WASHINGTON NATURAL HERITAGE PROGRAM

Key to Upland Plant Associations of the Puget Sound Drainage Basin (Version 1.0)

Prepared by

Tynan Ramm-Granberg

Natural Heritage
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WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

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ON THE COVER: *Phyllodoce empetriformis* - *Vaccinium deliciosum* Alpine Dwarf-shrubland (CEGL001398) and *Tsuga mertensiana* / *Phyllodoce empetriformis* - *Vaccinium deliciosum* Woodland (CEGL005579) in the Twin Sisters Range. (Photo by Tynan Ramm-Granberg)

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Acknowledgements

This product was produced under a contract with the Washington Department of Fish and Wildlife (WDFW #23-23650), which was in turn funded by the United States Environmental Protection Agency under assistance agreement PC-01J89501.

The key incorporates decades of vegetation classification work by ecologists from the Washington Natural Heritage Program, US Forest Service, National Park Service, and other organizations. It builds upon the foundations laid by Chris Chappell, Rex Crawford, Jan Henderson and many other ecologists—and their field crews.

Introduction

The U.S. National Vegetation Classification (USNVC, 2025) provides a common language for the effective management and conservation of plant communities in the United States. The classification standard was developed over many years by the Federal Geographic Data Committee (FGDC) Vegetation Subcommittee, with members from federal agencies, the Vegetation Panel of the Ecological Society of America, and NatureServe (http://usnvc.org/overview). The USNVC allows federal agencies to produce uniform statistics about vegetation resources across the nation, facilitate interagency cooperation on vegetation management issues that transcend jurisdictional boundaries, and encourage non-Federal partners to utilize and contribute to a common system when working with their Federal partners. The USNVC is also the system used by the Washington Natural Heritage Program for classifying, inventorying, assessing, and setting conservation priorities for the diverse ecosystems of Washington State (WADNR, 2025).

The USNVC is a hierarchical system consisting of eight levels, organized into three upper levels based primarily on physiognomic features, three middle levels that consider biogeographic and meso-climatic factors along with diagnostic species and life forms, and two lower levels based on floristics (FGDC, 2008; Faber-Langendoen et al., 2025) (Figure 1). The structure of early versions of the USNVC (FGDC, 1997) was in part based on an international vegetation classification developed by the United Nations Educational, Cultural, and Scientific Organization (UNESCO, 1973; Driscoll et al., 1984). Substantial revisions to the upper levels of the 1997 USNVC hierarchy were adopted by the FGDC in February 2008 (FGDC, 2008) and subsequent efforts incorporated more explicit ecological classifiers and connections to the Global Ecosystem Typology (Keith et al., 2022), resulting in the release of USNVC version 3.0 in 2025 (Faber-Langendoen et al., 2025).

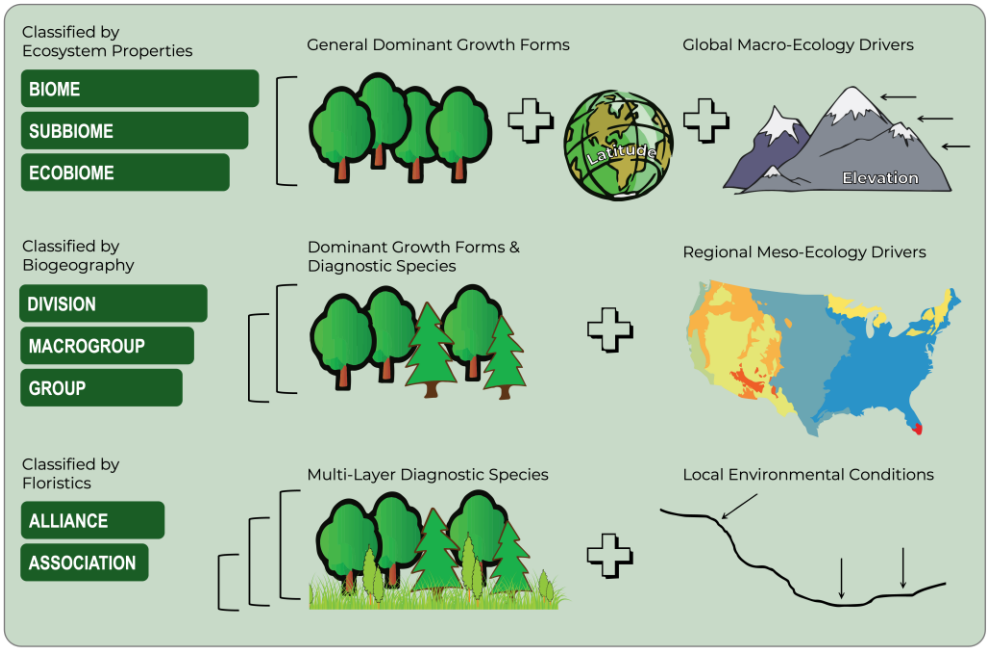

Figure 1. The U.S. National Vegetation Classification Hierarchy.

The association is the finest unit of the USNVC. The association has historically been used by the Washington Department of Natural Resources, Natural Heritage Program (WNHP) as the primary unit for classifying ecosystems. Associations are defined based on characteristic ranges of species composition, diagnostic species occurrence, habitat conditions, and physiognomy (Jennings et al., 2002, 2009). Associations reflect topo-edaphic climate, substrates, hydrology, and disturbance regimes. Associations are also the unit most commonly used by WNHP for classification of "element occurrences" (= specific locations with significant conservation value). When fine-scale association mapping is impractical, a coarser level of the hierarchy (USNVC group) is sometimes used.

WNHP has played a key role in the identification and development of USNVC associations for Washington State. WNHP ecologists continually work to synthesize the various vegetation classification efforts applicable to Washington with firsthand collection and analysis of vegetation plot data. Data from more than 140 vegetation classification efforts have been synthesized in order to produce this synonymized key to the upland plant associations occurring in the Puget Sound Drainage Basin (Figure 2)—both USNVC types and those that have not yet been incorporated into the national classification. This process will continue as new information becomes available. In the meantime, this key provides a resource with which users can field identify upland plants associations across a large swathe of western Washington.

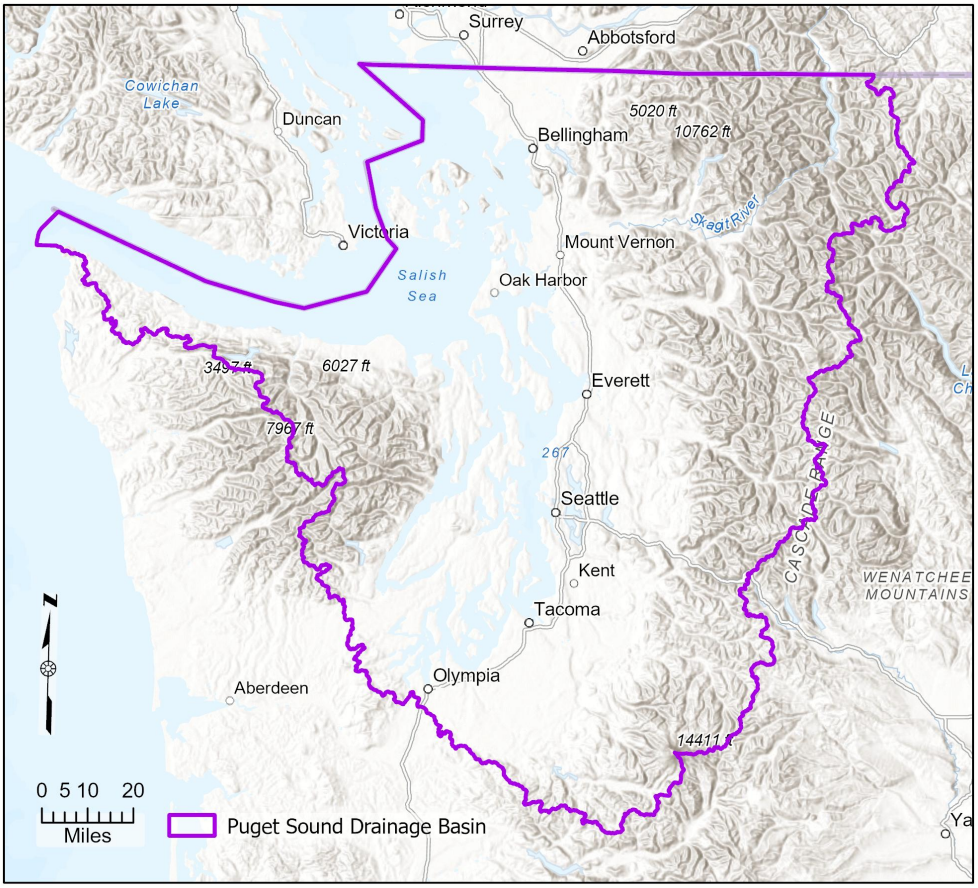

Figure 2. This key is designed for use throughout the Puget Sound Drainage Basin, but is applicable to much of western Washington State.

