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North Pacific Alpine and Subalpine Dry Grassland

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
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None	None	None	None
None	None	None	None

Vegetation Type

Herbaceous

Map Zone

7

Geographic Range

This type is most extensive in the eastern Cascades, although it also occurs in the Olympic Mountains.

Biophysical Site Description

This is a high-elevation (>6,000ft), grassland system dominated by perennial grasses and forbs, on dry sites, particularly south-facing slopes, typically imbedded in or above subalpine forests and woodlands. Subalpine grasslands are small meadows to large open parks surrounded by conifer trees but lacking continuous tree cover within them. In general, soil textures are much finer, and soils are often deeper under grasslands than in the neighboring forests. Grasslands, although composed primarily of tussock-forming species, do exhibit a dense sod that makes root penetration difficult for tree species. Sites are often wind-swept, resulting in lack of snowpack and summer drought (Daubenmire 1981).

Vegetation Description

Typical dominant species include *Festuca idahoensis*, *Festuca viridula*, and *Festuca roemerii* (the latter species occurring only in the Olympic Mountains). *Xerophyllum tenax* occurs in more maritime environments and will increase west and south in the Cascades.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
FEID	<i>Festuca idahoensis</i>	Idaho fescue
FEVI	<i>Festuca viridula</i>	Greenleaf fescue
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

Fire regimes are probably similar to adjacent forested vegetation and will generally be long-interval, stand-replacement regimes (Fire Regime Group IV). Fires may finger into this system from adjacent forests. Conifer encroachment is not common due to the droughty nature of these grasslands, but undoubtedly fire also plays some role in preventing conifer encroachment.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
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Replacement	202	100	75	500
Moderate (Mixed)				
Low (Surface)				
All Fires	202	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

Patches are typically 10s to 100s of acres.

Adjacency or Identification Concerns

Historical sheep grazing may have occurred in these systems. The cumulative effects are unknown. This system is similar to Northern Rocky Mountain Subalpine Dry Grassland (CES306.806) but differs in that it includes dry alpine habitats, more North Pacific floristic elements, greater snowpack, and higher precipitation.

Issues or Problems

Native Uncharacteristic Conditions

Comments

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	B	B	B	B	B	B	B
Herb	0.5-1.0	A	A	A	B	B	B	B	B	B	B
Herb	>1.0	A	A	A	B	B	B	B	B	B	B
Shrub	0-0.5	B	B	B	B	B	B	B	B	B	B
Shrub	0.5-1.0	B	B	B	B	B	B	B	B	B	B
Shrub	1.0-3.0	B	B	B	B	B	B	B	B	B	B
Shrub	>3.0	B	B	B	B	B	B	B	B	B	B
Tree	0-5	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	5-10	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	10-25	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	25-50	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	>50	B	B	B	B	B	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	2	Early Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
FEVI	<i>Festuca viridula</i>	Greenleaf fescue	Upper
FEID	<i>Festuca idahoensis</i>	Idaho fescue	Upper
PSSP6	<i>Pseudoroegneria spicata</i>	Bluebunch wheatgrass	Upper
XETE	<i>Xerophyllum tenax</i>	Common beargrass	Upper

Description

Post-replacement disturbance conditions dominated by herbs and sprouting grasses including green fescue, Idaho fescue, bluebunch wheatgrass, *Xerophyllum tenax*, or *Epilobium* spp.

Maximum Tree Size Class

None

Class B	98	Late Development 1 - Closed
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
FEVI	<i>Festuca viridula</i>	Greenleaf fescue	Upper
FEID	<i>Festuca idahoensis</i>	Idaho fescue	Upper
PSSP6	<i>Pseudoroegneria spicata</i>	Bluebunch wheatgrass	Upper
XETE	<i>Xerophyllum tenax</i>	Common beargrass	Upper

Description

Closed herbaceous cover dominated by green fescue, Idaho fescue, bluebunch wheatgrass, and *Xerophyllum tenax*. Low shrubs may be present, particularly mountain big sagebrush, *Eriogonum* spp., and *Phlox* spp.

Maximum Tree Size Class

None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Late1:CLS	4
Late1:CLS	5	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
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Replacement Fire	Late1:CLS	Early1:ALL	0.005	200	Yes	0
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References

Daubenmire, Rexford. 1981. Subalpine parks associated with snow transfer in the mountains of northern Idaho and eastern Washington. Northwest Science 55(2): 124-135.

Daubenmire, Rexford F. and Jean B. Daubenmire. 1968. Forest vegetation of eastern Washington and northern Idaho. Technical Bulletin 60. Pullman, WA: Washington State University, Agricultural Experiment Station. 104 pp.

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