

10520

Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Forest and Woodland

Map Zone

13

Geographic Range

Rocky Mountains west into the ranges of the Great Basin and high elevations of the Mojave Desert (map zone [MZ] 13). Well represented in the Spring Mountains of southern Nevada.

Biophysical Site Description

Elevations range from 2,100-3,000m. Occurrences of this system are found on cooler sites, which include lower and middle slopes of ravines; stream terraces; moist, concave topographic positions; and north- and east-facing slopes.

Vegetation Description

Abies concolor is most common canopy dominant, but *Pinus flexilis* and *Pinus ponderosa* are also co-dominants. Long fire return intervals (FRIs) of this system favor a mixed-conifer composition. *Pinus longaeva* may be present. This is truly a mixed-conifer system with little bristlecone pine. This system includes small mixed-conifer/*Populus tremuloides* stands on more cooler sites (but see Adjacency/Identification Concerns). *Juniperus scopulorum* is present as a midstory tree. A number of cold-deciduous shrub species can occur, including *Cercocarpus ledifolius* var. *intermontanus* (CELEI4), *Acer glabrum*, *Cornus serecea*, *Ribes cereum*, *Juniper communis*, *Holodiscus* spp., and *Symphoricarpus oreophilus*. Herbaceous species include *Carex rossii*, *Bromus ciliatus*, *Pseudoroegneria spicata*, *Elymus elymoides*, *Poa fendleriana*, *Erigeron* spp., *Astragalus* spp., *Luzula parviflora*, and *Thalictrum fendleri*.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
ABCO	<i>Abies concolor</i>	White fir
PIFL2	<i>Pinus flexilis</i>	Limber pine
PIPO	<i>Pinus ponderosa</i>	Ponderosa pine
POTR5	<i>Populus tremuloides</i>	Quaking aspen
PILO	<i>Pinus longaeva</i>	Great basin bristlecone pine
CELEI4	<i>Cercocarpus ledifolius</i> var. <i>intermontanus</i>	Curl-leaf mountain mahogany
JUSC2	<i>Juniperus scopulorum</i>	Rocky mountain juniper

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

Disturbance Description

Naturally occurring fires are of variable return intervals and are mostly light, erratic, and infrequent due to the cool, moist conditions. These ecological systems are dominated by moderate- to high-frequency, low- and moderate-severity fire regimes, but some portions of these sites are transition zones to moderate-frequency, high-severity fire regimes. This vegetation is a transition between the frequent surface and mixed-severity fires of ponderosa pine and the more stand-replacement regimes common in high-elevation pine and fir ecosystems.

Surface fire and mixed-severity fire intervals were ~35-100yrs (Brown et al. 1994). Stand-replacement fires occurred at intervals of 150-400yrs+ (Crane 1986; Barrett 1988; Bradley 1992a and 1992b; Brown et al. 1994; Morgan et al. 1996). For MZ13, the high end of these ranges was chosen, and in some cases, the FRIs were doubled compared to values for MZ12 and MZ17 (Great Basin). Likelihood of stand-replacement fires increased with canopy closure and fuel ladders caused by white fir growth.

Other disturbances included insect, disease, drought, and wind and ice damage. Fire was by far the dominant disturbance agent, and fire activity increases with drought and insects.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	217	18	120	400
Moderate (Mixed)	194	21		
Low (Surface)	65	61		
All Fires	40	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

This Biophysical Setting (BpS) occurs in patches ranging from 100s-1,000s of acres. Fire size is between 10-1,000ac.

Adjacency or Identification Concerns

This ecological system is in the elevation belt between Southern Rocky Mountain Ponderosa Pine Woodland (BpS 1054) and Inter-Mountain Subalpine Limber-Bristlecone Pine Woodland (BpS 1020), as in the Spring Mountains of southern Nevada near Las Vegas (Nachlinger and Reese 1996). BpS 131052 is not a small system (patch size of 100-1,000s of acres).

Bps 131051, Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodlands, was lumped with BpS 131052 because it is a very small component of the landscape and, depending on aspect, completely intermingled within BpS 1052, thus probably not mappable. BpS 131151 is considered rare in the Mojave Desert. Douglas-fir, an important component of BpS 1051, is absent. The SW REGap mapped 131151 in the Spring Mountains exactly where BpS 131054, which is ponderosa pine woodlands, is found. The Spring Mountains are well known for their relatively pure ponderosa pine stands with shrubby understories. When mixed conifers occur, such as on the Spring Mountains, they are mesic and harbor aspen. White fir, limber pine, and

ponderosa pine are found in equal amounts, with some bristlecone pines increasing in importance with elevation.