Key to Upland Plant Associations of the Puget Sound Drainage Basin

Instructions

1. Select a relatively uniform area of vegetation and topography within the stand.
2. This key is not dichotomous. If the stand or plot meets the criteria in a line, read to the right, or (if blank) to the next indented line. If the stand or plot does not meet the criteria, skip to the next line that is not indented from the current line.
3. The key is divided into two main sections. Use the "Key to Keys" to determine which one to use:
    a. "Key to Upland Plant Associations of the Puget Trough Ecoregion"—based on the structure introduced in Chappell (2006a).
    b. "Key to Plant Associations of Mount Rainier, North Cascades, and Olympic National Parks and Surrounding Areas"—based on the structure of Ramm-Granberg et al. (2021) and Crawford et al. (2009).
4. Some associations may be distinguished by multiple characteristics—these associations may be reached via more than one path in the key.
5. Percentage values refer to crown cover—the vertical projection below the entire crown of the plant. Do not subtract for spaces between leaves and branches
6. "Present" species are typically found in a representative plot (they regularly occur in the stand).
7. "Prominent" species are common within most plots (generally 3-15% cover) but do not make up the dominant vegetation.
8. "Dominant" and "Codominant" species are diagnostic species that have the greatest cover within their physiognomic stratum (tree/shrub/herb)
9. "+" = add the crown cover of each of the species indicated (e.g., 7+22 = 29% cover). Overlap between species is counted twice. Any individual species may be absent.
10. Important note: Stands with greater than 10% tree cover are considered forests or woodlands in current USNVC guidelines. This represents a lower threshold than the 25% cut-off used in Crawford et al. (2009) and some other data sets. When keying stands with 10 to 25% tree cover, we suggest keying through both the forest and shrubland keys to find the best fit. The same applies for the cutoffs between shrublands, herbaceous, and sparse types.
11. The key is not the classification. After keying a stand, always read the association description for additional details on vegetation composition, geographic distribution, and the typical environmental setting. If the description fits in most regards, you have likely made an accurate identification. If there are multiple inconsistencies between the stand and the description, consider trying the key again following slightly different leads or by increasing the flexibility of your cover estimates. Alternatively, the stand might represent an undocumented association, or an expansion of an existing association concept.
    a. To find descriptions for any other associations, see the listed reference (e.g., Chappell 2006a) or click the EL Code (e.g., CEGL007358) to view the description on NatureServe Explorer (https://explorer.natureserve.org/). Listed references are usually recent WNHP publications. References from other sources (e.g., US Forest Service, British Columbia Conservation Data Centre, etc.) are listed for types that are not described in WNHP publications.
    b. Specific guidance for using NatureServe Explorer may be found here: https://usnvc.org/wp-content/uploads/2025/10/NS-Explorer-Guidance.pdf

c. Some associations (those with EL codes starting with 'CTWA' or 'CWWA') exist only in our state classification and have not yet been incorporated into the USNVC. Still others are "provisional" associations based on scant or no plot evidence. These do not have descriptions on NatureServe Explorer. Note that some USNVC types are present in NatureServe Explorer, but lack descriptions. We have provided additional relevant references to consult for these types.
d. The following symbols are used to denote the relationship between a reference's association concept and the concept in this publication.
    i. = The concept is directly synonymous.
    ii. ~= The concept is essentially synonymous.
    iii. > The concept in this document is broader than the reference.
    iv. < The concept in this document is narrower than the reference.
    v. >< The concept in this document represents a different association concept than the similarly named association in the reference. They may be related, but the relationship is complicated.

12. The key provides the abbreviated names for each association based on the six-letter codes of the species (e.g., ARCCOL = Arctostaphylos columbiana Shrubland).
13. The USNVC is a living classification, with periodic updates. Conservation status ranks and other attributes may also change over time. The most up-to-date classification and conservation status information for any given association may be found by consulting the Washington State Vegetation Classification spreadsheet available on the WNHP website (https://dnr.wa.gov/natural-heritage-program/ecosystems-washington/us-national-vegetation-classification).
14. Additional notes:
    a. This key focuses on upland plant associations, but some wetland types are also included when it is useful to distinguish them from similar upland types. If you know you are classifying a wetland, please see Ramm-Granberg et al. (2025).
    b. The key is designed for use in the Puget Sound Drainage Basin, but includes some ecosystems that primarily occur in other regions of the state outside of the basin. These are included when they may potentially occur on the extreme margins of the basin (e.g., along the Cascade Crest).
    c. While designed for the Puget Trough, the key is usable throughout much of western Washington. With that said, it is missing a number of associations that are restricted to southwestern Washington.

Taxonomic standard

All species names used in the key follow the Checklist of Vascular Plants of Washington (Weinmann et al., 2002; Hitchcock & Cronquist, 2018). However, FGDC requirements specify that association names follow US Department of Agriculture PLANTS nomenclature (Kartesz, 1999; USDA NRCS, 2006). Ecosystem classification and names align with USNVC version 3.0 (USNVC, 2025).

The following closely related species are used interchangeably in the key:

Caltha leptosepala == C. biflora
Eucephalus ledophyllus == E. engelmannii
Cornus stolonifera == C. occidentalis
Oxalis oregana == O. trilliifolia
Glyceria elata == G. striata

Key to Keys

Stand consists of cultural vegetation (vegetation structure / composition determined by regular human activity such as planting, tilling, cropping, mowing, and/or irrigating)..... **Do not use this key**

Stand is a wetland. Vegetation is distinct from neighboring upland vegetation due to flooding or saturation, at least seasonally. It may not be a *jurisdictional* wetland. .....**Do not use this key. Instead, use Key to Wetland and Riparian Plant Associations of Washington State** (Ramm-Granberg et al., 2025)

Stand meets one of the following criteria:
1) occurs in Mount Rainier, North Cascades, or Olympic National Parks,
2) in coastal areas with Picea sitchensis present, or
3) at montane elevations (generally > ~1800 ft) or higher.
.....**Key to Plant Associations of Mount Rainier, North Cascades, and Olympic National Parks and Surrounding Areas, p. 21**

Stand occurs in the Puget Trough ecoregion. .....**Key to Upland Plant Associations of the Puget Trough Ecoregion, p. 10**

Key to Upland Plant Associations of the Puget Trough Ecoregion

[Adapted from Chappell (2006a, 2006b), Rocchio et al. (2012), and Copass & Ramm-Granberg (2016)]

Trees ≥ 10%, or stand is a tree island in subalpine parkland. Stands with 10-25% tree cover may also be assessed with the shrubland keys below, particularly in areas that have burned or otherwise experienced significant natural disturbance.

