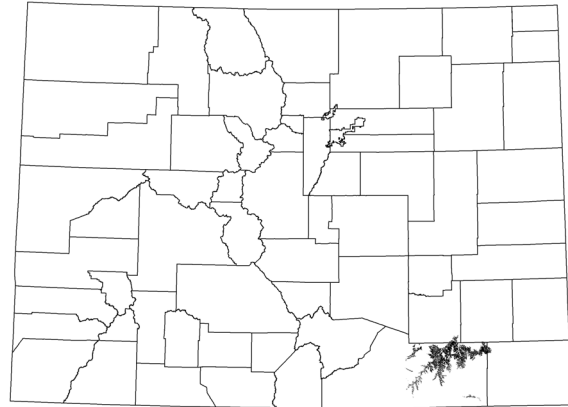


## SOUTHWESTERN GREAT PLAINS CANYON



R. Rondeau



extent exaggerated for display

### JUNIPERUS MONOSPERMA WOODLAND ALLIANCE

- Juniperus monosperma* / *Bouteloua curtipendula* Woodland
- Juniperus monosperma* / *Bouteloua eriopoda* Woodland
- Juniperus monosperma* / *Bouteloua gracilis* Woodland
- Juniperus monosperma* / *Cercocarpus montanus* - *Ribes cereum* Woodland
- Juniperus monosperma* / *Cercocarpus montanus* Woodland
- Juniperus monosperma* / *Hesperostipa neomexicana* Woodland
- Juniperus monosperma* / *Quercus x pauciloba* Woodland

### QUERCUS GAMBELII SHRUBLAND ALLIANCE

- Quercus gambelii* / *Symphoricarpos oreophilus* Shrubland

### CERCOCARPUS MONTANUS SHRUBLAND ALLIANCE

- Cercocarpus montanus* / *Achnatherum scribneri* Shrubland
- Cercocarpus montanus* / *Bouteloua curtipendula* Shrubland
- Cercocarpus montanus* / *Hesperostipa comata* Shrubland
- Cercocarpus montanus* / *Hesperostipa neomexicana* Shrubland
- Cercocarpus montanus* / *Rhus trilobata* var. *trilobata* Shrubland
- Cercocarpus montanus* - *Rhus trilobata* / *Andropogon gerardii* Shrubland

### RHUS TRILOBATA SHRUB HERBACEOUS ALLIANCE

- Rhus trilobata* Rocky Mountain Shrub Herbaceous Vegetation [Provisional]
- Rhus trilobata*-*Philadelphus microphyllus* (undescribed)
- Rhus trilobata*-*Ribes cereum* (undescribed)

### RIBES CEREUM SHRUBLAND ALLIANCE

### ARTEMISIA BIGELOVII SHRUBLAND ALLIANCE

- Artemisia bigelovii* / *Achnatherum hymenoides* Shrubland

### FRANKENIA JAMESII DWARF-SHRUBLAND (PROPOSED)

- Frankenia jamesii* / *Achnatherum hymenoides* (undescribed)
- Glossopetalon spinescens* var. *meionandrum* - *Frankenia jamesii* (undescribed)

### BOUTELOUA GRACILIS HERBACEOUS ALLIANCE

- Bouteloua gracilis* - *Pleuraphis jamesii* Herbaceous Vegetation
- Opuntia imbricata*-(*Chrysothamnus nauseous*) / *Bouteloua gracilis*-*Pleuraphis jamesii* Shrub Herbaceous (undescribed)

**Overview:** This system occurs in both perennial- and intermittent-stream canyons of the southwestern Great Plains. Soils can range from deep loams to alluvial to sandy. The mosaic of soil types which have developed from sandstone, limestone, basalt, and shale parent materials create a complex mosaic of grasslands, shrublands, and woodlands within the canyon system (Shaw et al. 1989). Although the system combines many elements from Southern Rocky Mountains Juniper Woodland and Savanna, Southern Rocky Mountains Lower Montane-Foothills Shrubland, Western Great Plains Shortgrass Prairie, and other shrublands, the varied geology, diverse soil types, and topographic dynamics together form a distinct ecological system complex characteristic of the canyons and dissected mesas of the southwestern Great Plains.

**Characteristic species:** Open to moderately dense piñon-juniper woodlands occupy most of the canyonland slopes. Scattered *Pinus edulis* may occur within these community types but are never dominant. Woodlands may be floristically similar to and intergrade with Southern Rocky Mountains Juniper Woodland and Savanna, but are distributed along rocky outcrops, canyon slopes, and mesas. *Juniperus monosperma* is the most common tree species, and forms extensive woodlands with an understory of *Bouteloua eriopoda*, *B. gracilis*, *B. hirsuta*, *B. curtipendula*, and *Pleuraphis jamesii*, or sometimes with an open shrub layer dominated by *Cercocarpus montanus*. Isolated small patches of *Pinus ponderosa* or *Populus tremuloides* woodland are found in some locations. Shrublands occur on canyon bottoms, in narrow side canyons, and integrate with woodlands on upper slopes. A mosaic of shrub species is characteristic of canyon walls and slopes, and varies with substrate and moisture availability. Common species include *Artemisia bigelovii*, *Cercocarpus montanus*, *Rhus trilobata*, *Ribes* spp., *Ptelea trifoliata*, *Philadelphus microphyllus*, and *Yucca glauca*. *Frankenia jamesii* and *Glossopetalon spinescens* var. *meionandrum* (*Forsellesia meionandra*) form a community restricted to gypsiferous and calciferous soils. Canyon floors, gravelly river benches and the bases of mesa slopes often support a degraded shrubby grassland of *Chrysothamnus nauseosus* and *Opuntia imbricata* with an understory of *Bouteloua gracilis* and *Pleuraphis jamesii*. Rock outcrops with sparse vegetation are also common.

