

11700

Klamath-Siskiyou Xeromorphic Serpentine Savanna and Chaparral

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Steppe/Savanna

Map Zones

2, 3, 7

Geographic Range

Found in zone 2 and the parts of zones 3 and 7 where Jeffrey Pine is mapped on ultramafic soils.

This savanna and chaparral type occurs in the Klamath-Siskiyou region of Southwest Oregon and Northern California on serpentine soils derived from ultramafic rocks. It occurs on very mineralized areas, which will not support forests or woodlands. This type barely enters map zone 7, north of Grants Pass, Oregon, at its west edge.

This model applies primarily within the Klamath Mountains Ecoregion but can also apply to the Pacific Northwest Coast and California North Coast ecoregions on ultramafic soils. Jeffrey pine that is not associated with ultramafic soils is covered by BpS 10310 California Montane Jeffrey Pine (Ponderosa Pine) Woodland.

Biophysical Site Description

These dry sites are easily recognized due to the serpentine soils and are more pronounced on southern aspects but may be found on rocky ridges, ridgetops, river terraces, or gravelly valley bottomlands. At elevations from 200-4,550ft above sea level, the sites will likely be dominated by Jeffrey pine. Soils are usually shallow and poorly drained with surface rock averaging 8-27%. However, the defining character for the soil is the mineral nutrition rather than its depth. Rainfall (over 130cm/yr) is adequate to support dense forests, but few plants can tolerate the xeromorphic environment.

This type represents about 20% of the total range of Jeffrey pine.

Vegetation Description

This BpS is characterized by a mosaic of savanna or shrub-dominated chaparral. Savannas are dominated almost entirely by Jeffrey pine with an understory of either a grass, with more frequent fire, or of shrub, with less frequent fire. Trees may have a stunted growth form.

Herbaceous layer strongly dominated by grasses, notably *Festuca roemerii*, *Stipa lemmonii* (*Achnatherum lemmonii*), and *Danthonia californica* and serpentine-adapted herbs. Varied shrubs can include *Quercus vacciniifolia*, *Quercus sadleriana*, *Lithocarpus densiflorus* var. *echinoides*, *Quercus garryana* var. *breweri*, *Ceanothus cuneatus*, *Ceanothus pumilus*, *Arctostaphylos viscida*, *Arctostaphylos x cinerea*, *Arctostaphylos canescens*, *Arctostaphylos nevadensis*, *Frangula californica* (*Rhamnus californica*), and *Garrya buxifolia*.

Plant associations include PIJE/ARCA5/FEID, PIJE/CECU/FEID, PIJE/FEID, PIJE/CEPU -- Jeffrey pine subtype associated with incense-cedar and Douglas-fir.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
PIJE	<i>Pinus jeffreyi</i>	Jeffrey pine
ARVI4	<i>Arctostaphylos viscida</i>	Sticky whiteleaf manzanita
CEPU	<i>Ceanothus pumilus</i>	Dwarf ceanothus
FERO	<i>Festuca roemerii</i>	Roemer's fescue

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

Disturbance Description

Historically, savanna patches had frequent low-severity fire (Fire Regime I), and grass and chaparral patches experienced more high-severity fire. Today there is higher susceptibility to stand-replacing fire because of fire exclusion.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	200	7	100	300
Moderate (Mixed)				
Low (Surface)	14	93	10	20
All Fires	13	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

Regionally a relatively small part of the landscape but of great value for plant diversity. Patches in 1,000s of acres. However, disturbance patches were occasionally smaller in mixed-severity fires. In a few areas, these occur on gravel deposits or very mineralized soils that will not support fine fuels (grasslands). These open savannas and shrublands have long return intervals and mixed fires rather than underburns.

Adjacency or Identification Concerns

These woodlands are usually found at low elevations within a matrix of mixed conifer and mixed evergreen stands. However, their identity lies in the soil conditions, rather than environmental gradients.

