10630

North Pacific Broadleaf Landslide Forest and Shrubland

BpS Model/Description Version: Aug. 2020

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| **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 | *Alnus rubra* | Red alder |
| ACMA3 | *Acer macrophyllum* | 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

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

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.