

11170

Southern Rocky Mountain Ponderosa Pine Savanna

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Steppe/Savanna

Map Zones

13, 15, 28

Geographic Range

Central and northern New Mexico and Arizona, southern Colorado, possibly southern Utah.

Biophysical Site Description

1,970-2,575m in elevation on a variety of topographic features, including mountains, mesas, and canyons. Mean annual precipitation ranges from ~16-25in. Biophysical Setting (BpS) is best described as a savanna that has widely spaced (>150yrs old) *Pinus ponderosa*.

Vegetation Description

Overstory canopy of ponderosa pine with a grassy understory, predominantly the bunchgrasses Arizona fescue and mountain muhly. May include sites with minor cover of Gambel oak (<15% cover).

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
PIPO	<i>Pinus ponderosa</i>	Ponderosa pine
FEAR2	<i>Festuca arizonica</i>	Arizona fescue
MUMO	<i>Muhlenbergia montana</i>	Mountain muhly

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

Disturbance Description

Mean composite surface fire intervals have been found to be 5-15yrs (Swetnam and Baisan 1996). Infrequent stand-replacement fire on the order of a few hundred years possible (300-500yrs?). Drought and other weather events (e.g., blowdown), parasites, and disease may play a minor role and have very long rotations. Insects may be a significant but infrequent occurrence.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	367	3		
Moderate (Mixed)				
Low (Surface)	11	97		
All Fires	11	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

Landscape scale (1,000s to tens of 1,000s of acres) (Swetnam and Baisan 1996).

Adjacency or Identification Concerns

Issues or Problems

Replacement fire rotation uncertain, and this affects the amount of forest in each class.

Native Uncharacteristic Conditions

Comments

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	A	A	A	A	A	A	A	A	A	A
Tree	5-10	C	C	C	C	C	B	B	B	B	B
Tree	10-25	D	D	D	D	D	E	E	E	E	E
Tree	25-50	D	D	D	D	D	E	E	E	E	E
Tree	>50	D	D	D	D	D	E	E	E	E	E

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	10	Early Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
FEAR2	Festuca arizonica	Arizona fescue	Lower
MUMO	Muhlenbergia montana	Mountain muhly	Lower
PIPO	Pinus ponderosa	Ponderosa pine	All

Bunchgrass-dominated (<90% canopy cover and any height). Some ponderosa pine individuals also becoming established.

Seedling <4.5ft

Indicator Species

Small and medium-sized ponderosa pine, still with high bunchgrass cover. Closed canopy defined as >50%.

Pole 5-9" DBH

Indicator Species

Small and medium-sized ponderosa pine, with moderate bunchgrass cover. Open canopy defined as 10-49%.

Pole 5-9" DBH

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIPO	<i>Pinus ponderosa</i>	Ponderosa pine	Upper
FEAR2	<i>Festuca arizonica</i>	Arizona fescue	Lower
MUMO	<i>Muhlenbergia montana</i>	Mountain muhly	Lower

Description

Large and very large old growth ponderosa pine, with medium to high cover of bunchgrasses. Old growth attributes prominent, including down wood, snags, and diseased trees.

Maximum Tree Size Class

Large 21-33" DBH

Class E

4

Late Development 1 - Closed

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIPO	Pinus ponderosa	Ponderosa pine	Upper
FEAR2	Festuca arizonica	Arizona fescue	Lower
MUMO	Muhlenbergia montana	Mountain muhly	Lower

Description

Large and very large old growth ponderosa pine, with medium cover of bunchgrasses. Old growth attributes prominent, including down wood, snags, and diseased trees.

Maximum Tree Size Class

Large 21-33" DBH

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Mid1:OPN	49
Mid1:OPN	50	Late1:OPN	149
Mid1:CLS	50	Late1:CLS	149
Late1:OPN	150	Late1:OPN	999
Late1:CLS	150	Late1:CLS	999

Probabilistic Transitions

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start Age After Disturbance?	Years Since Last Disturbance
Alternative Succession	Early1:ALL	Mid1:CLS	0.01	100	Yes	0
Replacement Fire	Mid1:OPN	Early1:ALL	0.003	333	Yes	0
Surface Fire	Mid1:OPN	Mid1:OPN	0.1	10	No	0
Replacement Fire	Mid1:CLS	Early1:ALL	0.003	333	Yes	0
Surface Fire	Mid1:CLS	Mid1:OPN	0.05	20	Yes	0
Surface Fire	Mid1:CLS	Mid1:CLS	0.05	20	No	0
Alternative Succession	Late1:OPN	Late1:CLS	0.003	333	Yes	0
Replacement Fire	Late1:OPN	Early1:ALL	0.003	333	Yes	0

Surface Fire	Late1:OPN	Late1:OPN	0.1	10	No	0
Replacement Fire	Late1:CLS	Early1:ALL	0.003	333	Yes	0
Surface Fire	Late1:CLS	Late1:OPN	0.05	20	Yes	0
Surface Fire	Late1:CLS	Late1:CLS	0.05	20	No	0

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