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Southern Rocky Mountain Juniper Woodland and Savanna

BpS Model/Description Version: Aug. 20201/09/07

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Vegetation Type

Steppe/Savanna

Map Zone

34

Geographic Range

This system may be limited to this map zone (MZ) or this and adjacent MZs in Texas and Oklahoma. It occurs in ECOMAP (Cleland et al. 2007) subsections 315Ba, 315Cc, 315Fb, 315Fc, and 332Fb.

Biophysical Site Description

Historically this type was likely restricted to steep slopes, buttes and escarpments, but appears to have expanded into adjacent grasslands since the 1860s (Ellis and Schuster 1968). This BpS occurs within Rough Breaks Ecological Sites (USDA NRCS Ecological Site Description). The Caprock escarpment where this BpS occurs is dominated by caliche, a layer of calcium carbonate that resists erosion.

Vegetation Description

This system varies from relatively open savannas to closed-canopy woodlands. Some occurrences might be interpreted as shrublands. Pinchot's juniper (*Juniperus pinchotii*) and oneseed juniper (*J. monosperma*) often dominate the system, along with fragrant sumac (*Rhus aromatica*), featherplume (*Dalea formosa*), Mohr oak (*Quercus mohriana*), and honey mesquite (*Prosopis glandulosa*) at some sites. Other shrub components may include lotebush (*Ziziphus obtusifolia*), algerita (*Berberis trifoliolata*), soapweed yucca (*Yucca angustifolia*), tulip prickly pear (*Opuntia phaeacantha*), and netleaf hackberry (*Celtis reticulata*). Grass species present include middle and short grasses such as sideoats grama (*Bouteloua curtipendula*), blue grama (*B. gracilis*), little bluestem (*Schizachyrium scoparium*), purple threeawn (*Aristida purpurea*), slim tridens (*Tridens muticus*), and plains lovegrass (*Eragrostis intermedia*). Forbs are also present and may be diverse.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
JUPI	<i>Juniperus pinchotii</i>	Pinchot's juniper
JUMO	<i>Juniperus monosperma</i>	Oneseed juniper
PRGL2	<i>Prosopis glandulosa</i>	Honey mesquite
RHAR4	<i>Rhus aromatica</i>	Fragrant sumac
BOCU	<i>Bouteloua curtipendula</i>	Sideoats grama

BOGR2	<i>Bouteloua gracilis</i>	Blue grama
SCSC	<i>Schizachyrium scoparium</i>	Little bluestem

Species names are from the NRCS PLANTS database. Check species codes at <http://plants.usda.gov>.

Disturbance Description

Extreme regional droughts would tend to open the canopy.

Fire return interval is somewhat longer for this Biophysical Setting (BpS) than it is in adjacent BpSs because of the differences in fine fuel availability due to edaphic differences between the surrounding landscape and the effect of the juniper canopy on fine fuel development. In addition, FRI is affected by topographic sheltering, which causes most fires to burn in a very interrupted pattern as opposed to a wide flaming front as they do in adjacent BpSs. Also, there is considerable variation around the mean fire return interval, which has profound consequences for ecosystem response.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	88	45		
Moderate (Mixed)	346	11		
Low (Surface)	89	44		
All Fires	39	100		

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

Historically, this system probably occurred as a relatively continuous ribbon along escarpments and breaks, up to about 2km in width.

Adjacency or Identification Concerns

Currently, junipers, along with mesquite, have invaded adjacent grasslands. Mapping will be difficult because of the increase in woody vegetation in the absence of a natural fire cycle and in the presence of modified grazing regime, making this type an uncharacteristic representation of adjacent shortgrass and mixedgrass prairie.

Issues or Problems

Native Uncharacteristic Conditions

Comments

Moving forward, junipers may increase for a while, which will decrease available water for other plant species. This change will decrease fine fuels as well as soil-holding capacity for the adjacent lands. Increased drought will cause increased juniper mortality after the increase of juniper density. The results may be a fairly barren and wind erosion habitat.

Drought cycle rate will decrease with climate change. Fine fuels will become less dense due to more prolonged and frequent drought. Overstory will be decreased due to mortality rates increasing due to drought.

Succession Classes

Mapping Rules

Upper Layer Lifeform	Height (m)	Canopy Cover (%)									
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Herb	0-0.5	A	A	A	A	A	A	A	A	A	A
Herb	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Herb	>1.0	A	A	A	A	A	A	A	A	A	A
Shrub	0-0.5	A	A	A	A	A	A	A	A	A	A
Shrub	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Shrub	1.0-3.0	A	A	A	A	A	A	A	A	A	A
Shrub	>3.0	A	A	A	A	A	A	A	A	A	A
Tree	0-5	B	B	B	C	C	C	C	C	UN	UN
Tree	5-10	B	B	B	C	C	C	C	C	UN	UN
Tree	10-25	B	B	B	C	C	C	C	C	UN	UN
Tree	25-50	B	B	B	C	C	C	C	C	UN	UN
Tree	>50	B	B	B	C	C	C	C	C	UN	UN

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

Description

Class A 14 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
BOCU	Bouteloua curtipendula	Sideoats grama	Upper
CHER2	Chaetopappa ericoides	Rose heath	Upper
GUSA2	Gutierrezia sarothrae	Broom snakeweed	Upper

Description

Early open following catastrophic fire taking out canopy. Cover of graminoids and forbs with standing dead woody stems.

Maximum Tree Size Class

None

Class B 23 Mid Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
JUPI	Juniperus pinchotii	Pinchot's juniper	Upper
JUMO	Juniperus monosperma	Oneseed juniper	Upper

Replacement Fire	Late1:CLS	Early1:ALL	0.004	250	Yes	0
Wind or Weather or Stress	Late1:CLS	Mid1:OPN	0.007	143	Yes	0

References

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USDA-NRCS Ecosite/Range Site Descriptions, Section II, Field Office Technical Guides. <http://www.nrcs.usda.gov/Technical/efotg/>.