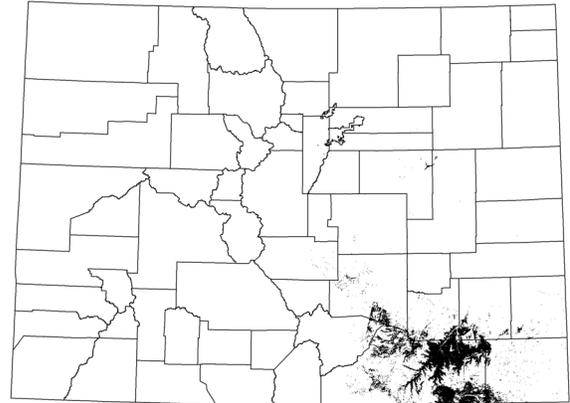


SOUTHERN ROCKY MOUNTAIN JUNIPER WOODLAND AND SAVANNA



JUNIPERUS MONOSPERMA WOODLAND ALLIANCE

Juniperus monosperma / *Andropogon hallii* Woodland
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 / *Krascheninnikovia lanata* Woodland
Juniperus monosperma - *Rhus trilobata* / *Schizachyrium scoparium* Woodland

JUNIPERUS SCOPULORUM WOODLAND ALLIANCE

Juniperus scopulorum / *Schizachyrium scoparium* Woodland

Overview: The Juniper Woodland and Savanna ecological system occupies lower and warmer elevations, primarily along the eastern and southern edge of the southern Rockies and Arizona-New Mexico mountains. Juniper woodlands and savannas are usually found just below the lower elevational range of *Pinus ponderosa* and often intermingle with grasslands and shrublands. In the canyons and tablelands of the southern Great Plains this system forms extensive cover at some distance from the mountain front. In the Colorado, this system is largely confined to the southeastern plains where it forms an extensive matrix with the Southwestern Great Plains Canyon ecological system.

Characteristic species: This system is best described as a savanna that has widely spaced mature (>150 years old) juniper trees with only occasional *Pinus edulis*. *Juniperus monosperma* and *Juniperus scopulorum* are the dominant tall shrubs or scattered short trees, though there may be inclusions of more dense juniper woodlands. Graminoid species are similar to those found in Western Great Plains Shortgrass Prairie, with *Bouteloua gracilis* and *Pleuraphis jamesii* being most common. In addition, succulents such as species of *Yucca* and *Opuntia* are typically present.

Environment: Occupies the lower and warmer elevations, growing from about 4,260 to 6,000 feet (1,300-1,830 m) in a semi-arid climate.

Dynamics: Although juniper woodlands and savannas are expected to occur naturally on the landscape, the extent and quality of this system has been severely altered since the early 1900's. Numerous studies have shown that juniper has encroached on shrublands and grasslands (e.g., Blackburn and Tueller 1970, West 1999). Processes that influence the formation and persistence of juniper savannas include climate, grazing, fires, tree harvest, and insect-pathogen outbreaks (West 1999; Eager 1999). Alteration of fire intensity and frequency, historic heavy livestock grazing, and changes in climate has led to various densities of younger trees occurring on some sites that were once shrublands or grasslands (West 1999, Commons et al. 1999).

Variation: Within a given region, the density of trees, both historically and currently, is strongly related to topoedaphic gradients. Less steep sites, especially those with finer textured soils, are where savannas, grasslands, and shrub steppes have occurred in the past. Juniper stands on these gentler slopes may have been larger but more savanna-like, with very open upper canopy and high grass production.



R. Rondeau

Blackburn, W. H., and P. T. Tueller. 1970. Pinyon and juniper invasion in black sagebrush communities in east-central Nevada. *Ecology* 51:841-848.

Commons M. L., R. K. Baydack and C. E. Braun. 1999. Sage grouse response to pinyon-juniper management. Pages 238-239 in S. B. Monsen and R. Stevens, eds., *Proceedings: ecology and management of pinyon-juniper communities within the Interior West*. U.S. Dept. Agric., Forest Service, Rocky Mountain Research Station, Proc. RMRS-P-9 Ogden, UT . 411 pp.

