

11720

Sierran-Intermontane Desert Western White Pine-White Fir Woodland

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
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None	None	None	None
None	None	None	None

Vegetation Type

Forest and Woodland

Map Zone

7

Geographic Range

This ecological system is found in the transition zone from the northern Sierra Nevada of California and Oregon, east into the Modoc Plateau and Intermountain region of northwestern Nevada. It is found in the Fremont National Forest east of Lake View in Oregon and in the Modoc Plateau and Warner Mountains of California. It continues farther south in California to the Diamond Mountains south of Honey Lake (a northeast extension of the Sierras), on Babbitt Peak between Lake Tahoe and Sierra Valley, and also in the Carson Range in Nevada east of Lake Tahoe. Scattered stands may occur on Hart Mountain and Steens Mountain in Oregon and possibly a few isolated places in the northern Great Basin and the Jarbridge Mountains of Nevada.

Biophysical Site Description

These forests and woodlands range from just above the zone of ponderosa pine in the montane zone to the upper montane zone. Elevations range from 1,370m to >2,135m (4,500-7,000ft). Occurrences are found on all slopes and aspects, although more frequently on drier areas, including northwest- and southeast-facing slopes, but it also occurs on northerly slopes and ridges. This ecological system generally occurs on basalts, andesite, glacial till, basaltic rubble, colluvium, volcanic-ash-derived soils, and sometimes on granitic (Carson Range). These soils have characteristic features of good aeration and drainage, coarse textures, circumneutral to slightly acidic pH, an abundance of mineral material, rockiness, and periods of drought during the growing season. Climatically, this system occurs somewhat in the rain shadow of the Sierras and Cascades and has a more continental regime, similar to the northern Great Basin.

Vegetation Description

This system tends to be more woodland than forest in character, and the undergrowth is more open and drier, with little shrub or herbaceous cover. Tree regeneration is less prolific than in other mixed-montane conifer systems of the Cascades, Sierras, and California Coast Ranges. *Pinus monticola* is the dominant conifer in most places, but *Abies concolor* var. *lowiana* is usually present, at least in the understory and occasionally as the dominant in the canopy, replacing *Pinus monticola*, particularly at lower elevations. *Pinus ponderosa* is also often present. In the Warner Mountains, the *Abies concolor* var. *lowiana* stands range from 1,675-2,135m (5,500-7,000ft) in elevation, and the mixed *Pinus monticola*-*Abies concolor* is usually

above 2,135m (7,000ft). Mixed stands with *Pinus contorta*, in moister locations, as well as *Pinus jeffreyi* and sometimes *Populus tremuloides* occasionally occur. Southern stands (around Babbitt Peak and in the Carson Range) can sometime have *Abies magnifica* in them, sometimes replacing *Abies concolor*.

These forests and woodlands are marked by the absence of *Pseudotsuga menziesii*, *Pinus lambertiana*, and *Calocedrus decurrens*, and the generally drier, continental climatic conditions. In addition, the overall floristic affinities are with the Great Basin rather than the Pacific Northwest.

Understories are typically open, with moderately low shrub cover and diversity, and include *Arctostaphylos patula*, *Arctostaphylos nevadensis*, *Chrysolepis sempervirens*, *Ceanothus* spp., and *Ribes viscosissimum*. Common herbaceous taxa include *Arnica cordifolia*, *Festuca* spp., *Poa nervosa*, *Carex inops*, *Pyrola picta*, and *Hieracium albiflorum*. In openings, *Wyethia mollis* can be abundant.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
PIMO	<i>Pinus monophylla</i>	Singleleaf pinyon
ABCO	<i>Abies concolor</i>	White fir
PIPO	<i>Pinus ponderosa</i>	Ponderosa pine

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

Disturbance Description

Most fires in this type are mixed- and low-severity fires that can allow large areas of the landscape to develop mature characteristics. Occasional severe fires are driven by weather extremes.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	203	12		
Moderate (Mixed)	65	36		
Low (Surface)	46	52		
All Fires	24	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 is a large patch system. Low-severity fires can cover a wide range of sizes, and replacement fires tend to be large and driven by extreme weather conditions.

Adjacency or Identification Concerns

Red fir commonly occurs upslope of these sites, and the lower elevation communities include ponderosa pine and bitterbrush. Occasionally there are lodgepole stands mixed within this type. As a result of fire suppression, many areas of this type have become dense with ABCO.

Issues or Problems

There have been few fire history studies in this type, so data are limited.

Native Uncharacteristic Conditions

Comments

This description came mostly from the NatureServe description. The structure of this model was influenced from 091045.