Because of the varied topography, relatively permanent water along stream beds and southern location, these canyonlands have a rich herpetofauna. This system provides good habitat for a number of snake species that are otherwise uncommon in the Central Shortgrass Prairie ecoregion, including Texas blind snake (*Leptotyphlops dulcis*), ringneck snake (*Diadophis punctatus*), night snake (*Hypsiglena torquata*), and ground snake (*Sonora semiannulata*) (Mackessy 1998). Occasional seeps and springs of the canyon walls provide habitat for rare ferns.

**Variation:** Vegetation varies both regionally and locally depending on latitude, aspect, slope position and substrate and can range from riparian vegetation to xeric or mesic woodlands and shrublands.

Mackessy, S.P. 1998. A Survey of the Herpetofauna of the Comanche National Grasslands in Southeastern Colorado. USDA/Forest Service. 61 pages. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/1999/comaherp/comaherp.htm> (Version 04JUN99).

Shaw, R.B., S.L. Anderson, K.A. Schulz, V.E. Diersing. 1989. Plant communities, ecological checklist, and species list for the U.S. Army Pinon Canyon Maneuver Site, Colorado. Science Series No. 37. Department of Range Science, Colorado State University, Ft. Collins, Colorado.

Rank:	A	B	C	D
<b>① CONDITION</b>				
<b>Community structure</b>	Species richness is high and includes a diverse shrub component. There may be minor or easily restorable impacts from human use to the vegetation and natural processes which have not permanently altered the vegetation structure and composition.	Impacts from human activities are not excessive and natural conditions should be easily restored with some change in management in a relatively short time period (within 10-25 years).	Native species are present but may be nearly equal in canopy cover to non-native species. Tree or shrub density may be altered from natural conditions due to grazing or other disturbance. Species richness is reduced in comparison with higher ranked occurrences.	Native species composition is greatly altered (including reduced diversity).
<b>Invasive exotics with major potential to alter structure and composition (e.g.,)</b>	Absent.	< 1%	May be prominent in small and discrete patches but still controllable.	Widespread, and control would be extremely costly.
<b>Other non-native spp.</b>	<1%, native species dominant.	May be present in low abundance (< 3% total canopy cover) throughout and abundant in small parts of the area (such as around stock tanks or corrals).	Present but have less than 10% cover.	Very common to dominant over much of the landscape.
<b>Fragmentation from roads, dams, development, or agriculture</b>	< 1% of the occurrence.	< 5% of the occurrence.		Non-natural disturbances are extensive throughout the occurrence.
<b>Natural processes</b>	Natural ecological processes are still able to function or be simulated. Natural erosional processes are functioning without impediment.	Natural ecological processes are still able to function or be simulated. Natural erosional processes are functioning.	Some natural ecological processes may no longer be able to function or be fully restored.	The system remains fundamentally compromised despite restoration of some processes.
<b>Surface and groundwater hydrologic regimes</b>	Unaltered, or very little altered.	Very little altered, and any alterations have not significantly changed the associated communities.	Hydrological alteration is widespread but potentially restorable over several decades.	Hydrological alteration is extensive and restoration potential is low.
<b>② SIZE</b>				
<b>Acres</b>	>5,000	2,000-5,000	1,000-2,000	< 1,000
<b>③ LANDSCAPE CONTEXT</b>				
<b>Connectivity</b>	Species interactions and movements between adjacent systems are unimpeded. Natural processes are occurring across communities.	Species interactions and movement across adjacent systems are largely unaffected by fragmentation. The surrounding landscape may include partially disturbed natural or semi-natural communities, but natural processes are able to occur across most communities.	Interconnectivity with the larger drainage system is somewhat fragmented. with barriers between species interactions and natural processes across natural communities.	The occurrence is isolated from similar occurrences within the larger drainage system (i.e. large dams are present), and highly fragmented by roads or other development.
<b>Surrounding land</b>	The occurrence is an integral part of a large canyon drainage system. The area around the occurrence is largely intact natural vegetation.	The occurrence is well connected to a larger canyon drainage system but may have minimal fragmentation. The area around the occurrence is mostly intact natural vegetation.	The area around the occurrence is largely a combination of cultural and natural vegetation.	The area around the occurrence is entirely, or almost entirely surrounded by agricultural or urban land use. At best, the occurrence is buffered on one side by natural communities.