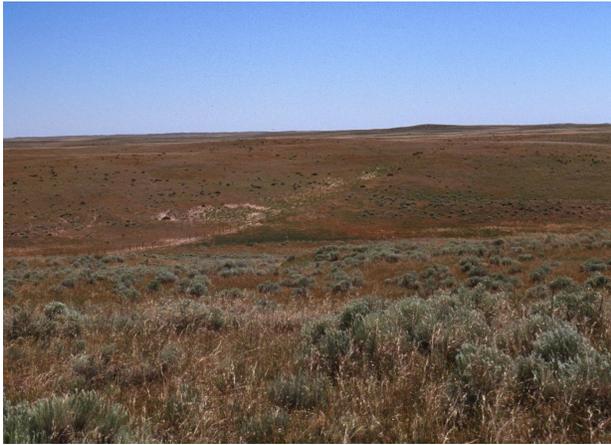
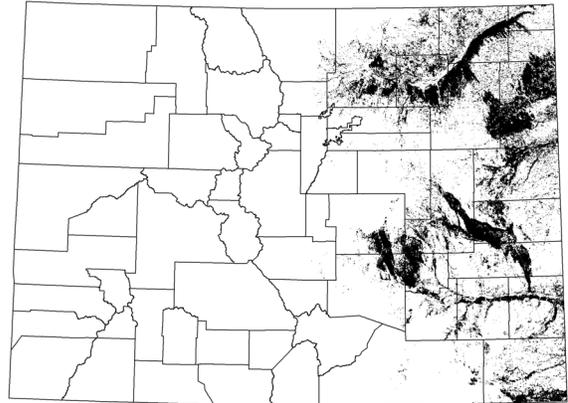


## WESTERN GREAT PLAINS SANDHILL SHRUBLAND



S. Kettler



extent exaggerated for display

### ARTEMISIA FILIFOLIA SHRUBLAND ALLIANCE

*Artemisia filifolia* / *Andropogon hallii* Shrubland

*Artemisia filifolia* / *Bouteloua (curtipendula, gracilis)* Shrubland

*Artemisia filifolia* / *Calamovilfa longifolia* Shrubland

*Artemisia filifolia* / *Schizachyrium scoparium* - *Andropogon hallii* Shrubland

*Artemisia filifolia* / *Sporobolus cryptandrus* Shrubland

### PRUNUS ANGUSTIFOLIA SHRUBLAND ALLIANCE

*Prunus angustifolia* / *Schizachyrium scoparium* Shrubland

### QUERCUS HAVARDII SHRUBLAND ALLIANCE

*Quercus havardii* / *Sporobolus cryptandrus* - *Schizachyrium scoparium* Shrubland

**Overview:** The sandsage prairie ecological system is found primarily in the south-central areas of the Western Great Plains Division. Occurrences range from the Nebraska Sandhill region south to central Texas, although some examples may reach as far north as the Badlands of South Dakota. The greater part of the system occurs in the Central Shortgrass Prairie Ecoregion in eastern Colorado, western Kansas and southwestern Nebraska. The climate is semi-arid to arid for much of the region in which this system occurs. This system is found on somewhat excessively to excessively well-drained, deep sandy soils that are often associated with dune systems and ancient floodplains. In some areas, this system may actually occur as a result of overgrazing in Western Great Plains Tallgrass Prairie or Western Great Plains Sand Prairie. Throughout its range it is closely tied to sandy soils, and this edaphic restriction is characteristic of large patch systems. In addition, this system is likely to intergrade closely with shortgrass prairie, perhaps forming a locally patchy sandsage/shortgrass matrix, and therefore it may be difficult to delimit as a distinct ecological system in places.

**Characteristic species:** Throughout its range, this system is characterized by a sparse to moderately dense woody layer dominated by *Artemisia filifolia*. These shrubs usually do not grow as clumps but as individuals, and the intervening ground is most often dominated by a sparse to moderately dense layer of tall, mid- or short grasses. Associated species can vary with geography, precipitation, disturbance and soil texture. Graminoid species such as *Andropogon hallii*, *Sporobolus cryptandrus*, *Calamovilfa longifolia*, *Calamovilfa gigantea*, *Hesperostipa comata*, and *Bouteloua* spp. are often associated with this system. Other shrub species may also be present including *Yucca glauca*, *Prosopis glandulosa*, *Rhus trilobata*, and *Prunus angustifolia*. A few species such as the shrubs *Prunus pumilla* var. *besseyi* and *Amorpha canescens* and the grasses *Panicum virgatum* and *Sorghastrum nutans* are believed to have been formerly more common, but now much decreased, most likely by cattle grazing throughout the growing season (pers. comm. Harvey Sprock and Ben Berlinger, Colorado NRCS).

Greater and lesser prairie-chickens, Cassin's sparrows, and ornate box turtles are indicators of a healthy sandsage prairie system.

**Environment:** In eastern Colorado, this system is found in extensive tracts on Quaternary eolian deposits along the South Platte, Arikaree and Republican Rivers, between Big Sandy and Rush Creeks, and along the Arkansas and Cimarron Rivers, where it is contiguous with areas in Kansas (Comer et al. 2003).