Quercus garryana ≥ 25% or ≥ 50% relative tree cover. .....**Oregon White Oak Woodland Key, p. 14**

Total tree cover < 70%, Pinus ponderosa ≥ 25% or ≥ 50% relative tree cover.....**Savanna Key, p. 14**

Pinus contorta var. contorta ≥ 25% ..... **Shore Pine - Douglas-fir Forest Key, p. 15**

Native deciduous broadleaf trees ≥ 75% relative tree cover. **Red Alder - Bigleaf Maple Forest Key, p. 15**

Tsuga heterophylla or Thuja plicata ≥ 10% or dominate tree regeneration.
.....**Douglas-fir - Western Hemlock - Western Redcedar Forest Key, p. 18**

Abies grandis ≥ 10%. .....**Douglas-fir - Grand Fir Forest Key, p. 17**

Arbutus menziesii ≥ 20%. .....**Douglas-fir - Pacific Madrone Forest Key, p. 16**

Abies grandis dominates tree regeneration.....**Douglas-fir - Grand Fir Forest Key, p. 17**

Pseudotsuga menziesii dominates tree regeneration. .....**Douglas-fir Forest Key, p. 16**

Holodiscus discolor + Rosa gymnocarpa + Symphoricarpos albus + Amelanchier alnifolia + Corylus cornuta ≥ 25%. .....**Douglas-fir Forest Key, p. 16**

Gaultheria shallon AND Holodiscus discolor ≥ 10%.....**Douglas-fir Forest Key, p. 16**

Mahonia aquifolium + Festuca occidentalis + Elymus glaucus + Carex inops + Clinopodium douglasii + Moehringia macrophylla + Chimaphila umbellata + Lonicera hispidula ≥ 1% OR any three of these species present .....**Douglas-fir Forest Key, p. 16**

Not as above.....**Douglas-fir - Western Hemlock - Western Redcedar Forest Key, p. 18**

Trees < 10%. Stands with 10-25% tree cover may also be assessed with the forest keys above.

Shrubs < 25%, trees ≥ 10% AND not confined to mesic microsites..... **Savanna Key, p. 14**

Arctostaphylos columbiana or dwarf-shrubs ≥ 25% OR shrubs < 25% and trees either < 10% or confined to mesic microsites. ..... **Grassland, Coastal Dune, & Bald Key, p. 11**

Shrubs ≥ 25%. Stand is not a bald. ..... **Use Wetland Key (Ramm-Granberg et al., 2025) or Key to Upland Shrublands, p. 38**

Grassland, Coastal Dune, and Bald Key

Arctostaphylos columbiana ≥ 25%. ..... **ARCCOL** (CEGL008247)
Ramm-Granberg et al. (2021) p. A-171
= ARCO, Chappell (2006b) p. 36

Dwarf-shrubs (does *not* include Phlox diffusa or Penstemon subserratus) ≥ 25%.
Arctostaphylos nevadensis dominant ..... **ARC(NEV,UVA)-JUNCOM** (CTWA003376)
= AR(NE,UV)-JUCO, Chappell (2006b) p. 33

Arctostaphylos uva-ursi dominant
Juniperus communis ≥ 5%. ..... **ARC(NEV,UVA)-JUNCOM** (CTWA003376)
= AR(NE,UV)-JUCO, Chappell (2006b) p. 33

Fragaria virginiana or Festuca roemeri ≥ 5%. .....**ARCUVA-FRAVIR-(FESROE)** (CEGL008242)
Ramm-Granberg et al. (2021) p. A-169
= ARUV-FRVI-(FERO), Chappell (2006b) p. 34

Juniperus communis dominant
Arctostaphylos nevadensis or A. uva-ursi ≥ 1% ..... **ARC(NEV,UVA)-JUNCOM** (CTWA003376)
= AR(NE,UV)-JUCO, Chappell (2006b) p. 33

Phlox diffusa usually present..... **JUNCOM-PHLDIF** (CEGL008261)
Ramm-Granberg et al. (2021) p. A-160
= JUCO-(PHDI), Chappell (2006b) p. 35

Juniperus communis ≥ 5% and Arctostaphylos nevadensis + A. uva-ursi ≥ 5%.
..... **ARC(NEV,UVA)-JUNCOM** (CTWA003376)
= AR(NE,UV)-JUCO, Chappell (2006b) p. 33

Not as above ..... **see Key to Upland Dwarf-shrublands, p. 40**

Calamagrostis nutkaensis ≥ 25% .....**CALNUT-ELYGLA** (CEGL001564)
Ramm-Granberg et al. (2021) p. A-162
= CANU-VIGI-(EQTE), Chappell (2006b) p. 18

Carex macrocephala ≥ 5%. Coastal dunes. ..... **CARMAC** (CEGL003368)
= CARMAC, Copass & Ramm-Granberg (2016) p. B-50

Leymus mollis dominant. Lathyrus japonicus, Ambrosia chamissonis, and/or Abronia latifolia usually present.
Coastal dunes and gravel. ..... **LEYMOL-ABRLAT** (CEGL001796)
Copass & Ramm-Granberg (2016) p. B-48
Rocchio et al. (2012) p. 54

Festuca roemeri ≥ 10%
Plectritis congesta ≥ 5%..... **FESROE-PLECON** (CTWA003389)
= FERO-PLCO, Chappell (2006a) p. 45
= FERO-PLCO, Chappell (2006b) p. 23

Camassia leichtlinii ≥ 5% ..... **FESRUB-(CAMLEI,GRISTR)** (CEGL003347)
> FERO-CALE, Chappell (2006a) p. 39
= FERU-(GRST-CALE), Chappell (2006a) p. 51
= FERU-(GRST-CALE), Chappell (2006b) p. 25

Festuca rubra ≥ 5% AND Aspidotis densa present ..... **FESROE-(DANCAL-KOEMAC)** (CEGL003349)
= FESROE-CERARV-KOEMAC, Ramm-Granberg et al. (2021) p. A-165
= FERO-(CEAR-KOMA), Chappell (2006a) p. 43
= FERO-(CEAR-KOMA), Chappell (2006b) p. 22
> FERU-FERO-ASDE, Chappell (2006a) p. 49
> FERU-FERO-ASDE, Chappell (2006b) p. 24

Sericocarpus rigidus, Hieracium scouleri (=cynoglossoides), Lupinus lepidus, Sisyrinchium idahoense, OR Lupinus albicaulis present **FESROE-SERRIG** (CEGL001608)
= FERO-SERI, Chappell (2006a) p. 47

Cerastium arvense present AND Erigeron speciosus, Solidago simplex var. simplex, or Triteleia grandiflora var. howellii present. Deep soils. .....**FESROE-CAMQUA-CERARV** (CTWA003380)
= FERO-CAQU-CEAR, Chappell (2006a) p. 41

Cerastium arvense, Selaginella wallacei, Koeleria macrantha, Aspidotis densa, or Elymus glaucus present. Shallow soils ..... **FESROE-(DANCAL-KOEMAC)** (CEGL003349)
= FESROE-CERARV-KOEMAC, Ramm-Granberg et al. (2021) p. A-165
= FERO-(CEAR-KOMA), Chappell (2006a) p. 43
= FERO-(CEAR-KOMA), Chappell (2006b) p. 22
> FERU-FERO-ASDE, Chappell (2006a) p. 49
> FERU-FERO-ASDE, Chappell (2006b) p. 24

Achnatherum lemmonii ≥ 10%..... **ACHLEM/RACCAN** (CEGL001800)
= ACLE, Chappell (2006b) p. 14

Festuca rubra ≥ 10%
Festuca roemeri ≥ 1% AND Aspidotis densa present..... **FESROE-(DANCAL-KOEMAC)** (CEGL003349)
= FESROE-CERARV-KOEMAC, Ramm-Granberg et al. (2021) p. A-165
= FERO-(CEAR-KOMA), Chappell (2006a) p. 43
= FERO-(CEAR-KOMA), Chappell (2006b) p. 22
> FERU-FERO-ASDE, Chappell (2006a) p. 49
> FERU-FERO-ASDE, Chappell (2006b) p. 24

Camassia quamash or Grindelia stricta present. Bluffs or shallow soils near saltwater. ..... **FESRUB-(CAMLEI,GRISTR)** (CEGL003347)
> FERO-CALE, Chappell (2006a) p. 39
= FERU-(GRST-CALE), Chappell (2006a) p. 51
= FERU-(GRST-CALE), Chappell (2006b) p. 25

Calystegia soldanella, Spergularia macrotheca, or Plantago maritima often present. Steep coastal bluffs. ..... **FESRUB Coastal** (CEGL001567)
= FESRUB Coastal Headland, Rocchio et al. (2012) p. 39

