

Ecological site R002XN613WA Cool Wet Prairie

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.



Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

MLRA notes

Major Land Resource Area (MLRA): 002X–Willamette and Puget Sound Valleys

Major Land Resource Area-[MLRA][LRU]: 002X N Willamette and Puget Sound Valleys, North Puget. The Land Resource Unit (LRU) is described in detail in the reference Washington NRCS Pasture TN-101 Forage Zones available on the eFOTG. For more information on MLRA's, refer to the following web site:

http://www.essc.psu.edu/soil_info/soil_lrr/. Additional information on Common Resource Areas is available on the eFOTG for NRCS Washington: http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=WA and the following website:

<http://soils.usda.gov/survey/geography/cra.html>. This ecological site occurs in the following Common Resource Areas: 2.10 - Fraser Lowland; 2.11 - Eastern Puget Riverine Lowlands; 2.11 - Eastern Puget Mountain River Valleys; 2.12 - San Juan Islands; 2.13 - Olympic Rainshadow; 2.5 - Eastern Puget Uplands; and 2.6 - Central Puget Lowland

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Deschampsia caespitosa</i> (2) <i>Carex</i>

Physiographic features

The soils which support this native plant community typically occur on floodplains or in depressional areas with high water tables, often remnant shallow lake basins or other waterlaid sediments.

Table 2. Representative physiographic features

Landforms	(1) Valley (2) Valley flat (3) Depression
Flooding frequency	None
Ponding duration	Brief (2 to 7 days) to very long (more than 30 days)
Ponding frequency	Occasional to frequent
Elevation	0–200 ft
Slope	0–5%
Ponding depth	0–8 in
Water table depth	0–8 in
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation ranges from 18 to 60 inches, although most areas range from 30 to 50 inches. Annual precipitation less than 30 inches occurs in the rainshadow of the Olympic Mountains along the western border of this area and in the San Juan Islands. Higher average annual precipitation, 50 to 60 inches, occurs next to the foothills of the surrounding mountains. Most of the precipitation occurs as low intensity, Pacific frontal storms. The distribution is 75% in the fall and winter, 15% in the spring and 10% in the summer. Rain turns to snow at the higher elevations, although accumulations are usually small and of short duration. The number of days with snow on the ground varies from 0 to 9, with an average of 3 days. Summers are cool and dry. This ecosite occurs in areas with cooler spring weather and cooler summer nights, resulting in fewer available heat units for plant growth and soil warming. Recorded temperature extremes range from -1 degrees to 90 degrees fahrenheit. See the climate tables in this document for information on temperatures and frost-free periods.

Table 3. Representative climatic features

Frost-free period (average)	243 days
Freeze-free period (average)	302 days
Precipitation total (average)	60 in

Influencing water features

Soil features

The soils generally have a water table at or near the soil surface for much of the winter and spring, and the water table is often within a few feet of the soil surface for the remainder of the year. A soil series this site may occur on is Coupeville, which is a deep, poorly drained soil formed in glacial drift over dense glaciomarine deposits in drainageways and valleys of glacial drift plains.

Table 4. Representative soil features

Surface texture	(1) Loam
Family particle size	(1) Loamy
Drainage class	Poorly drained to somewhat poorly drained

Permeability class	Slow to moderate
Soil depth	40–60 in
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5.3–8.1 in
Soil reaction (1:1 water) (0-40in)	5.6–6.5
Subsurface fragment volume <=3" (Depth not specified)	0–5%
Subsurface fragment volume >3" (Depth not specified)	0%