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Rank:	A	B	C	D
① CONDITION				
Tree density	<30 per ha on favorable sites, but may range up to 200 trees per ha on rocky, less favorable sites.	<40 per ha on favorable sites, but not more than 600 trees per ha on rocky, less favorable sites.	>40 trees per ha on favorable sites, >600 per ha on rocky, less favorable sites.	Very high (>800 ha) on both favorable and poor sites.
Community structure	Herbaceous cover between trees is heavy enough to carry surface fires with some frequency, at least on the less steep, rocky sites.	System occurrence is dominated by natives, herbaceous undergrowth is present but may be declining.	The system occurrence is dominated by native species; however, herbaceous undergrowth is becoming sparse and is not sufficient to carry fire.	Herbaceous undergrowth is nearly absent.
Fire regime	Fire has occurred within the stand within the last 10 years for deep soil sites.	Fire has occurred within the stand within the last 20-50 years for deep soil sites.	Fire has not occurred within the stand for 50-100 years.	Fire has not occurred within the stand for >100 years.
Invasive exotics with major potential to alter structure and composition (e.g., leafy spurge, Russian knapweed, diffuse knapweed, spotted knapweed, or yellow toadflax)	Either not present or occupy less than 1 percent of the occurrence, with no patches larger than 1 acre.	No more than 1-3% of the occurrence with no patches larger than 1 acre.	3-7% of the occurrence, with some patches larger than 1 acre.	

Non-native annual grasses (e.g., <i>Bromus tectorum</i>)	Absent or incidental.	May be present only in disturbed areas but not found throughout the occurrence.		Present and abundant.
Native perennial increaser spp.	May be present on <5% of the area.	May be present and even dominant in spots, but not throughout the occurrence.	>10%	May be dominant.
Disturbance	No surficial disturbance is evident, the stand has never been "chained" and re-seeded. Some disturbance may be evident in small, isolated areas (e.g., mines or ranch activities and buildings; minor off-road vehicle use of <1%).	Little to no surficial disturbance is evident (<20% of the area). The stand has never been "chained" and re-seeded, or if such activities have occurred they have not resulted in removal of pre-settlement trees, soil compaction, or significant changes in understory species composition.	Surficial disturbances occur on no more than 30% of the area. Less than 50% of the stand may have been "chained" and/or re-seeded.	Surficial disturbances occur on >50% of the area. The stand may have been "chained" but not more than 50% of the occurrence.
Roads	Few or none.	None to only a few.	More than a few.	Many.
Soil erosion	Not significantly accelerated by anthropogenic activities	Soil erosion may be accelerated in small patches, or lightly so throughout the occurrence, but can be easily reversed by relatively simple, straightforward, and inexpensive changes in management.	Soil erosion and gullyng may be observed in patches (up to 30%) within the stand.	May be severe in places.
② LANDSCAPE CONTEXT				
Surrounding land	Occurrence surrounded by at least 90% natural or semi-natural vegetation, with natural vegetation comprising the majority of the landscape.	Landscape composed of at least 80% natural or semi-natural vegetation. occurrence is surrounded by moderate- to low-quality prairie or other shrublands.	Landscape is a mosaic of agricultural or semi-developed areas and natural or semi-natural vegetation. Semi-natural vegetation may dominate the landscape.	Surrounded primarily by urban or agricultural landscape, with <25% landscape cover of natural or semi-natural vegetation.
Connectivity Does the surrounding landscape capture characteristic ecological gradients (including adjacent shortgrass prairie, canyons and shrublands) and geomorphic processes.	Highly connected.	Moderately connected.	Moderately fragmented and isolated.	Highly fragmented and isolated.
③ SIZE				
Acres	>5,000 Large enough to support a mosaic of stand conditions, ages, and disturbance patterns.	2,000-5,000	1,000-2,000	< 1,000 Subject to edge effects, with no opportunity for mosaic disturbance patterns.