Cerastium arvense AND Bromus sitchensis present, OR Abronia latifolia, Lupinus littoralis, Lathyrus japonicus, Ambrosia chamissonis, or Lomatium nudicaule present. Stabilized dunes and beach gravels inland of drift logs..... **FESRUB Dune** (CEGL001774)
= FESRUB Stabilized Dune, Rocchio et al. (2012) p. 52
= FESRUB-AMBCHA, Copass & Ramm-Granberg (2016) p. B-49

Danthonia californica ≥ 10% ..... **DANCAL** (CEGL001598)
> DACA-ERLA, Chappell (2006a) p. 33

Artemisia campestris and Festuca rubra most abundant vascular plants. Nonvascular cover (e.g., Cladonia/Cladina spp., Niphotrichum canescens, Tortula ruralis) may be high. Sparsely vegetated coastal dunes ..... **ARTCAM-FESRUB/RACCAN** (CEGL003370)

Danthonia californica ≥ 10% ..... **DANCAL** (CEGL001598)
> DACA-ERLA, Chappell (2006a) p. 33

Carex inops ≥ 25% ..... **CARINO-ERILAN** (CTWA003387)
= CAIN-ERLA, Chappell (2006b) p. 20

Camassia quamash dominant. Triteleia hyacinthina may codominate. ..... **CAMQUA-TRIHYA** (CWWA000210)
= CAQU-TRHY, Chappell (2006b) p. 19

Plectritis congesta dominant. ..... **PLECON** (CTWA003376)
> FERO-PLCO, Chappell (2006a) p. 45
> FERO-PLCO, Chappell (2006b) p. 23
= PLCO, Chappell (2006b) p. 30

Phlox diffusa ≥ 20%. Lomatium martindalei, Penstemon subserratus, or Selaginella wallacei present.
..... **PHLDIF-(LOMMAR)** (CEGL008262)
Ramm-Granberg et al. (2021) p. A-224
= PHDI-(LOMA-PESU), Chappell (2006b) p. 29

Calamagrostis howellii ≥ 5%. Relatively sparse (moss often > vascular plants)
..... **CALHOW** (CTWA003386)
= CAHO, Chappell (2006b) p. 17

Mimulus guttatus ≥ 5% ..... **MIMGUT-TRIHYA** (CEGL006654)
= MIGU-TRHY, Chappell (2006b) p. 28

Senecio integerrimus var. ochroleucus dominant ..... **SENINT** (CTWA003375)
= SEIN, Chappell (2006b) p. 31

Triteleia hyacinthina ≥ 10% ..... **TRIHYA** (CWWA000243)
= TRHY, Chappell (2006b) p. 32

Lomatium martindalei ≥ 10% OR Saxifraga ferruginea ≥ 5% and L. martindalei present. . **LOMMAR** (CEGL001972)
= LOMA, Chappell (2006b) p. 27

Koeleria macrantha and/or Agrostis pallens ≥ 10% ..... **KOEMAC-(AGRPAL-RACCAN)** (CEGL008251)
Ramm-Granberg et al. (2021) p. A-167
= KOMA-(AGPA), Chappell (2006b) p. 26

Artemisia campestris and Festuca rubra most abundant vascular plants. Nonvascular cover (e.g., Cladonia/Cladina spp., Niphotrichum canescens, Tortula ruralis) may be high. Sparsely vegetated dunes
..... **ARTCAM-FESRUB/RACCAN** (CEGL003370)

Stunted Pseudotsuga menziesii and Pincus contorta var. contorta dominate open tree layer. Niphotrichum canescens, Cladonia spp., and/or Racomitrium lanuginosum dominate moss layer. Exposed bedrock present.
..... **PINCON-PSEMEN/CLADINA** (CEGL003375)

Cladina spp. and Selaginella wallacei codominate. Other mosses and lichens common.
..... **SELWAL/CLADINA** (CTWAPGW550)

Balsamorhiza deltoidea dominant. ..... **Return to top of grassland key and focus on dominant graminoids**
= BADE [Provisional], Chappell (2006b) p. 16

Allium cernuum dominant. ..... **Return to top of grassland key and focus on dominant graminoids**
= ALCE [Provisional], Chappell (2006b) p. 15

Cytisus scoparius dominant
Coastal dunes and bluffs..... **CYTSCO Coastal** (CEGL003045)

Inland..... **CYTSCO Inland** (Not tracked12)
= BRO(DIA,HOR,STE) Ruderal, Copass & Ramm-Granberg (2016), p. B-40
= BRO(DIA,HOR,STE) Ruderal, Rocchio et al.(2012), p. 48

Ammophila arenaria dominant
Cardionema ramosissimum present ..... **AMMARE-CARRAM** (CEGL003373)
Not as above ..... **AMMARE** (CEGL003006)

Bromus diandrus, B. hordeaceus, or other annual exotic grasses dominant..... **BRO(DIA,HOR)** (Not tracked13)
= BRO(DIA,HOR,STE) Ruderal, Copass & Ramm-Granberg (2016), p. B-40
= BRO(DIA,HOR,STE) Ruderal, Rocchio et al.(2012), p. 48

Not as above..... **see Key to Upland Herbaceous Vegetation, p. 42 or Key to Upland Bryophyte and Sparse Vegetation, p. 46**

Savanna Key

Festuca roemeri or Danthonia californica ≥ 5% OR Carex inops + Elymus glaucus ≥ 25%
Pinus ponderosa dominates tree layer ..... **PINPON/CARINO-FESROE** (CEGL003348)
= PIPO/CAIN-FERO, Chappell (2006a) p. 57

Quercus garryana dominates tree layer..... **QUEGAR/FESTUCA** (CEGL001714)
= QUGA/FERO, Chappell (2006a) p. 121

Not as above..... **Ruderal association or see Douglas-fir Forest Key, p. 16**

Oregon White Oak Woodland Key

Viburnum ellipticum + Toxicodendron diversilobum ≥ 10%. ..... **QUEGAR/VIBELL-TOXDIV**(CEGL003354)
= QUGA/VIEL/TODI, Chappell (2006a) p. 129

Symphoricarpos albus ≥ 10%
Pseudotsuga menziesii ≥ 25% AND Polystichum munitum present.
..... **PSEMEN-QUEGAR/SYMALB** (CEGL000929)
= QUGA-PSME/SYAL/POMU, Chappell (2006a) p. 125

Fraxinus latifolia ≥ 25% ..... **QUEGAR-(FRALAT)/SYMALB** (CEGL003299)
= QUGA-(FRLA)/SYAL, Chappell (2006a) p. 123

Polystichum munitum + Circaea alpina + Claytonia sibirica + Maianthemum stellatum ≥ 1%
Riparian or wetland fringe setting ..... **QUEGAR-(FRALAT)/SYMALB** (CEGL003299)
= QUGA-(FRLA)/SYAL, Chappell (2006a) p. 123

Pseudotsuga menziesii ≥ 10% OR numerous P. menziesii stumps. Upland.
..... **PSEMEN-QUEGAR/SYMALB** (CEGL000929)
= QUGA-PSME/SYAL/POMU, Chappell (2006a) p. 125

Toxicodendron diversilobum AND Holodiscus discolor ≥ 10%.... **QUEGAR/VIBELL-TOXDIV**(CEGL003354)
= QUGA/VIEL/TODI, Chappell (2006a) p. 129

Carex inops or Elymus glaucus ≥ 1% ..... **QUEGAR/SYMALB/CARINO** (CEGL003358)
= QUGA/SYAL/CAIN, Chappell (2006a) p. 127

Symphoricarpos albus ≥ 50% OR Oemleria cerasiformis ≥ 25%.
..... **QUEGAR-(FRALAT)/SYMALB** (CEGL003299)
= QUGA-(FRLA)/SYAL, Chappell (2006a) p. 123

Mahonia aquifolium, Carex inops, or Elymus glaucus present. ....**QUEGAR/SYMALB/CARINO** (CEGL003358)
= QUGA/SYAL/CAIN, Chappell (2006a) p. 127

