10540

Southern Rocky Mountain Ponderosa Pine Woodland

BpS Model/Description Version: Aug. 2020

**Reviewed by:** Amy Waltz

Vegetation Type

Forest and Woodland

Map Zones

13, 14

Geographic Range

Biophysical Setting (BpS) is found on a few ranges in the Great Basin and Mojave Desert and in southern Utah High Plateau into Arizona.

Biophysical Site Description

These woodlands occur at the lower treeline/ecotone between grassland or shrubland and more mesic coniferous forests typically in warm, dry, exposed sites. Elevations range from 1,700-2,200m in map zone (MZ) 13 and MZ14. Occurrences are found on all slopes and aspects; however, moderately steep to very steep slopes or ridgetops are most common. This ecological system generally occurs on soils derived from igneous, metamorphic, and sedimentary material, with characteristic features of good aeration and drainage, coarse textures, circumneutral to slightly acid pH, an abundance of mineral material, rockiness, and periods of drought during the growing season.

Vegetation Description

*Pinus ponderosa* is the predominant conifer; *Pinus monophylla*, *Abies concolor*, and *Juniperus* spp. may be present in the tree canopy. The understory is usually shrubby with *Artemisia nova*, *Artemisia tridentata*, *Arctostaphylos pugens*, *Cercocarpus ledifolius* var. *intermontanus*, *Purshia stansburiana*, *Ribes cereum*, *Purshia tridentata*, *Quercus gambelii*, *Symphoricarpos* spp., *Amelanchier utahensis*, and *Rosa* spp. Common grass species include *Pseudoroegneria spicata* and species of *Hesperostipa*, *Achnatherum*, *Hymenoides*, and *Poa fendleriana*.

BpS Dominant and Indicator Species

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

Disturbance Description

These sites are in a Fire Regime Group I. Literature is scarce for this particular geography. Biondi et al. (2011) found on Mt. Irish (southeastern Nevada) that the overall pre-European settlement mean fire return interval was 13yrs for the transition zone spanning the ponderosa pine and pinyon pine.

Bark beetle outbreaks are highly related to stand density. Denser stands in relation to site capacity will favor outbreaks, which will decrease as trees are thinned.

Fire Frequency

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

Adjacency or Identification Concerns

It is usually found on sites that are dry montane with a variety of slopes, aspects, and soil conditions.

Issues or Problems

Ponderosa pine woodlands and savannas should be better researched for the Great Basin and Mojave Desert. Many scattered PIPO patches were completely logged during the mining era of 1850-1900 and during the railroad construction era throughout the western United States. Old sawmill structures in the Sheep Range indicate past logging close to extant ponderosa pine stands. It is also thought that the dominance of shrubs in understories is greater today than during pre-settlement because livestock grazing greatly reduced grasses in the southern portion of the Great Basin and Mojave Desert, but there is no quantitative or recorded evidence to support this plausible notion. Some uncertainty exists in the historical fire return intervals and the percent of fires that were replacement fires for this BpS (e.g., Williams and Baker 2012; Fule et al. 2014),

Native Uncharacteristic Conditions

Ponderosa pine cover >60% is uncharacteristic. When ponderosa pine is encroached by white fir and limber pine, uncharacteristic tree cover is >80%.

Comments

Succession Classes

**Mapping Rules**

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 13 Early Development 1 - All Structures

Indicator Species

Description

Openings with grass, shrub, and forbs created after replacement fire. May have seedlings of ponderosa pine or other species (e.g., white fir).

*Maximum Tree Size Class*  
Pole 5-9" DBH

Class B 10 Mid Development 1 - Closed

Indicator Species

Description

Forest canopy closure is 35% or greater. Closed pole-sapling/grass and shrubs. Shrub cover can be dense.

*Maximum Tree Size Class*  
Medium 9-21" DBH

Class C 18 Mid Development 1 - Open

Indicator Species

Description

Forest canopy closure is <35%. Open pole-sapling/grass and shrubs. Ponderosa pine dominates with white fir and limber pine present.

*Maximum Tree Size Class*  
Medium 9-21" DBH

Class D 58 Late Development 1 - Open

Indicator Species

Description

Forest canopy closure is <35%. Open large trees/grass and shrubs. Ponderosa eventually outnumbers white fir due to insect/disease and difference in fire resistance. Limber pine becomes co-dominant with ponderosa pine.

*Maximum Tree Size Class*  
Large 21-33" DBH

Class E 1 Late Development 1 - Closed

Indicator Species

Description

Forest canopy closure is 35% or greater. Closed large trees, poles, saplings, and shrubs.

*Maximum Tree Size Class*  
Large 21-33" DBH

Model Parameters

Deterministic Transitions

Probabilistic Transitions

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