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North Pacific Broadleaf Landslide Forest and Shrubland

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 Zones

2, 7

Geographic Range

These forests and shrublands occur throughout the northern Pacific mountains, becoming less prominent in the northern half of this region.

Biophysical Site Description

They occur as dynamic successional patches (large patch in character). They occur on relatively moist sites, many of which have seasonally fluctuating water tables. These systems occur on steep slopes and bluffs that are susceptible to mass movements. Here they are found in patches of differing age associated with different landslide events.

Vegetation Description

The vegetation is deciduous broadleaf forests, sometimes with varying components of conifers also. *Alnus rubra* and *Acer macrophyllum* are the major species.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
ALRU2	<i>Alnus rubra</i>	Red alder
ACMA3	<i>Acer macrophyllum</i>	Bigleaf maple

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

Disturbance Description

Primary disturbance is landslide, which results in poor soil quality, so succession reverts to species that are able to provide some of their own nitrogen. After decades of this vegetation type, soil nitrogen and carbon have increased notably. Fires tend to be stand-replacing due to the continuity of fuels. These stands, however, are fire-resistant, so they serve to impede the fires that come from outside the type. These fires are also commonly associated with synoptic weather events.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	100	83		
Moderate (Mixed)	498	17		
Low (Surface)				
All Fires	83	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

These patches tend to occur in broad swaths associated with mass movements. Patches are commonly in the 10s-100s of acres.

Adjacency or Identification Concerns

Adjacent forests would be the variety of upland forest types. These species occur from the lowlands up to the subalpine zone, though with higher elevation, the type may lean toward avalanche chute vegetation as the terrain becomes steeper.

Issues or Problems

Native Uncharacteristic Conditions

Comments

Map zones 2 and 7 were combined during 2015 Biophysical Setting Review.

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	A	A	A	A	A	A	A
Tree	10-25	B	B	B	B	B	B	B	B	B	B
Tree	25-50	B	B	B	B	B	B	B	B	B	B
Tree	>50	B	B	B	B	B	B	B	B	B	B

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	39	Early Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
ALRU2	Alnus rubra	Red alder	Upper

Description

Immediately after a major disturbance, alder is the primary responder. Eventually bigleaf maple may get established, but in this stage it is no more than a rare co-dominant. Replacement fire could occur. Landslides may occur but are rarer than the fires. Mixed-severity fires would be minimal, though possible.

Maximum Tree Size Class

None

Class B	61	Late Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
ACMA3	Acer macrophyllum	Bigleaf maple	Upper
ALRU2	Alnus rubra	Red alder	Mid-Upper

Description

These mature patches are starting to be dominated by bigleaf maple. The alder may hang around in the stand for a few more decades, but it is on the decline. Landslides may occur but are rarer than the fires. Mixed-severity fires would be minimal, though possible.

Maximum Tree Size Class

None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Late1:ALL	30
Late1:ALL	31	Late1:ALL	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
Mixed Fire	Early1:ALL	Early1:ALL	0.002	500	No	0
Optional 1	Early1:ALL	Early1:ALL	0.005	200	Yes	0
Replacement Fire	Early1:ALL	Early1:ALL	0.01	100	Yes	0
Mixed Fire	Late1:ALL	Early1:ALL	0.002	500	Yes	0
Optional 1	Late1:ALL	Early1:ALL	0.005	200	Yes	0
Replacement Fire	Late1:ALL	Early1:ALL	0.01	100	Yes	0

Optional Disturbances

Optional 1: Landslide

References

Agee, James K. 1993. Fire Ecology of Pacific Northwest Forests. Washington, DC: Island Press. 493 pp.

Franklin, Jerry F. and C.T. Dyrness 1988. Natural Vegetation of Oregon and Washington. Corvallis, OR: Oregon State University Press.

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