Mahonia aquifolium ≥ 25% .....**QUEGAR/SYMALB/CARINO** (CEGL003358)
= QUGA/SYAL/CAIN, Chappell (2006a) p. 127

Pseudotsuga menziesii dominates canopy. Melica subulata, Sanicula crassicaulis, and/or Carex inops dominate herb layer. Rhytidiadelphus triquetrus usually present. .....**PSEMEN-QUEGAR/MELSUB** (CEGL003355)

Carex inops, Festuca roemeri, Festuca rubra, or Elymus glaucus ≥ 10% AND Camassia quamash or Ranunculus occidentalis present. .....**QUEGAR/CARINO-CAMQUA** (CEGL000548)
= QUGA/CAIN-(CAQU), Chappell (2006a) p. 119

Shore Pine - Douglas-fir Forest Key

Juniperus communis ≥ 5%. Ultramafic/serpentine indicators such as Aspidotis densa, Carex scirpoidea ssp. scirpoidea, and Adiantum aleuticum present. Provisional association currently documented only in the Twin Sister Range of the North Cascades .....**PINCON/JUNCOM/CARSCI** (CTWA003390)

Niphotrichum canescens and/or Racomitrium lanuginosum dominate moss layer. Exposed bedrock present. ..... **PINCON-PSEMEN/CLADINA** (CEGL003375)

Arbutus menziesii and Gaultheria shallon each ≥ 10%. ..... **ARBMEN-PINCON/GAUSHA** (CEGL000132)

Vaccinium ovatum ≥ 10%. Stabilized dunes. .....**PINCON-PICSIT/VACOVAT** (CEGL000403)

Arctostaphylos uva-ursi ≥ 10%. Stabilized dunes. .....**PINCON/ARCUVA** (CEGL002605)

Gaultheria shallon ≥ 10%. .....**PINCON-PSEMEN/GAUSHA** (CEGL000150)
Ramm-Granberg et al. (2021) p. A-30
= PICO-PSME/GASH, Chappell (2006a) p. 53

Mahonia nervosa ≥ 5% .....**PINCON-PSEMEN/MAHNER** (CEGL007317)
= PICO-PSME/MANE, Chappell (2006a) p. 55

Not as above..... **see Key to Upland Conifer Forests and Woodlands, p. 25**

Red Alder - Bigleaf Maple Forest Key

Wetland soils or otherwise subjected to flooding ..... **see Wetland Key** (Ramm-Granberg et al., 2025)

Betula papyrifera ≥ 10% ..... **BETPAP-ALNRUB/POLMUN** (CEGL003352)
= BEPA-ALRU/POMU, Chappell (2006a) p. 25

Polystichum munitum ≥ 10%
Tellima grandiflora present. Steep, erosive slopes and landslide deposits.
.....**ACEMAC-ALNRUB/POLMUN-TELGRA** (CEGL003334)
= ACMA-ALRU/POMU-TEGR, Chappell (2006a) p. 31

Not as above. ..... **ALNRUB/POLMUN** (CEGL000638)
= ALRU/POMU, Chappell (2006a) p. 37

Exotic pasture grasses dominate understory .....**ALNRUB Nonnative** (Not tracked1)

Not as above.....**see Key to Deciduous Forests and Woodlands, p. 22**

Douglas-fir - Pacific Madrone Forest Key

Vaccinium ovatum ≥ 5% or Gaultheria shallon ≥ 10% ..... **ARBMEN-(PSEMEN)/GAUSHA** (CEGL007332)
> PSME-ARME/VAOV, Chappell (2006a) p. 73
> PSME-ARME/GASH, Chappell (2006a) p. 69

Holodiscus discolor + Symphoricarpos albus + Lonicera hispidula + Festuca occidentalis ≥ 1%.
..... **PSEMEN-ARBMEN/HOLDIS** (CEGL000422)
= PSME-ARME/HODI/LOHI, Chappell (2006a) p. 71

Not as above..... **Ruderal association or see Douglas-fir Forest Key, p. 16**

Douglas-fir Forest Key

Polystichum munitum ≥ 60% ..... **PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN** (CEGL005634)
> PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN, Ramm-Granberg et al. (2021) p. A-114
> PSME/COCO/POMU-TITR, Chappell (2006a) p. 75
~= PSME-ABGR/COCO/POMU, Chappell (2006a) p. 61

Vaccinium ovatum ≥ 5%. Abies grandis and Thuja plicata absent or minor. Typically young stands (Maturation I or earlier).

Polystichum munitum ≥ 3%

Rhododendron macrophyllum < 5% ..... **PSEMEN-TSUHET/VACOVAT/POLMUN** (CEGL000121)
= PSME-TSHE/VAOV/POMU, Chappell (2006a) p. 117

Rhododendron macrophyllum ≥ 5%
..... **PSEMEN-TSUHET/RHOMAC-VACOVAT/POLMUN** (CEGL005546)

Rhododendron macrophyllum ≥ 5%..... **PSEMEN-TSUHET/RHOMAC-VACOVAT** (CEGL002615)
= PSME-TSHE/RHMA-VAOV, Chappell (2006a) p. 111

Rhododendron macrophyllum < 5%..... **PSEMEN-TSUHET/VACOVAT** (CEGL002614)
= PSME-TSHE/ VAOV, Chappell (2006a) p. 115)

Gaultheria shallon ≥ 10%

Polystichum munitum ≥ 10%.
..... **PSEMEN/GAUSHA-MAHNER/POLMUN** (CEGL007365)
= PSME/GASH/POMU, Chappell (2006a) p. 81

Holodiscus discolor, Mahonia aquifolium, Rosa gymnocarpa, or Symphoricarpos mollis present.
..... **PSEMEN/GAUSHA-HOLDIS** (CEGL005531)
= PSME/GASH-HODI, Chappell (2006a) p. 79

Polystichum munitum ≥ 10%

Athyrium filix-femina + Dryopteris expansa + Tiarella trifoliata + Urtica dioica ≥ 3%. Other strong indicators relative to the following association include Sambucus racemosa, Tiarella trifoliata, Carex leptopoda, and Abies grandis. ..... **PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN** (CEGL005634)
> PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN, Ramm-Granberg et al. (2021) p. A-114
> PSME/COCO/POMU-TITR, Chappell (2006a) p. 75
~= PSME-ABGR/COCO/POMU, Chappell (2006a) p. 61

Corylus cornuta + Symphoricarpos spp. ≥ 10%. Both present. Other strong indicators relative to the previous association include Lonicera ciliosa, Holodiscus discolor, Linnaea borealis, Maianthemum stellatum, and Fragaria vesca. ..... **PSEMEN/CORCOR/SYM(ALB,HES)-POLMUN** (CEGL007358)
= PSME/COCO-SYMPH/POMU, Chappell (2006a) p. 77

Polystichum munitum ≥ 5% AND Acer circinatum + Corylus cornuta > Symphoricarpos spp.

.....**PSEMEN/CORCOR/SYM(ALB,HES)-POLMUN** (CEGL007358)
= PSME/COCO-SYMPH/POMU, Chappell (2006a) p. 77

Symphoricarpos mollis ≥ 5%. Often in former prairie landscapes.
.....**PSEMEN/HOLDIS-SYM(ALB,HES)** (CEGL009049)
>< PSME/HODI-SYAL, Chappell (2006a) p. 83
> PSME/SYMPH-AMAL, Chappell (2006a) p. 91

Symphoricarpos albus AND Holodiscus discolor each ≥ 10%. Acer circinatum, Acer macrophyllum, Mahonia nervosa, Corylus cornuta, Cornus nuttallii, and Achlys triphylla absent or trace. Arbutus menziesii may be present. Melica subulata often prominent. .....**PSEMEN/HOLDIS-SYMALB** (CEGL000460)
< PSME/HODI-SYAL, Chappell (2006a) p. 83

Symphoricarpos mollis ≥ 5% OR Corylus cornuta + Snowberry spp. > Rosa gymnocarpa + Festuca occidentalis
.....**PSEMEN/HOLDIS-SYM(ALB,HES)** (CEGL009049)
>< PSME/HODI-SYAL, Chappell (2006a) p. 83
> PSME/SYMPH-AMAL, Chappell (2006a) p. 91

