to topographic conditions. Small seeps may occur, especially during the wettest years. Although there are no animal species which are strictly endemic to midgrass prairie, grassland birds such as chestnut-collared longspur, lark bunting, Cassin's sparrow, and grasshopper sparrow do use these mid-height grasslands for major portions of their life cycle, and are indicators of a functioning system.

Environment: Differences in topography and soil characteristics occur across the range of this system. It is often characterized by rolling to extremely hilly landscapes with soils developed from loess, shale, limestone or sandstone parent material. Mollisol soils are most prevalent and range from silt loams and silty clay loams with sandy loams possible on the western edge of the range.

Dynamics: Fire and grazing are the primary processes occurring within the system. The diversity in this mixedgrass system likely reflects both the short- and long-term responses of the vegetation to these often concurrent disturbance regimes. Fire suppression and overgrazing can lead to the invasion of this system by woody species such as *Juniperus virginiana* and *Pinus ponderosa*.

Variation: Because of its position between two other prairie systems, this system contains elements from both shortgrass and tallgrass prairies, which combine to form the midgrass prairie ecological system throughout its range. The distribution, species richness and productivity of plant species within the midgrass ecological system is controlled primarily by environmental conditions, especially soil moisture and topography. The relative dominance of the various grass and forb species within different associations in the system can strongly depend on the history and degree of natural or human disturbance.


photo courtesy of Colorado Natural Areas Program

Although this system forms the matrix vegetation in parts of the Central Mixedgrass Prairie ecoregion, it is a large patch system in Colorado. In regions where this system is matrix forming, a viable example of this system would be large enough that fire and grazing can occur at spatial and temporal scales approaching those at which they naturally occurred, and viable sizes would range from 5,000 to over 100,000 acres. In the Colorado, occurrences of this size would simply not be found, and size ranking is adjusted accordingly.

McGinnies, W.J., H.L. Shantz, and W.G. McGinnies. 1991. Changes in Vegetation and Land Use in Eastern Colorado: A Photogaphic Study, 1904 to 1986. US Department of Agriculture, Agricultural Research Service, ARS-85, 165 pp.

Rank:	A	B	C	D
① CONDITION				
Community structure	In general, canopy cover is at least 60% mid-height grasses. Native bunchgrasses form extensive stands, providing suitable structure for grassland birds which prefer them. Species richness is high and includes native grasses as well as a diverse forb component.	Native bunchgrasses form extensive stands, providing suitable structure for grassland birds. Species richness is high, and native grasses (non-increasers) are common. Vegetation structure or composition may be somewhat altered (e.g. increased shrub component or loss of diversity on sandsage prairie from heavy grazing or lack of fire) but is still dominated by native species.	Native bunchgrasses are present but may be nearly equal in canopy cover to non-native species. Forb diversity is low, and species richness is reduced in comparison with higher ranked occurrences.	Non-native species are very common to dominant over much of the landscape and have greatly altered native species composition (including reduced diversity). Native species have less than 10% canopy cover and 20% relative cover. Alteration of vegetation is extensive and restoration potential is low.
Invasive exotics with major potential to alter structure and composition	Absent .	May be present, but <1% cover.	May be prominent in small and discrete patches but still controllable.	Present.
Other non-native spp.	<1% cover, native species dominant.	<3% cover, native species dominant.	10% cover	Dominant.
Native increaser spp.	< 3% cover	<10% cover	May be dominant to co-dominant.	
Disturbance	Fragmentation from roads and developments, non-native grasslands, row crops, or other cover types not dominated by native midgrass prairie species is less than 1% of the occurrence. Surface and groundwater hydrologic regimes are unaltered, or very little altered.	Fragmentation from roads and developments are less than 5% of the occurrence.	Fragmentation, vehicle use or livestock grazing disturbance, if present, is extensive and significant enough to have notable impact on species composition and soil compaction.	Vehicle use or livestock grazing disturbance, if present, is extensive and significant enough to have notable impact on species composition, erosion, and soil compaction.
Ground cover	No erosion or soil compaction is evident.	Little to no erosion or compaction of the soil is evident.	Plant density and production may be reduced, and litter may be excessive. Some erosion and soil compaction may be evident.	Disturbance has had notable impact on species composition, soil compaction, and soil erosion.
② LANDSCAPE CONTEXT				
Surrounding land	Occurrence surrounded by a native and unaltered landscape of other high-quality natural Great Plains communities, with very little to no urban development or agriculture (> 90% natural).	The occurrence is surrounded by a landscape that has had some land conversion but in general is still ecologically connected with many of the adjacent natural communities (60-90% natural). Few non-natural barriers present.	The surrounding landscape is a mosaic of agricultural or semi-developed areas with natural or semi-natural vegetation. Adjacent systems surrounding occurrence are fragmented by alteration (20-60% natural), and have limited connectivity for species dispersal, migration or recolonization.	The surrounding landscape is almost entirely dominated by lands converted to agricultural or urban uses.
Connectivity	Connectivity of adjacent systems allows species dispersal, migration, or recolonization. Natural ecological processes such as fire are still able	Natural processes, species interaction and migration can occur across most of the adjacent communities or systems. Few non-	Some non-natural barriers are present. Many species will not be viable within the community. Significant disturbance, but easily	Connectivity is severely hampered. Ecological processes and species migration cannot occur at a natural scale.

	to function or be simulated by management.	natural barriers are present. Adjacent systems surrounding occurrence have moderate urban or agricultural alteration but retain much connectivity. Natural ecological processes are still able to function or be simulated by management.	restorable. Major natural ecological processes may have been altered, but could be easily restored.	
③ SIZE				
Acres	>5,000	2,000-5,000	1,000-2,000	< 1,000