

10350

North Pacific Dry Douglas-fir(-Madrone) Forest and Woodland

BpS Model/Description Version: Aug. 2020

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Reviewer: Miles Hemstrom, Pat Hochhalter, Jane Kertis, Amy Nathanson

Vegetation Type

Forest and Woodland

Map Zones

1, 2, 7

Model Splits or Lumps

This Biophysical Setting (BpS) is lumped into the Mediterranean California Dry-Mesic Mixed-Conifer Forest and Woodland (BpS 10270) in the Klamath ecoregion.

Geographic Range

The range of this BpS includes the Puget Lowland, Willamette Valley, and surrounding ecoregions. The primary distribution is in the foothills around the rim of the Willamette Valley, Oregon, including parts of the valley in map zones (MZ) 2 and 7. It is more abundant at the southern end of the valley. An MZ 1 reviewer suggests that this type is much like the valley aprons around the rogue valleys, too, but is decidedly wetter as far as rainfall and species composition. (Note that this BpS in the Rogue Valley is covered by a different model.)

Biophysical Site Description

The type occurs in the lower hills of both the Coast Range and Cascades. Precipitation averages 50-55in/yr. Elevation 1,000-1,800ft.

Vegetation Description

These types commonly include Douglas-fir with grand fir, particularly in later seral stages. Willamette Valley grasses may be present in the post-replacement and open classes. Dry and southern sites may contain incense-cedar. Incense-cedar not found in the northern part of the range of this BpS. Western red cedar occurs in the northern portion of this BpS.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
PSME	<i>Pseudotsuga menziesii</i>	Douglas-fir
ABGR	<i>Abies grandis</i>	Grand fir
CADE27	<i>Calocedrus decurrens</i>	Incense cedar

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

Disturbance Description

Fire Regime III overall, mix of III and I. Burns more frequently than the North Pacific Maritime Dry-Mesic Douglas-Fir-Western Hemlock Forest BpS. Since the type spans between the frequent fires of the Willamette Valley grasslands and forested hills, the range of fire return is wide.

Native American burning may have increased the frequency of fire in certain locations, especially at lower elevations where the grasslands fire regime impinges. In areas where Native American burning may have increased fire frequency, the Dry Douglas-Fir Woodland BpS took on savanna-like conditions with widely spaced Douglas-firs. These trees have a very coarse appearance, with very large limbs, in some cases persisting down nearly to the ground.

The large persistent limbs on individual trees, along with proximity of the Douglas-fir savannas to oak savannas in near-valley locations, suggest a subset of the North Pacific Dry Douglas-Fir Forest and Woodland may have been subject to Fire Regime I conditions prior to cessation of Native American burning.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	370	10	100	400
Moderate (Mixed)	71	50	40	150
Low (Surface)	91	40		
All Fires	36	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 type occurs in relatively small patches at low abundance.

Adjacency or Identification Concerns

This BpS is affected by fires from the adjacent oak woodland. It burns more frequently than the Douglas-fir-Hemlock type in the foothills.

Issues or Problems

This BpS represents dry Douglas-fir forests. Madrone is not an indicator species for this BpS. We suggest that the name be changed to North Pacific Dry Douglas-Fir Forest.

Native Uncharacteristic Conditions

Comments

Miles Hemstrom, Pat Hochhalter, Jane Kertis, and Amy Nathanson refined this model during the 2016 review period. Changes include: adjusting the geographic range to more clearly define the area to which this model applies and other minor revisions to the description.

This BpS was influenced from the R#DFWV Rapid Assessment model. Reviewers of that Rapid Assessment model thought that its fire frequency (all fire = 26) was too high. The current model allows for less fire than the RA model. One thesis showed mean fire return interval (MFRI) = 28yrs (cross-dated) in the southern Willamette Valley foothills, while another showed 50-60yrs in the Coburg Hills (not cross-dated). The cross-dated fire history informed this model (021035)

and may reflect the detection of lower-severity fires than those that non-cross-dated results may show. Due to comments from reviewers, fir beetle was added to the model. Also, reviewers felt that wind storms may be significant enough to be worth modeling.

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	A	A	A	C	C	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	6	Early Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PSME	<i>Pseudotsuga menziesii</i>	Douglas-fir	Upper

Description

Grasses, forbs, and seedling to pole-sized Douglas-fir. Seedlings average <1in DBH and <5m height, and pole trees average 5in DBH and 13m height.

Maximum Tree Size Class

Sapling >4.5ft; <5" DBH

Class B	10	Mid Development 1 - Closed
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Indicator Species

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Symbol	Scientific Name	Common Name	Canopy Position
PSME	Pseudotsuga menziesii	Douglas-fir	Upper
ABGR	Abies grandis	Grand fir	Mid-Upper
CADE27	Calocedrus decurrens	Incense cedar	CADE27

Description

Medium (15in DBH, 25m tall) and large, even-aged Douglas-fir (20in DBH, 35m tall) with some grand fir in the overstory, little understory. Douglas-fir beetles can take out the older trees.

Maximum Tree Size Class

Very Large >33" DBH

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Mid1:CLS	19
Mid1:OPN	20	Late1:OPN	59
Mid1:CLS	20	Late1:CLS	59
Late1:OPN	60	Late1:OPN	999
Late1:CLS	60	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
Replacement Fire	Early1:ALL	Early1:ALL	0.0027	370	Yes	0
Mixed Fire	Early1:ALL	Early1:ALL	0.02	50	No	0
Alternative Succession	Mid1:OPN	Late1:CLS	1	1	Yes	39
Replacement Fire	Mid1:OPN	Early1:ALL	0.0027	370	Yes	0
Mixed Fire	Mid1:OPN	Mid1:OPN	0.01	100	No	0
Surface Fire	Mid1:OPN	Mid1:OPN	0.02	50	No	0
Replacement Fire	Mid1:CLS	Early1:ALL	0.0027	370	Yes	0
Surface Fire	Mid1:CLS	Mid1:CLS	0.005	200	No	0
Mixed Fire	Mid1:CLS	Mid1:OPN	0.015	67	Yes	0
Alternative Succession	Late1:OPN	Late1:CLS	1	1	Yes	40
Replacement Fire	Late1:OPN	Early1:ALL	0.0027	370	Yes	0
Insects or Disease	Late1:OPN	Mid1:OPN	0.003	333	Yes	0
Mixed Fire	Late1:OPN	Late1:OPN	0.01	100	No	0
Surface Fire	Late1:OPN	Late1:OPN	0.02	50	No	0

Replacement Fire	Late1:CLS	Early1:ALL	0.0027	370	Yes	0
Insects or Disease	Late1:CLS	Mid1:CLS	0.003	333	Yes	0
Mixed Fire	Late1:CLS	Late1:OPN	0.02	50	Yes	0

References

Kertis, J. 2004. Valley fringe fire history study. Unpub. Data on file. Corvallis, OR: USDA Forest Service, Siuslaw National Forest.

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