Rosa gymnocarpa + Holodiscus discolor + Festuca occidentalis ≥ 1%.
.....**PSEMEN/HOLDIS-ROSGYM/FESOCC** (CEGL000456)
Ramm-Granberg et al. (2021) p. A-113
= PSME/ROGY-HODI, Chappell (2006a) p. 87

Not as above.....**see Douglas-fir - Western Hemlock - Western Redcedar Forest Key, p. 18**

Douglas-fir - Grand Fir Forest Key

Gaultheria shallon ≥ 10%
Polystichum munitum ≥ 5%.....**PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN** (CEGL005634)
> PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN, Ramm-Granberg et al. (2021) p. A-114
> PSME/COCO/POMU-TITR, Chappell (2006a) p. 75
~= PSME-ABGR/COCO/POMU, Chappell (2006a) p. 61

Mahonia nervosa present. Difference between this and PSEMEN-ABIGRA/GAUSHA-HOLDIS is unclear.
.....**PSEMEN-(ABIGRA,THUPLI)/MAHNER-GAUSHA** (CEGL002845)
> PSME-ABGR/GASH, Chappell (2006a) p. 65
> PSME-THPL-(ABGR)/GASH, Chappell (2006a) p. 89

Mahonia nervosa absent. Difference between this and PSEMEN-(ABIGRA,THUPLI)/MAHNER-GAUSHA is unclear. .....**PSEMEN-ABIGRA/GAUSHA-HOLDIS** (CEGL007331)
= PSME-ABGR/GASH, Chappell (2006a) p. 65
= PSEMEN-ABIGRA/GAUSHA-HOLDIS, Rocchio et al. (2012), p. B-18

Polystichum munitum ≥ 5%. Corylus cornuta + Acer circinatum ≥ 10%.
.....**PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN** (CEGL005634)
> PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN, Ramm-Granberg et al. (2021) p. A-114
> PSME/COCO/POMU-TITR, Chappell (2006a) p. 75
~= PSME-ABGR/COCO/POMU, Chappell (2006a) p. 61

Holodiscus discolor ≥ 10%, Symphoricarpos albus AND Polystichum munitum present
.....**PSEMEN-ABIGRA/SYMALB/MELSUB** (CEGL003350)
= PSME-ABGR/HODI/POMU, Chappell (2006a) p. 67

Festuca occidentalis ≥ 1% .....**PSEMEN-ABIGRA/HOLDIS/MELSUB** (CEGL007385)
= PSME-ABGR/FEOC, Chappell (2006a) p. 63

Not as above.....**see Douglas-fir - Western Hemlock - Western Redcedar Forest Key, p. 18**

Douglas-fir - Western Hemlock - Western Redcedar Forest Key

Oplopanax horridus ≥ 10% .....**TSUHET-(PSEMEN)/OPLHOR/POLMUN** (CEGL000497)
= THPL-TSHE/OPHO/POMU, Chappell (2006a) p. 133

Oxalis oregana and Polystichum munitum each ≥ 5%
Struthiopteris spicant or Vaccinium ovalifolium present, Mahonia nervosa and/or Pseudotsuga menziesii absent..... **TSUHET/POLMUN-OXAORE** (CEGL005586)
Ramm-Granberg et al. (2021) p. A-43
>< PSME-THPL/OXOR, Chappell (2006a) p. 95

Not as above ..... **PSEMEN-TSUHET/POLMUN-OXAORE** (CEGL005568)
Ramm-Granberg et al. (2021) p. A-37
>< PSME-THPL/OXOR, Chappell (2006a) p. 95

Stand is in Olympic Mountains rain shadow, Tsuga heterophylla < 25%, AND Thuja plicata + Abies grandis > Tsuga heterophylla. “Olympic Mountains rain shadow” refers to a geographic and climatic area encompassing San Juan County, far western Skagit and Whatcom counties (Cypress, Guemes, Lummi, Fidalgo islands), northern and central Island County, northeastern Jefferson County (Miller and Quimper Peninsulas), and part of eastern Clallam County (Sequim Bay to Port Angeles).

Polystichum munitum ≥ 35%
Oemleria cerasiformis + Rubus spectabilis + Sambucus racemosa + Ribes divaricatum ≥ 15%
..... **THUPLI-ACEMAC-ABIGRA/(OEMCER)/POLMUN** (CEGL002846)

Not as above.....**THUPLI-ABIGRA/POLMUN** (CEGL000468)
= THPL-ABGR/POMU, Chappell (2006a) p. 131

Gaultheria shallon + Rhododendron macrophyllum ≥ 10%
Rhododendron macrophyllum ≥ 5% ..... **PSEMEN-TSUHET/RHOMAC** (CEGL005544)
Ramm-Granberg et al. (2021) p. A-52
> PSME-THPL/RHMA, Chappell (2006a) p. 97

Polystichum munitum ≥ 5% ..... **THUPLI-PSEMEN-ABIGRA/MAHNER/POLMUN** (CEGL002848)
= PSME-THPL/GASH-MANE/POMU, Chappell (2006a) p. 93

Holodiscus discolor or Mahonia nervosa present
..... **PSEMEN-(ABIGRA,THUPLI)/MAHNER-GAUSHA** (CEGL002845)
> PSME-ABGR/GASH, Chappell (2006a) p. 65
> PSME-THPL-(ABGR)/GASH, Chappell (2006a) p. 89

Polystichum munitum ≥ 10%
Oemleria cerasiformis + Rubus spectabilis + Sambucus racemosa + Ribes divaricatum ≥ 15%
..... **THUPLI-ACEMAC-ABIGRA/(OEMCER)/POLMUN** (CEGL002846)

Mahonia nervosa or Gaultheria shallon ≥ 10%
.....**THUPLI-PSEMEN-ABIGRA/MAHNER/POLMUN** (CEGL002848)
= PSME-THPL/GASH-MANE/POMU, Chappell (2006a) p. 93

Tiarella trifoliata + Athyrium filix-femina + Dryopteris expansa ≥ 1%
..... **THUPLI-ABIGRA/POLMUN** (CEGL000468)
= THPL-ABGR/POMU, Chappell (2006a) p. 131

Mahonia nervosa ≥ 5%
Polystichum munitum ≥ 5% .....**THUPLI-PSEMEN-ABIGRA/MAHNER/POLMUN** (CEGL002848)
= PSME-THPL/GASH-MANE/POMU, Chappell (2006a) p. 93

Polystichum munitum < 5% ..... **PSEMEN-(ABIGRA,THUPLI)/MAHNER-GAUSHA** (CEGL002845)
> PSME-ABGR/GASH, Chappell (2006a) p. 65

> PSME-THPL-(ABGR)/GASH, Chappell (2006a) p. 89

Stand is outside Olympic Mountains rain shadow, Tsuga heterophylla ≥ 25%, OR Thuja plicata + Abies grandis < Tsuga heterophylla.

