

10630

North Pacific Broadleaf Landslide Forest and Shrubland

BpS Model/Description Version: Aug. 2020/20/06

14

Modelers		Reviewers	
John Foster	jfoster@tnc.org	Rod Clausnitzer	rclausnitzer@fs.fed.us
Kori Blankenship	kblankenship@tnc.org	None	None
None	None	None	None

Vegetation Type

Forest and Woodland

Map Zones

1

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

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

Vegetation Description

The vegetation is deciduous broadleaf forest, sometimes with varying components of conifers. *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; therefore, succession reverts to species that can 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	453	67		
Moderate (Mixed)	905	33		
Low (Surface)				
All Fires	302	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 to 100s of acres.

Adjacency or Identification Concerns

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

Issues or Problems

The modelers were not familiar with this type.

Native Uncharacteristic Conditions

Comments

Jan Henderson, Jimmy Kagan, and Rex Crawford provided input on the fire return interval for this type.

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	0.0011	909	No	0
Replacement Fire	Early1:ALL	Early1:ALL	0.0022	455	Yes	0
Optional 1	Early1:ALL	Early1:ALL	0.005	200	Yes	0
Mixed Fire	Late1:ALL	Early1:ALL	0.0011	909	Yes	0
Replacement Fire	Late1:ALL	Early1:ALL	0.0022	455	Yes	0
Optional 1	Late1:ALL	Early1:ALL	0.005	200	Yes	0

SUCCESSION PATHWAYS

BpS	From Class	Begins at (yr)	Succeeds to	After (years)
0110630	Early1:ALL	0	Late1:ALL	30
0110630	Late1:ALL	31	Late1:ALL	999

DISTURBANCE PATHWAYS

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
MixedFire	Early1:ALL	Early1:ALL	0.0011	909	No	
Optional1	Early1:ALL	Early1:ALL	0.0050	200	No	
ReplacementFire	Early1:ALL	Early1:ALL	0.0022	455	No	
MixedFire	Late1:ALL	Early1:ALL	0.0011	909	Yes	
Optional1	Late1:ALL	Early1:ALL	0.0050	200	Yes	
ReplacementFire	Late1:ALL	Early1:ALL	0.0022	455	Yes	

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 22 Early Development 1 - All Structures

Upper Layer Lifeform: Tree

Upper Layer Canopy Cover: 0 - 100%

Upper Layer Canopy Height: Tree 0m - Tree 10m

Indicator Species

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

Description

Alder is the primary responder immediately after a major disturbance. Eventually, bigleaf maple may get established, but in this stage, it is no more than a rare codominant. Succession to Class B. 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	78	Late Development 1 - All Structures
----------------	-----------	--

Upper Layer Lifeform: Tree

Upper Layer Canopy Cover: 0 - 100%

Upper Layer Canopy Height: Tree 10.1m - Tree 50m

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. Although the alder may hang around in the stand for a few more decades, it is on the decline. Replacement fire occurs. Though landslides may occur, they are rarer than the fires. Mixed-severity fires would be minimal, though possible.

Maximum Tree Size Class

None

Model Parameters

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. 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.