This system includes small patches of mixed-conifer/*Populus tremuloides* (aspen) stands (much smaller than the mixed-conifer component). If aspen is present in large patches and soils show a clear organic layer, BpS 1061 Intermountain Basins Aspen-Mixed Conifer Forest and Woodland should be used. For MZ13, BpS 131061 was added to the list of BpSs based on Nachlinger and Reese's (1996) description of aspen/white fir communities associated with avalanche chutes and riparian corridors in the Spring Mountains. It is not clear whether BpS 131061 was more widespread during pre-settlement and replaced by BpS 131052 during the last century because of fire suppression and the association of aspen with riparian corridors and avalanches. Observation shows that avalanches and snow creep may be dominant disturbances and that these occur regardless of fire suppression. Also, it is not evident that Native American burning was prevalent in these small aspen communities.

Issues or Problems

Time Since Disturbance has a strong effect on the calculated Historic Range of Variability (HRV). We chose a period matching one fire cycle.

There are few data on this system in the Mojave Desert, except the description by Nachlinger and Reese (1996). FEIS describes results from other zones and completely lacks data from Nevada, especially southern Nevada, on some topics.

Native Uncharacteristic Conditions

Native tree cover can reach 100% and remains characteristic of the pre-settlement condition.

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	B	B	B	B	B	B	B
Tree	10-25	D	D	D	E	E	E	E	E	E	E
Tree	25-50	D	D	D	E	E	E	E	E	E	E
Tree	>50	D	D	D	E	E	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	12	Early Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
SYMPH	Symphoricarpos	Snowberry	Mid-Upper
PIPO	Pinus ponderosa	Ponderosa pine	Upper
HOLOD	Holodiscus	Oceanspray	Mid-Upper
POTR5	Populus tremuloides	Quaking aspen	Upper

Description

Tree seedling-shrub-grass-forb. Moderate to high herbaceous cover. Shrubs and trees species that resprout are *Symphoricarpos oreophilus*, *Ribes*, *Populus*, and *Holodiscus*.

Maximum Tree Size Class

Seedling <4.5ft

Class B	29	Mid Development 1 - Closed
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
ABCO	Abies concolor	White fir	Upper
PIPO	Pinus ponderosa	Ponderosa pine	Upper
PIFL2	Pinus flexilis	Limber pine	Upper

Description

This class includes closed trees, sapling, large poles, grass, and scattered shrubs. Composition is similar amounts of white fir, ponderosa pine, and limber pine.

Maximum Tree Size Class

Medium 9-21" DBH

Class C	15	Mid Development 1 - Open
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
ABCO	Abies concolor	White fir	Upper
PIPO	Pinus ponderosa	Ponderosa pine	Upper
PIFL2	Pinus flexilis	Limber pine	Upper

Open pole-sapling/grass and scattered shrubs; maybe 90% white fir and fire-resistant ponderosa pine.

Medium 9-21" DBH

Indicator Species

Open large tree/grass and scattered shrubs. Mixed conifers with more fire-resistant types dominant; ponderosa pine and limber pine. White fir present to abundant.

Large 21-33" DBH

Indicator Species

Closed medium to large trees, scattered shrubs, 60-100% white fir.

Large 21-33" DBH

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	0.0067	149	Yes	0
Wind or Weather or Stress	Early1:ALL	Early1:ALL	0.007	143	No	0
Mixed Fire	Early1:ALL	Early1:ALL	0.01	100	No	0
Alternative Succession	Mid1:OPN	Mid1:CLS	1	1	Yes	35
Wind or Weather or Stress	Mid1:OPN	Mid1:OPN	0.001	1000	No	0
Replacement Fire	Mid1:OPN	Early1:ALL	0.0025	400	Yes	0
Insects or Disease	Mid1:OPN	Mid1:OPN	0.01	100	No	0
Surface Fire	Mid1:OPN	Mid1:OPN	0.028	36	No	0
Wind or Weather or Stress	Mid1:CLS	Mid1:OPN	0.005	200	Yes	0
Replacement Fire	Mid1:CLS	Early1:ALL	0.0067	149	Yes	0
Mixed Fire	Mid1:CLS	Mid1:OPN	0.01	100	Yes	0
Insects or Disease	Mid1:CLS	Mid1:CLS	0.02	50	No	0
Alternative Succession	Late1:OPN	Late1:CLS	1	1	Yes	65
Wind or Weather or Stress	Late1:OPN	Late1:OPN	0.001	1000	No	0
Replacement Fire	Late1:OPN	Early1:ALL	0.0025	400	Yes	0
Insects or Disease	Late1:OPN	Late1:OPN	0.01	100	No	0
Surface Fire	Late1:OPN	Late1:OPN	0.028	36	No	0
Wind or Weather or Stress	Late1:CLS	Late1:OPN	0.005	200	Yes	0
Replacement Fire	Late1:CLS	Early1:ALL	0.0067	149	Yes	0
Insects or Disease	Late1:CLS	Mid1:OPN	0.008	125	Yes	0
Mixed Fire	Late1:CLS	Late1:OPN	0.01	100	Yes	0
Insects or Disease	Late1:CLS	Late1:OPN	0.012	83	Yes	0
Surface Fire	Late1:CLS	Late1:CLS	0.021	48	No	0

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