Polystichum munitum ≥ 50% OR Athyrium filix-femina ≥ 3%
..... **TSUHET-(PSEMEN-THUPLI)/POLMUN-ATHFIL** (CEGL005576)
Ramm-Granberg et al. (2021) p. A-40
= TSHE-PSME/POMU-DREX, Chappell (2006a) p. 135

Polystichum munitum ≥ 10%
Vaccinium ovatum ≥ 10% ..... **PSEMEN-TSUHET/VACOVAT/POLMUN** (CEGL000121)
= PSME-TSHE/VAOV/POMU, Chappell (2006a) p. 117

Gaultheria shallon ≥ 10% ..... **PSEMEN-TSUHET/GAUSHA/POLMUN** (CEGL005536)
Ramm-Granberg et al. (2021) p. A-35
= PSME-TSHE/GASH/POMU, Chappell (2006a) p. 103

Dryopteris expansa + Athyrium filix-femina + Tiarella trifoliata + Struthiopteris spicant ≥ 5% OR > Mahonia nervosa + Holodiscus discolor..... **TSUHET-(PSEMEN-THUPLI)/POLMUN-ATHFIL** (CEGL005576)
Ramm-Granberg et al. (2021) p. A-40
= TSHE-PSME/POMU-DREX, Chappell (2006a) p. 135

Rubus spectabilis > Mahonia nervosa + Holodiscus discolor.
..... **TSUHET-(PSEMEN-THUPLI)/POLMUN-ATHFIL** (CEGL005576)
Ramm-Granberg et al. (2021) p. A-40
= TSHE-PSME/POMU-DREX, Chappell (2006a) p. 135

Holodiscus discolor or Symphoricarpos albus ≥ 5%.
..... **PSEMEN-TSUHET/HOLDIS/POLMUN** (CEGL005540)
= PSME-TSHE/HODI/POMU, Chappell (2006a) p. 105

Mahonia nervosa ≥ 5% ..... **PSEMEN-TSUHET/MAHNER-POLMUN** (CEGL005543)
Ramm-Granberg et al. (2021) p. A-36
= PSME-TSHE/MANE-POMU, Chappell (2006a) p. 109

Vaccinium ovatum ≥ 5%
Polystichum munitum ≥ 3%
Rhododendron macrophyllum < 5%
..... **PSEMEN-TSUHET/VACOVAT/POLMUN** (CEGL000121)
= PSME-TSHE/VAOV/POMU, Chappell (2006a) p. 117

Rhododendron macrophyllum ≥ 5%
..... **PSEMEN-TSUHET/RHOMAC-VACOVAT/POLMUN** (CEGL005546)

Rhododendron macrophyllum ≥ 5% ..... **PSEMEN-TSUHET/RHOMAC-VACOVAT** (CEGL002615)
= PSME-TSHE/RHMA-VAOV, Chappell (2006a) p. 111

Rhododendron macrophyllum < 5% ..... **PSEMEN-TSUHET/VACOVAT** (CEGL002614)
= PSME-TSHE/ VAOV, Chappell (2006a) p. 115)

Rhododendron macrophyllum ≥ 5%
Polystichum munitum ≥ 3% ..... **PSEMEN-TSUHET/RHOMAC/POLMUN** (CEGL005545)

Polystichum munitum < 3%..... **PSEMEN-TSUHET/RHOMAC** (CEGL005544)
Ramm-Granberg et al. (2021) p. A-52
> PSME-THPL/RHMA, Chappell (2006a) p. 97

Gaultheria shallon ≥ 10%
Polystichum munitum ≥ 3% ..... **PSEMEN-TSUHET/GAUSHA/POLMUN** (CEGL005536)
Ramm-Granberg et al. (2021) p. A-35

Holodiscus discolor ≥ 3% ..... **PSEMEN-TSUHET/GAUSHA-HOLDIS** (CEGL005537)

= PSEMEN-TSUHET/GAUSHA-HOLDIS, Ramm-Granberg et al. (2021) p. A-61
= PSME-TSHE/GASH-HODI, Chappell (2006a) p. 99

Mahonia nervosa ≥ 5% ..... **PSEMEN-TSUHET/GAUSHA-MAHNER** (CEGL005538)
Ramm-Granberg et al. (2021) p. A-49
= PSME-TSHE/GASH-MANE, Chappell (2006a) p. 101

Mahonia nervosa ≥ 5%
Tiarella trifoliata var. laciniata ≥ 5% .....**PSEMEN-TSUHET/TIATRI** (CEGL007337)
= PSME-TSHE/TITRLA, Chappell (2006a) p. 113

Polystichum munitum ≥ 3% .....**PSEMEN-TSUHET/MAHNER-POLMUN** (CEGL005543)
Ramm-Granberg et al. (2021) p. A-36
= PSME-TSHE/MANE-POMU, Chappell (2006a) p. 109

Gaultheria shallon ≥ 5% ..... **PSEMEN-TSUHET/GAUSHA-MAHNER** (CEGL005538)
Ramm-Granberg et al. (2021) p. A-49
= PSME-TSHE/GASH-MANE, Chappell (2006a) p. 101

Tiarella trifoliata var. laciniata ≥ 1% .....**PSEMEN-TSUHET/TIATRI** (CEGL007337)
= PSME-TSHE/TITRLA, Chappell (2006a) p. 113

Not as above..... **PSEMEN-TSUHET/MAHNER** (CEGL005541)
Ramm-Granberg et al. (2021) p. A-51
= PSME-TSHE/MANE, Chappell (2006a) p. 107

Tiarella trifoliata var. laciniata ≥ 1% .....**PSEMEN-TSUHET/TIATRI** (CEGL007337)
= PSME-TSHE/TITRLA, Chappell (2006a) p. 113

Mahonia nervosa ≥ 1% or not as above..... **PSEMEN-TSUHET/MAHNER** (CEGL005541)
Ramm-Granberg et al. (2021) p. A-51
= PSME-TSHE/MANE, Chappell (2006a) p. 107

Not as above.....**see Key to Conifer Forests and Woodlands, p. 25**

Key to Plant Associations of Mount Rainier, North Cascades, and Olympic National Parks and Surrounding Areas

[Adapted from Ramm-Granberg et al. (2021) and Crawford et al. (2009)]

Key to Physiognomic Categories

Trees ≥ 10%, or stand is a tree island in subalpine parkland. Stands with 10-25% tree cover may also be assessed with the shrubland keys below, particularly in areas that have burned or otherwise experienced significant natural disturbance.

Deciduous broadleaf trees typically dominate or codominate in the canopy (if uncertain, try this key first). ..... **Key to Deciduous Forests and Woodlands, p. 22**

Coniferous trees clearly dominate in the canopy.

Stand occurs as a linear or small patch restricted to riparian areas, flooded valley floors, depressional wetlands, springs or seeps, or other areas with high water tables, including ephemeral washes. ..... **Do not use this key. Instead, use Key to Wetland and Riparian Plant Associations of Washington State** (Ramm-Granberg et al., 2025)

Stand occurs in an upland setting. Site may be sloping or flat, but lacks a high water table, has no potential for flooding, and vegetation is not influenced by discharging groundwater. ..... **Key to Upland Coniferous Forests and Woodlands, p. 25**

Shrubs or shrub-form trees (krummholz/subalpine scrub) ≥ 10% and stand occurs on a landform where groundwater discharge and/or overbank flooding heavily influences vegetation composition (e.g. seeps/springs, depressions, riparian areas). Soils can be mineral or organic (fibrous or woody peat, or muck). This includes riparian shrublands, shrub swamps, and carrs. ..... **Do not use this key. Instead, use Key to Wetland and Riparian Plant Associations of Washington State** (Ramm-Granberg et al., 2025)

Tall Shrubs (taller than 0.5 m) or shrub-form trees (krummholz/subalpine scrub) ≥ 10%. Upland habitat. ..... **Key to Upland Shrublands, p. 38**

Dwarf-shrubs (shorter than 0.5 m) ≥ 10%. Upland habitat ..... **Key to Upland Dwarf-shrublands, p. 40**

Herbaceous vegetation ≥ 10%

Aquatic, submerged, or floating-leaved species dominant and emergent vegetation < 10% ..... **Do not use this key. Instead, use Key to Wetland and Riparian Plant Associations of Washington State** (Ramm-Granberg et al., 2025)

Stand occurs where surface water accumulates or groundwater discharges during at least part of the year (e.g., marshes, wet meadows, bogs, fens, aquatic beds, and snowbeds). The water table is near, at, or above soil surface for significant portion of growing season; soil is very moist to saturated, though it may dry by late summer; organic soils may be present ..... **Do not use this key. Instead, use Key to Wetland and Riparian Plant Associations of Washington State** (Ramm-Granberg et al., 2025)

Stand occurs in upland environments (steep slopes, rocky and/or well-drained soils, other areas where surface and/or groundwater do not affect vegetation). Sites may be near early melting snowbeds. Soils can be moist, but are rarely saturated (and if so, only in early spring). Organic soils or organic soil horizons are absent..... **Key to Upland Herbaceous Vegetation, p. 42**

Herbaceous vegetation < 10% ..... **Key to Bryophyte and Sparse Vegetation, p. 46**