This type has a very dry, open appearance that distinguishes it from the Klamath-Siskiyou Lower Montane Serpentine Mixed Conifer Woodland, which is found on less xeric sites and has a woodland physiognomy.

[illegible]

Shrub	>3.0	A	A	A	A	A	A	A	A	A	A
Tree	0-5	A	A	A	A	UN	UN	UN	UN	UN	UN
Tree	5-10	B	B	B	B	UN	UN	UN	UN	UN	UN
Tree	10-25	C	C	C	C	UN	UN	UN	UN	UN	UN
Tree	25-50	C	C	C	C	UN	UN	UN	UN	UN	UN
Tree	>50	C	C	C	C	UN	UN	UN	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 14 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
CEPU	Ceanothus pumilus	Dwarf ceanothus	Upper
FERO	Festuca roemerii	Roemer's fescue	Upper
ACLE8	Achnatherum lemmonii	Lemmon's needlegrass	Upper
DACA3	Danthonia californica	California oatgrass	Upper

Description

Scattered Jeffrey pine seedlings and saplings with herbaceous or shrub understory. Herb and forb cover rarely exceeds 40%, and shrub cover rarely exceeds 60%. Dominant life form is always either grasses or chaparral shrublands, based on the fire return interval (FRI). Areas with high FRIs support grass savanna, while areas with lower FRIs support chaparral.

Maximum Tree Size Class

Sapling >4.5ft; <5" DBH

Class B 31 Mid Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIJE	Pinus jeffreyi	Jeffrey pine	Upper
CEPU	Ceanothus pumilus	Dwarf ceanothus	Middle
ARVI4	Arctostaphylos viscida	Sticky whiteleaf manzanita	Middle
FERO	Festuca roemerii	Roemer's fescue	Lower

Description

Open stands of Jeffrey pine, with grass and forb or shrub understory. DBH is the best way to distinguish Classes B and C.

Maximum Tree Size Class

Medium 9-21" DBH

Class C**55****Late Development 1 - Open**Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIJE	<i>Pinus jeffreyi</i>	Jeffrey pine	Upper
CEPU	<i>Ceanothus pumilus</i>	Dwarf ceanothus	Middle
DACA3	<i>Danthonia californica</i>	California oatgrass	Lower
FERO	<i>Festuca roemerii</i>	Roemer's fescue	Lower

Description

Scattered large Jeffrey pine, with either grass and forb understory or shrub understory. The grass understory is maintained by frequent, low-intensity fires and is characterized as a grass savanna. Dominant species include *Festuca roemerii* (*F. idahoensis* in plot data), *Achnatherum lemmonii*, and *Danthonia californica*. The shrub understory develops in areas with lower fire frequencies and is characterized as an open chaparral shrubland with trees. Species include *Arctostaphylos viscidus*, *A. canescens*, *Quercus breweri*, *Ceanothus cuneatus*, and the low-growing *Ceanothus pumilus*, with grasses and forbs. DBH is the best way to distinguish Classes B and C.

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:OPN	29
Mid1:OPN	30	Late1:OPN	119
Late1:OPN	120	Late1:OPN	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	0.005	200	Yes	0
Surface Fire	Early1:ALL	Early1:ALL	0.07	14	No	0
Replacement Fire	Mid1:OPN	Early1:ALL	0.005	200	Yes	0
Surface Fire	Mid1:OPN	Mid1:OPN	0.07	14	No	0
Replacement Fire	Late1:OPN	Early1:ALL	0.005	200	Yes	0
Surface Fire	Late1:OPN	Late1:OPN	0.07	14	No	0

References

Atzet, T., D.E. White, L.A. McCrimmon, P.A. Martinez. P.R. Fong and V.D. Randall. 1996. Field guide to the forested plant associations of Southwestern Oregon. Portland, OR: USDA Forest Service Tech. Pap. R6-NR-ECOL-TP-17-96.

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