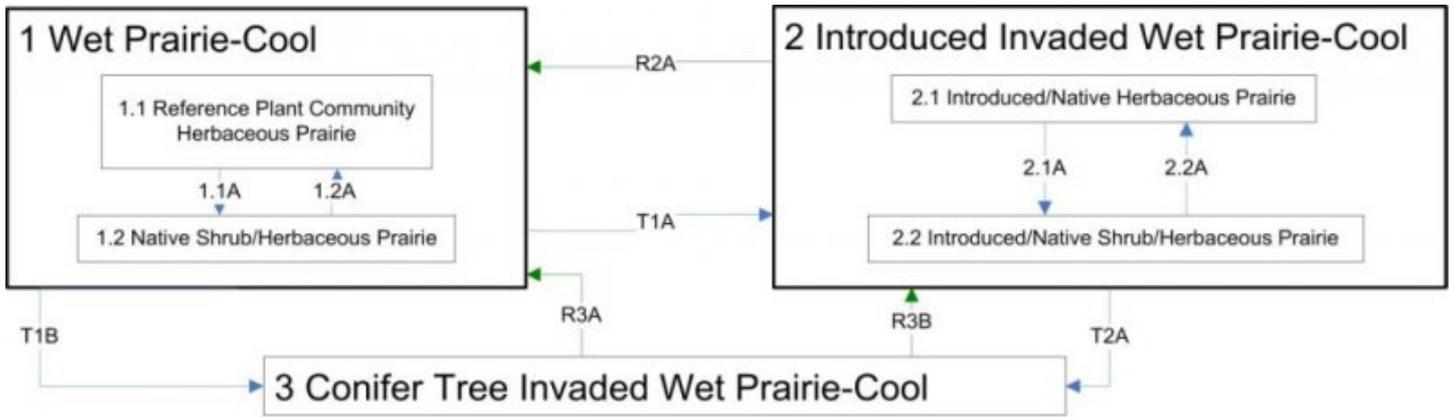
Ecological dynamics

These areas were historically kept free of extensive brush and tree cover by burning. Typical native plant species include Tufted Hairgrass (*Deschampsia caespitosa*), Great Camas (*Camassia leichtlinii*), and various sedge species (*Carex* spp.). Some disturbance is natural in these plant communities, including: fire, both natural and human caused; soil perturbation resulting from causes such as small mammals, earthworms, root activity; freeze-thaw cycles; and harvest of bulbs and rhizomes; and wildlife grazing. Disturbances can be reduced or eliminated through actions such as fire control, or cessation of activities such as mowing, soil disturbance, livestock grazing or vehicle access. If no disturbance occurs, this plant community will be invaded by shrub and tree species. Typical shrub and tree species include snowberry, rose, Douglas fir and lodgepole pine. Disturbance will affect the different plant classes in varying ways. Timing of disturbance will also affect shifts in plant communities. The Disturbance Effects on Plant Classes table summarizes some of these effects.

If nonnative species are present in the area, these will invade the site whether or not disturbance is maintained, increased, or eliminated. Their dominance in the community will be affected by the type and intensity of disturbance, as will the dominance of the different plant classes. If disturbance such as tillage, herbicide use, or intensive vehicle traffic eliminates the plant community, then a nonnative plant community will be established, either through planting, or invasion of introduced seral species.

Restoration – It's possible to reestablish plant communities on suitable soils. Native species can be replanted and the site managed to maintain or increase the percentage cover of these species. The Disturbance Effects table lists appropriate types of disturbance to help establish the desired plant community. If nonnatives are present on the site, there will always be a presence in the community as these species are adapted to a wide range of soils, climates and disturbance regimes. However, the management of disturbance types can affect the balance of species on a site.

State and transition model



Disturbance Effects on Plant Classes

Disturbance type	Grasses	Forbs	Grass-like	Palatable shrubs	Unpalatable shrubs	Trees
Fire, periodic	M	E	D	D	D	D
Fire, frequent	D	E	D	D	D	D
Soil perturbation	E	E	E	E	E	D
Soil inversion	D	D	D	D	D	D
Managed livestock grazing	D	E	D	D	E	D
Grading during spring bloom of native species	D	D	E	E	E	E
Overgrazing	D	D	E	D	E	D
Wildlife grazing	E	D	E	D	E	M
Light vehicle traffic	M	M	M	D	D	D
Excessive vehicle traffic	D	D	D	D	D	D
Grass specific herbicides	D	E	E	E	E	E
Forb & Shrub specific herbicides	E	D	E	D	D	E
Non specific herbicides	D	D	D	D	D	E

