

10550

Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Forest and Woodland

Map Zones

18

Model Splits or Lumps

This BpS is lumped with: Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland (BpS 10560). The descriptions and models are identical.

Geographic Range

Subalpine forests the Great Basin (eastern CA, NV and UT).

In MZ18 this BS may occur in the few northernmost Basin and Range systems within this area (e.g., Albion Mountains, Cassia Mountains, Jarbidge Mountains)

Biophysical Site Description

Dry-mesic fir forests represent the matrix forests of the subalpine zone, with elevations ranging from 2,100-3,355m (7,000-11,000ft). Sites within this system are cold year-round, and precipitation is predominantly in the form of snow, which may persist until late summer. Snowpacks are deep and late-lying, and summers are cool and dry. Frost is possible almost all summer and may be common in restricted topographic basins and benches.

Vegetation Description

Subalpine fir forests comprise a substantial part of this subalpine forest, accompanied by *Pinus albicualis* and/or *Pinus flexilis*. The amount of *Pinus* in stands (and species occurrence) depends on moisture limitations, some stands can be quite droughty. *Populus tremuloides* stands are common on early seral moist sites. *Abies lasiocarpus* increases in importance or replaces *Picea engelmannii* with increasing distance from the region of MT and ID where maritime air masses influence the climate. Fire is an important disturbance factor, but fire regimes have a long return interval and so are often stand-replacing. *Abies lasiocarpus* can rapidly recolonize and dominate burned sites, or can succeed other species such as *Pinus albicaulis*, *flexilis*, or *Populus tremuloides*. Old growth characteristics in *Abies lasiocarpa* forests will include treefall and windthrow gaps in the canopy, with large downed logs, rotting woody material, tree seedling establishment on logs or on mineral soils unearched in root balls, and snags.

In MZ18 *Abies lasiocarpa* and *Pinus contorta* co-dominate. *Pinus albicualis* and/or *Pinus flexilis* may be occasionally present typically in drier sites. *Populus tremuloides* stands are common on early seral moist sites. *Picea engelmannii* may be present with varying abundance potentially increasing on cooler/moist sites (i.e., riparian). Xeric understory species may include *Juniperus communis*, *Linnaea borealis*, *Mahonia repens*, *Vaccinium scoparium*, *Calamagrostis rubescens*, or *Carex geyeri*.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
ABLA	<i>Abies lasiocarpa</i>	Subalpine fir
PIAL	<i>Pinus albicaulis</i>	Whitebark pine
PIFL2	<i>Pinus flexilis</i>	Limber pine

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

Disturbance Description

Primarily long-interval stand replacement fires, with mixed severity fire occurring in open conditions. Disturbances also include insect/disease and windthrow events than thin younger closed stands.

Moderately frequent high-severity fires result in a lodgepole pine dominated system. Mixed-severity fires generally result in a mosaic consisting of subalpine fir patches (chance escapes) in a matrix of mixed species regeneration.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	176	80		
Moderate (Mixed)	689	20		
Low (Surface)				
All Fires	140	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

Patch sizes vary but are mostly in the tens and hundreds of acres. There may be frequent small disturbances in the 10s of acres or less.

Adjacency or Identification Concerns

It is important not to confuse adjacent mountain sagebrush systems (BpS 1126 Inter-Mountain Basins Montane Sagebrush Steppe) with early development stages of this system. BpS 1056 may be imbedded in BpS 1055.

If aspen is present in large patches or if conifers are not coming in after ~30yrs, the BpS is probably misclassified and one of the aspen types should be examined (BpS 1011 or 1061).

In MZ18 this BpS adjacent to and upslope of BpS 1045 and adjacent and down slope of BpS 1046. Aspen patch size issue relevant (see above), further BpS 1011 likely present as patches within this BpS.

Issues or Problems

Native Uncharacteristic Conditions

Comments

D Major made changes to vegetation class structural values in response to MTD v3.1 updates (K Pohl 7/18/05 request). These changes have not been reviewed and accepted by model developers as of 7/24/05.

For MZ18, BpS 1055 and BpS 1056 shared the same model and were modified from BpS 1055 & 1056 for MZ17 to account for species differences (conifer dominance- ABLA and understory shrub composition).

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	B	B	B	B	B	B
Tree	10-25	C	C	C	C	D	D	D	D	D	D
Tree	25-50	C	C	C	C	D	D	D	D	D	D
Tree	>50	C	C	C	C	D	D	D	D	D	D

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 32 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
CARU	Calamagrostis rubescens	Pinegrass	Lower
CAGE	Carex geophila	White mountain sedge	Lower
ABLA	Abies lasiocarpa	Subalpine fir	Upper
PICO	Pinus contorta	Lodgepole pine	Upper

Early succession after moderately long to long interval replacement fires. Occasionally, a lack of seed source of conifer may maintain this condition. Replacement fire occurs.

Sapling >4.5ft; <5"DBH

Indicator Species

Description

Shade tolerant and mixed conifer saplings to poles. *Abies lasiocarpus* and *Pinus contorta* co-dominate, or *Pinus contorta* only. Insects and disease may open up the canopy. Dog-hair conditions in this state may maintain the mid-development closed condition.

Medium 9-21"DBH

Indicator Species

Description

Primarily consists of moderately tolerant saplings to poles (1-6.9in DBH) and <50% canopy cover of fir, with pine often intermediate or suppressed.

Medium 9-21"DBH

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
ABLA	Abies lasiocarpa	Subalpine fir	Upper
PICO	Pinus contorta	Lodgepole pine	Mid-Upper
ABLA	Abies lasiocarpa	Subalpine fir	Middle
VASC	Vaccinium scoparium	Grouse whortleberry	Low-Mid

Description

Pole and larger diameter moderately to shade tolerant conifer species in moderate to large size patches, all aspects. Fir dominates, pine (MZ18 PICO) is intermediate or suppressed/dying.

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:CLS	39
Mid1:CLS	40	Late1:CLS	79
Mid1:OPN	40	Late1:CLS	79
Late1:CLS	80	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
Competition or Maintenance	Early1:ALL	Early1:ALL	0.002	500	No	0
Replacement Fire	Early1:ALL	Early1:ALL	0.005	200	Yes	0
Mixed Fire	Mid1:OPN	Mid1:OPN	0.001	1000	No	0
Replacement Fire	Mid1:OPN	Early1:ALL	0.005	200	Yes	0
Competition or Maintenance	Mid1:CLS	Mid1:CLS	0.001	1000	No	0
Replacement Fire	Mid1:CLS	Early1:ALL	0.005	200	Yes	0
Insects or Disease	Mid1:CLS	Mid1:OPN	0.007	143	Yes	0
Wind or Weather or Stress	Late1:CLS	Late1:CLS	0.001	1000	No	0
Mixed Fire	Late1:CLS	Mid1:OPN	0.004	250	Yes	0
Replacement Fire	Late1:CLS	Early1:ALL	0.007	143	Yes	0
Insects or Disease	Late1:CLS	Early1:ALL	0.01	100	Yes	0

References

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