

10490

Rocky Mountain Foothill Limber Pine-Juniper Woodland

BpS Model/Description Version: Aug. 202011/18/05

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Vegetation Type

Forest and Woodland

Map Zones

19, 20, 21, 23, 28, 29

Geographic Range

Northern Montana to central Colorado, on escarpments across Wyoming into the Black Hills.

Biophysical Site Description

Occurs in foothill and lower montane zones into the western Great Plains. Elevation ranges from 1,000-2,400m (3,300-7,900ft). Occurs in shallow soils with high rock component, often gravelly and calcareous. Slopes are moderately steep to steep, typically on steep, rocky, well-drained, windswept, and nutrient-poor sites on exposed ridges and summits.

Vegetation Description

Open canopy dominated by *Pinus flexilis*. Commonly associated with *Juniperus scopulorum*, to a lesser extent *Juniperus osteosperma*. Often associated with *Pinus ponderosa*. *Pinus edulis* is not present. The shrubs layer is sparse to moderately dense. Shrubs may include *Artemisia nova*, *Artemisia tridentata*, *Cercocarpus ledifolius*, *Cercocarpus montanus*, *Cornus sericea*, *Ericaneria nauseosa*, *Purshia tridentata*, *Rhus trilobata*, and *Rosa woodsii*. Herbaceous layers are sparse, often significantly different than surrounding community. These may include *Bouteloua gracilis*, *Leucopoa kingii*, *Hesperostipa comata*, *Koeleria macrantha*, *Pipatherum micranthum*, *Poa secunda*, and *Pseudoroegneria spicata*. Limber pine at lower elevation appear to be short-lived compared to those found at high elevation.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
PIFL2	<i>Pinus flexilis</i>	Limber pine
JUSC2	<i>Juniperus scopulorum</i>	Rocky mountain juniper
JUOS	<i>Juniperus osteosperma</i>	Utah juniper
ARNO4	<i>Artemisia nova</i>	Black sagebrush
ARTR2	<i>Artemisia tridentata</i>	Big sagebrush
BOGR2	<i>Bouteloua gracilis</i>	Blue grama
LEKI2	<i>Leucopoa kingii</i>	Spike fescue
POSE	<i>Poa secunda</i>	Sandberg bluegrass

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

Disturbance Description

Limber pine bark at the base of older trees may be 2in (5cm) thick; therefore, these trees can withstand stem scorch from low-severity fires. Terminal buds are somewhat protected from the heat associated with crown scorch by the tight clusters of needles around them. Wildfires are less frequent in limber pine communities than in other conifer habitats because of low fuel accumulation associated with poor soil development and limited grass and forb productivity. Locations where limber pine grows may have a much lower fire frequency than surrounding communities. Surrounding community fire regime may have an impact on limber pine.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	383	100		
Moderate (Mixed)				
Low (Surface)				
All Fires	383	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

10s to 100s of acres, generally smaller islands of trees.

Adjacency or Identification Concerns

Where limer pine grows in association with other trees, the fire regimes of those species are relevant and affect fire return interval.

Non-native white pine blister rust is a concern in Wyoming and northern Colorado.

Issues or Problems

Fire history is lacking with a wide range of estimates available. As a whole, fire is rare in this Biophysical Setting due to coarse, gravelly soils and rock. Review raises concern about the percent of replacement fire.

Native Uncharacteristic Conditions

Cover >70% can be considered uncharacteristic in this woodland community.

Comments

Succession Classes

Mapping Rules

[illegible]

Tree	0-5	A	A	A	A	A	A	A	UN	UN	UN
Tree	5-10	B	B	B	B	C	C	C	UN	UN	UN
Tree	10-25	B	B	B	B	C	C	C	UN	UN	UN
Tree	25-50	B	B	B	B	C	C	C	UN	UN	UN
Tree	>50	B	B	B	B	C	C	C	UN	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 21 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIFL	Pieris floribunda	Mountain fetterbush	Upper
JUSC2	Juniperus scopulorum	Rocky mountain juniper	Upper

Description

Seedling tend to establish in protected sites, shelter of rocks, little grass or herb competition.

Maximum Tree Size Class

Seedling <4.5ft

Class B 31 Mid Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIFL	Pieris floribunda	Mountain fetterbush	Upper
JUSC2	Juniperus scopulorum	Rocky mountain juniper	Upper

Description

Trees are established. Grasses and herbs are sparse in gravelly rocky soils.

Maximum Tree Size Class

Sapling >4.5ft; <5" DBH

Class C 48 Late Development 1 - Closed

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIFL	Pieris floribunda	Mountain fetterbush	Upper
JUSC2	Juniperus scopulorum	Rocky mountain juniper	Upper

Description

Mature trees, little grass and herbs on ground. Often little grass or herb cover.

Maximum Tree Size Class

Medium 9-21" DBH

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Mid1:OPN	99
Mid1:OPN	0	Late1:CLS	299
Late1:CLS	300	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
Replacement Fire	Early1:ALL	Early1:ALL	0.004	250	Yes	0
Replacement Fire	Mid1:OPN	Early1:ALL	0.004	250	Yes	0
Replacement Fire	Late1:CLS	Early1:ALL	0.001	1000	Yes	0

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