Effect: E = Enhance/Increase; D = Decrease; M = Maintain

LEGEND
 1.1A, 2.1A, T1B, T2A = No Fire or Other Disturbance
 T1A = Overuse & Other Disturbance
 1.2A, 2.2A = Fire or Brush Control or Other Disturbance
 R2A = Restoration
 R3A = Tree Removal & Restoration
 R3B = Tree Removal

State 1 Reference State

The soils which support this native plant community typically occur on floodplains or in depressional areas with high water tables, often remnant shallow lake basins or other waterlaid sediments. The soils generally have a water table at or near the soil surface for much of the winter and spring, and the watertable is often within a few feet of the soil surface for the remainder of the year. A soil series this site may occur on is Coupeville. These areas were historically kept free of extensive brush and tree cover by burning. These ecosites occur in areas with warmer spring weather and warmer summer nights, resulting in more available heat units for plant growth and soil warming. Typical native plant species include Tufted Hairgrass (*Deschampsia caespitosa*), Great Camas (*Camassia leichtlinii*), and various sedge species (*Carex* spp.)

Community 1.1 Herbaceous Prairie

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1200	1500	1800
Forb	700	875	1050
Shrub/Vine	80	100	120
Tree	20	25	30
Total	2000	2500	3000

Figure 5. Plant community growth curve (percent production by month). WA0225, Winter Water Table. Winter water table within ~12" of soil surface for significant period between Nov 1 - April 1.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	2	8	22	20	18	16	11	3	0	0

Community 1.2

Native Shrub/Herbaceous Prairie

Pathway 1.1A

Community 1.1 to 1.2

No fire or other disturbance – This pathway/transition occurs when disturbances, either natural or man-made, are reduced or eliminated through actions such as fire control, or cessation of activities such as mowing, soil perturbation grazing or vehicle access.

Pathway 1.2A

Community 1.2 to 1.1

Fire, Brush Control or Other Disturbance – This pathway occurs when controlled disturbance is restored to the system, through methods such as prescribed fire, brush control, invasive plant control, mowing, thatching, grazing, and/or soil aeration.

State 2

Introduced Invaded State

Community 2.1

Introduced/Native Herbaceous Prairie

Community 2.2

Introduced/Native Shrub/Herbaceous Prairie

Pathway 2.1A

Community 2.1 to 2.2

No fire or other disturbance – This pathway/transition occurs when disturbances, either natural or man-made, are reduced or eliminated through actions such as fire control, or cessation of activities such as mowing, soil perturbation grazing or vehicle access.

Pathway 2.2A

Community 2.2 to 2.1

Fire, Brush Control or Other Disturbance – This pathway occurs when controlled disturbance is restored to the system, through methods such as prescribed fire, brush control, invasive plant control, mowing, thatching, grazing, and/or soil aeration.

State 3

Conifer Invaded State

Community 3.1

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Transition 1A

State 1 to 2

This transition occurs when uncontrolled disturbance is persistent in the system, such as: overgrazing; mowing in the wrong season, wrong height, or at the wrong frequency; vehicle use which causes vegetation damage; or too-frequent fire. In addition, non-native plant seeds or propagules or present on or near the site.

Transition 1B

State 1 to 3

No fire or other disturbance – This pathway/transition occurs when disturbances, either natural or man-made, are reduced or eliminated through actions such as fire control, or cessation of activities such as mowing, soil perturbation grazing or vehicle access.

Restoration pathway 2A

State 2 to 1

Restoration – removal of non-native species and restoration of the original plant community through methods such as prescribed fire, brush control, invasive plant control, mowing, thatching, grazing, and/or soil aeration and reseeding.