**Dynamics:** Fire and grazing are the most important dynamic processes for this type, although drought stress can impact this system significantly in some areas (Ramaley 1939). Excessive grazing can lead to decreasing dominance of some of the grass species such as *Andropogon hallii*, *Calamovilfa gigantea*, *Calamovilfa longifolia* and *Schizachyrium scoparium*.



R. Rondeau

**Variation:** Colorado’s eastern plains exhibit climatic differences from north to south which may be reflected in the local expression of sandsage prairie. Occurrences in southern Colorado experience a longer growing season, lower annual precipitation, and differences in precipitation patterns (Western Regional Climate Center 2004), and may be dominated by different species than northern stands. In the southern range of this system, *Quercus havardii* may also be present and represents one succession pathway that develops over time following a disturbance. *Quercus havardii* is able to resprout following a fire and thus may persist for long periods of time once established (Wright and Bailey 1982).

Comer, P., S. Menard, M. Tuffly, K. Kindscher, R. Rondeau, G. Jones, G. Steinuaer, and D. Ode. 2003. Upland and Wetland Ecological Systems in Colorado, Wyoming, South Dakota, Nebraska, and Kansas. Report and map (10 hectare minimum map unit) to the National Gap Analysis Program. Dept. of Interior USGS. NatureServe.

Ramaley, F. 1939. Sand-hill vegetation of northeastern Colorado. Ecological Monographs 9(1):1-51.

Western Regional Climate Center. 2004. Climate of Colorado narrative and state climate data. Available online at <http://www.wrcc.dri.edu>

Wright, H.A. and A.W. Bailey. 1982. *Fire ecology: United States and southern Canada*. John Wiley and Sons. NY. 501 p.

Rank:	A	B	C	D
<b>① SIZE</b>				
<b>Acres</b> Size specifications are based on the potential for an occurrence to support Greater or Lesser Prairie Chicken populations.	>100,000	30,000-100,000	14,000-30,000	< 14,000
<b>② CONDITION</b>				
<b>Community structure</b>	A variety of seral stages are represented which could provide habitat for all phases of the lesser or greater prairie-chicken life cycle. The vegetation exhibits a diversity of native short to tall grasses and native forbs	Heterogeneity of seral stages is present throughout the majority of the occurrence or easily re-established through management practices. Native tallgrass species are common.	Much of the occurrence is dominated by a single seral stage, and may be lacking in vegetative species diversity. Native tallgrass species are lacking or present in minor amounts only on the most productive or	Vegetation on the occurrence has little or no structural diversity and is likely to have low native species diversity. Cover required for nesting and/or breeding of grassland birds is not sufficient, or there are no

	interspersed with sparse to somewhat dense low-growing shrubby cover which includes sufficient cover for nesting and broodrearing, as well as open areas suitable for leks.		protected sites.	open sites suitable for leks.
<b>Non-native/Invasive spp.</b>	Absent or minimal.	May be present but are controllable.	May be having an impact on the stability of the system, but could be controlled with a sustained effort.	Present and widespread.
<b>Disturbance</b> (e.g. historically tilled areas, roads, oil and gas wells, windmills, stock ponds, etc.)	Alteration from presettlement conditions is minimal or non-existent.	Alteration from presettlement conditions is present but in less than 5% of the habitat.	Alteration from presettlement conditions is present but in less than 10% of the habitat.	More than 10% of the area impacted by anthropogenic alterations.
<b>Internal fragmentation</b>	Internal fencing divisions are at least four square miles in extent. The area retains sufficient internal connectivity to allow natural processes (fire, drought stress) to operate to maintain heterogeneous structure.	Internal fencing divisions average at least one square mile in extent. Fragmentation is minimal, or can be easily mitigated.	Internal fencing divisions are less than one square mile in extent. Internal fragmentation and alteration from natural conditions is present in more than 5% of the occurrence.	The occurrence has a high level of internal fragmentation.

### ③ LANDSCAPE CONTEXT

<b>Surrounding land</b>	Occurrence is surrounded by a native and unaltered landscape with very little to no urban development or cultivated agriculture (>90% natural).	Landscape is composed of at least 70-90% natural or semi-natural vegetation, with little urban development directly adjacent to the occurrence.	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 (20-70% natural).	Major human-caused alteration of surrounding landscape.
<b>Landscape fragmentation</b>	Fencing divisions are at least four square miles in extent. There is little or no fragmentation by cropland, development, trees, or roads.	Fencing divisions average at least one square mile in extent. Fragmentation is minimal, or can be easily mitigated.	Internal fragmentation and alteration from natural conditions is present in more than 5% of the occurrence. Internal fencing divisions are less than one square mile in extent.	Landscape has a high level of internal fragmentation.
<b>Area landuse patterns</b>	Generally stable from year to year, changing at a rate of less than 2% per decade.		May be changing from year to year, at a rate greater than 2% per decade.	
<b>Connectivity</b>	Connectivity of adjacent systems (including other matrix and large patch systems) allows natural ecological processes (e.g. fire) to occur, facilitates migration, and results in greater than 300,000 acres of native prairie.	Connectivity of adjacent systems should result in 150,000 - 300,000 acres of native prairie.	Connectivity of adjacent systems should result in 50,000 - 150,000 acres of native prairie.	Connectivity is severely hampered.