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	B	B	B	B	B	B
Tree	25-50	D	D	D	D	E	E	E	E	E	E
Tree	>50	D	D	D	D	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 14 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIMO	<i>Pinus monophylla</i>	Singleleaf pinyon	Upper
PIPO	<i>Pinus ponderosa</i>	Ponderosa pine	Upper
ABCO	<i>Abies concolor</i>	White fir	Upper

Description

Open stand of ABCO, PIMO, and PIPO and other tree seedlings mixed with grasses and shrubs. Early seral dominant species include *ceanothus* and grasses. Mixed fire is the more common type of fire which allows many of the pines to survive. The occasional fire destroys even these starts.

Sapling >4.5ft; <5" DBH

Class B	24	Mid Development 1 - Closed
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIMO	<i>Pinus monophylla</i>	Singleleaf pinyon	Upper
ABCO	<i>Abies concolor</i>	White fir	Upper
PIPO	<i>Pinus ponderosa</i>	Ponderosa pine	Upper

Description

Closed stands of 5-20in DBH early seral tree species. Forests in this type rarely if ever exceed 80% canopy closure even in closed, dense conditions. This class has relatively high probability of mixed fire, due to the dense understory.

Maximum Tree Size Class

Medium 9-21" DBH

Class C 28 Mid Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIMO	<i>Pinus monophylla</i>	Singleleaf pinyon	Upper
PIPO	<i>Pinus ponderosa</i>	Ponderosa pine	Upper
ABCO	<i>Abies concolor</i>	White fir	Upper

Description

Open stands of 5-20in DBH early seral tree species. This class has low probability of mixed fire and surface fires due to discontinuous fuels in these open stands; these fires maintain the stand in Class C. Without fire, the stand eventually transitions to Class B. Replacement fire resets to Class A.

Maximum Tree Size Class

Medium 9-21" DBH

Class D	23	Late Development 1 - Open
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIMO	<i>Pinus monophylla</i>	Singleleaf pinyon	Mid-Upper
ABCO	<i>Abies concolor</i>	White fir	Mid-Upper
PIPO	<i>Pinus ponderosa</i>	Ponderosa pine	Upper

Open stands of 20+inches DBH early seral tree species. This class has low probability of mixed fire and surface fires due to discontinuous fuels in these open stands.

Very Large >33" DBH

Indicator Species

Description

Closed stands of 20+inches DBH early seral tree species. Forests in this Biophysical Setting rarely, if ever, exceed 80% canopy closure even in closed, dense conditions. This class has relatively high probability of mixed fire, due to the dense understory.

Very Large >33" DBH

Deterministic Transitions

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	1	1	Yes	28
Replacement Fire	Early1:ALL	Early1:ALL	0.005	200	Yes	0
Competition or Maintenance	Early1:ALL	Early1:ALL	0.01	100	Yes	0
Mixed Fire	Early1:ALL	Early1:ALL	0.025	40	No	0
Alternative Succession	Mid1:OPN	Mid1:CLS	1	1	Yes	30
Replacement Fire	Mid1:OPN	Early1:ALL	0.005	200	Yes	0
Mixed Fire	Mid1:OPN	Mid1:OPN	0.01	100	No	0

Surface Fire	Mid1:OPN	Mid1:OPN	0.04	25	No	0
Surface Fire	Mid1:CLS	Mid1:CLS	0.005	200	No	0
Replacement Fire	Mid1:CLS	Early1:ALL	0.005	200	Yes	0
Mixed Fire	Mid1:CLS	Mid1:OPN	0.02	50	Yes	0
Alternative Succession	Late1:OPN	Late1:CLS	1	1	Yes	30
Replacement Fire	Late1:OPN	Early1:ALL	0.005	200	Yes	0
Mixed Fire	Late1:OPN	Late1:OPN	0.01	100	No	0
Surface Fire	Late1:OPN	Late1:OPN	0.04	25	No	0
Surface Fire	Late1:CLS	Late1:OPN	0.005	200	Yes	0
Replacement Fire	Late1:CLS	Early1:ALL	0.005	200	Yes	0
Insects or Disease	Late1:CLS	Mid1:OPN	0.01	100	Yes	0
Competition or Maintenance	Late1:CLS	Late1:OPN	0.01	100	Yes	0
Mixed Fire	Late1:CLS	Late1:OPN	0.02	50	Yes	0

References

Hopkins, W.E. 1979a. Plant associations of the Fremont National Forest. R6 Ecol 79-004. Portland, OR: USDA Forest Service, Pacific Northwest Region. 106 pp. + illus.

Hopkins, W.E. 1979b. Plant associations of the south Chiloquin and Klamath Ranger Districts, Winema National Forest. R6 Ecol 79-005. Portland, OR: USDA Forest Service, Pacific Northwest Region. 96 pp. + illus.

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. Data current as of 10 February 2007.