Transition 2A

State 2 to 3

No fire or other disturbance – This pathway/transition occurs when disturbances, either natural or man-made, are reduced or eliminated through actions such as fire control, or cessation of activities such as mowing, soil perturbation grazing or vehicle access.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	Perennial Grasses			0	
	tufted hairgrass	DECE	<i>Deschampsia cespitosa</i>	0	–
	blue wildrye	ELGL	<i>Elymus glaucus</i>	0	–
	slender wheatgrass	ELTR7	<i>Elymus trachycaulus</i>	0	–
	red fescue	FERU2	<i>Festuca rubra</i>	0	–
	meadow barley	HOBR2	<i>Hordeum brachyantherum</i>	0	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0	–
2	Perennial Grasslike			0	
	sedge	CAREX	<i>Carex</i>	0	–
	spikerush	ELEOC	<i>Eleocharis</i>	0	–
	rush	JUNCU	<i>Juncus</i>	0	–
	Pacific woodrush	LUCO6	<i>Luzula comosa</i>	0	–
3	Annual Grasses			0	
	Howell's bluegrass	POHO6	<i>Poa howellii</i>	0	–
Forb					
6	Bulbs			0	
	tapertip onion	ALAC4	<i>Allium acuminatum</i>	0	–
	crown brodiaea	BRCO3	<i>Brodiaea coronaria</i>	0	–
	large camas	CALE5	<i>Camassia leichtlinii</i>	0	–
	small camas	CAQU2	<i>Camassia quamash</i>	0	–
	checker lily	FRAFA2	<i>Fritillaria affinis</i> var. <i>affinis</i>	0	–
	Idaho blue-eyed grass	SIIDI	<i>Sisyrinchium idahoense</i> var.	0	–

			<i>laanoense</i>		
	meadow deathcamas	ZIVE	<i>Zigadenus venenosus</i>	0	–
7				0	
	darkthroat shootingstar	DOPU	<i>Dodecatheon pulchellum</i>	0	–
	hookedspur violet	VIAD	<i>Viola adunca</i>	0	–
8	biscuitroots			0	
	barestem biscuitroot	LONU2	<i>Lomatium nudicaule</i>	0	–
	common lomatium	LOUT	<i>Lomatium utriculatum</i>	0	–
10	Perennial Forbs			0	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0	–
	field chickweed	CEAR4	<i>Cerastium arvense</i>	0	–
	Menzies' larkspur	DEME	<i>Delphinium menziesii</i>	0	–
	common woolly sunflower	ERLA6	<i>Eriophyllum lanatum</i>	0	–
	Virginia strawberry	FRVI	<i>Fragaria virginiana</i>	0	–
	western buttercup	RAOC	<i>Ranunculus occidentalis</i>	0	–
	Oregon buttercup	RAOR	<i>Ranunculus oreogenes</i>	0	–
11	Ferns			0	
	western brackenfern	PTAQ	<i>Pteridium aquilinum</i>	0	–
12	Perennial Legume			0	
	cows clover	TRWO	<i>Trifolium wormskioldii</i>	0	–
	American vetch	VIAM	<i>Vicia americana</i>	0	–
13	Annual			0	
	giant blue eyed Mary	COGR2	<i>Collinsia grandiflora</i>	0	–
14	Annual Legume			0	
	desert deervetch	LOMI	<i>Lotus micranthus</i>	0	–
Shrub/Vine					
20	Shrubs			0	
	California phacelia	PHCA	<i>Phacelia californica</i>	0	–
	Nootka rose	RONU	<i>Rosa nutkana</i>	0	–
	rose spirea	SPDO	<i>Spiraea douglasii</i>	0	–
Tree					
25	Tree			0	
	lodgepole pine	PICO	<i>Pinus contorta</i>	0	–
	Sitka spruce	PISI	<i>Picea sitchensis</i>	0	–
	western redcedar	THPL	<i>Thuja plicata</i>	0	–

Contributors

Martha Chaney

Approval

Kirt Walstad, 5/09/2024

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	09/20/2024
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:**

- 2. Presence of water flow patterns:**

- 3. Number and height of erosional pedestals or terracettes:**

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

- 5. Number of gullies and erosion associated with gullies:**

- 6. Extent of wind scoured, blowouts and/or depositional areas:**

- 7. Amount of litter movement (describe size and distance expected to travel):**

- 8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

- 9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

- 10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

17. **Perennial plant reproductive capability:**