Key to Deciduous Forests and Woodlands

Populus trichocarpa dominant

Oplopanax horridus ≥ 10% ..... **POPBAL/OPLHOR-ACEGLA** (CEGL000482)

Acer macrophyllum codominant

Picea sitchensis present to codominant and Oxalis oregana present

..... **POPBAL-PICSIT-(ACEMAC)/OXAORE** (CEGL003418)
Ramm-Granberg et al. (2021) p. A-137

Symphoricarpos albus dominant shrub ..... **POPBAL-ACEMAC/SYMALB** (CEGL003363)
= ACEMAC-POPBAL/SYMALB, Titus et al. (1996) p. 45
= POPBALT-ACEMAC/SYMALB, Kagan et al. (2004) p. 24

Alnus rubra codominant

Rubus spectabilis dominant shrub..... **POPBAL-ALNRUB/RUBSPE** (CEGL003407)
Ramm-Granberg et al. (2021) p. A-136

Carex obnupta prominent to codominant ..... **POPBAL/CORSER/CAROBN** (CEGL002844)
Ramm-Granberg et al. (2021) p. A-138

Picea sitchensis codominant and Oxalis oregana present

..... **POPBAL-PICSIT-(ACEMAC)/OXAORE** (CEGL003418)
Ramm-Granberg et al. (2021) p. A-137

Cornus occidentalis or Cornus stolonifera present to dominant shrub

Carex obnupta prominent to codominant ..... **POPBAL/CORSER/CAROBN** (CEGL002844)
Ramm-Granberg et al. (2021) p. A-138

Not as above. Low-elevation valley bottoms just east of Cascade Crest

..... **POPBAL/CORSER** (CEGL000672)
Ramm-Granberg et al. (2021) p. A-119

Acer glabrum ≥ 10%..... **POPBAL/ACEGLA** (CWWA000020)
= POTR2/ACGL, Crowe & Clausnitzer (1997) p. 92

Populus trichocarpa and/or Alnus rubra seedlings and saplings dominate, with variable density. Alluvial bars

..... **ALNRUB Alluvial** (CWWA000300)
Ramm-Granberg et al. (2021) p. A-120

Acer macrophyllum dominant

Picea sitchensis present to codominant and Oxalis oregana present OR Oxalis oregana ≥ 5%

..... **ACEMAC/OXAORE** (CWWA000205)
Ramm-Granberg et al. (2021) p. A-126

Rubus spectabilis dominant shrub ..... **ACEMAC/RUBSPE** (CEGL000561)
Ramm-Granberg et al. (2021) p. A-31

Polystichum munitum ≥ 10%

Pseudotsuga menziesii usually codominant, Corylus cornuta and/or Mahonia nervosa usually prominent, non-riparian disturbed settings..... **ACEMAC-PSEMEN/ACECIR/POLMUN** (CEGL003394)
Ramm-Granberg et al. (2021) p. A-31

Tolmiea menziesii present. Riparian ..... **ACEMAC/POLMUN-TOLMEN** (CWWA000206)
Ramm-Granberg et al. (2021) p. A-127

Symphoricarpos albus + Cornus nuttallii ≥ 10% ..... **ACEMAC/SYMALB** (CEGL008240)
Ramm-Granberg et al. (2021) p. A-21

Rubus nutkanus + Maianthemum racemosum ≥ 5%, mesic toes slope or avalanche chute
..... **ACEMAC/RUBPAR/MAIRAC** (CEGL008239)
Ramm-Granberg et al. (2021) p. A-20

Acer circinatum or Acer glabrum codominate shrub layer with scrubby Acer macrophyllum, Paxistima myrsinites present, dry avalanche chute or debris apron
..... **ACEMAC/ACECIR-PAXMYR-(CORCOR)** (CEGL008233)
Ramm-Granberg et al. (2021) p. A-10

Not as above, Maianthemum stellatum present..... **ACEMAC/MAISTE** (CWWA000440)
Ramm-Granberg et al. (2021) p. A-139

Alnus rubra dominant
Picea sitchensis codominant and Carex obnupta and/or Lysichiton americanus present to codominant.
..... **PICSIT/RUBSPE/CAROBN-LYSAME** (CEGL000400)
Ramm-Granberg et al. (2021) p. A-146

Oplopanax horridus ≥ 10%
Maritime indicators present (Polystichum munitum, Struthiopteris spicant, Tolmiea menziesii). Rubus spectabilis and/or Ribes bracteosum usually prominent to codominant. West Cascades.
..... **ALNRUB/OPLHOR-RUBSPE** (CEGL003399)
Ramm-Granberg et al. (2021) p. A-131

Athyrium filix-femina dominates herb layer. Maianthemum racemosum usually present. East Cascades.
..... **ALNRUB/OPLHOR/ATHFIL** (CEGL006696)
< ALRU, Kovalchik & Clausnitzer (2004) p. 131

Rubus spectabilis dominant shrub
Carex obnupta (always present) and/or Lysichiton americanus ≥ 5%
..... **ALNRUB/RUBSPE/CAROBN-LYSAME** (CEGL003389)
Ramm-Granberg et al. (2021) p. A-143

Chrysosplenium glechomifolium ≥ 25%..... **ALNRUB/RUBSPE/CHRGLE** (CWWA000208)
Crawford et al. (2009) p. A-198
= ALRU/RUSP/CHGL, Chappell (1999) p. 14

Rubus spectabilis + Ribes bracteosum ≥ 20% ..... **ALNRUB/RUBSPE** (CEGL000639)
Ramm-Granberg et al. (2021) p. A-134

Lysichiton americanus dominates the herb layer OR Athyrium filix-femina dominates and Lysichiton americanus is present ..... **ALNRUB/ATHFIL-LYSAME** (CEGL003388)
Ramm-Granberg et al. (2021) p. A-141

Alnus viridis ≥ 10%..... **ALNRUB/ALNVIR** (CWWA000301)
Ramm-Granberg et al. (2021) p. A-140

Acer circinatum ≥ 10%
Oxalis oregana ≥ 5% ..... **ALNRUB/OXAORE** (CEGL003400)
Ramm-Granberg et al. (2021), p. A-132

Acer circinatum dominant shrub (often ≥ 40%), Abies grandis absent, Claytonia sibirica usually present
..... **ALNRUB/ACECIR/CLASIB** (CEGL003298)
Ramm-Granberg et al. (2021) p. A-129

Abies grandis, Cornus stolonifera, Moehringia macrophylla, and/or Osmorhiza purpurea present [East Cascades] ..... **ALNRUB/ACECIR** (CWWA000298)
< ALRU, Kovalchik & Clausnitzer (2004) p. 131

Understory dominated by grasses, Elymus glaucus, or Elymus hirsutus present to dominant, Poa trivialis and/or Rubus ursinus usually present ..... **ALNRUB/ELYGLA** (CEGL003398)
Ramm-Granberg et al. (2021) p. A-130

Glyceria striata and/or Glyceria elata ≥ 30%, Veronica americana usually present ..... **ALNRUB/GLYSTR** (CWWA000207)
Ramm-Granberg et al. (2021) p. A-142

Oxalis oregana and/or O. trilliifolia the dominant herb ..... **ALNRUB/OXAORE** (CEGL003400)
Ramm-Granberg et al. (2021), p. A-132

Rubus nutkanus ≥ 30% ..... **ALNRUB/RUBPAR** (CEGL003402)
Ramm-Granberg et al. (2021) p. A-133

Achlys triphylla ≥ 10% ..... **ALNRUB/ACHTRI** (CWWA000299)
< ALRU, Kovalchik & Clausnitzer (2004) p. 131

Stachys ciliata + Tolmiea menziesii + Tiarella trifoliata + Claytonia sibirica + Circaea alpina + Urtica dioica + Petasites frigidus ≥ 10% ..... **ALNRUB/STACHA-TOLMEN** (CEGL003403)
Ramm-Granberg et al. (2021) p. A-135

Polystichum munitum ≥ 10%, upland setting ..... **ALNRUB/POLMUN** (CEGL000638)
Ramm-Granberg et al. (2021) p. A-32

Carex obnupta dominant herb beneath open shrub layer. Usually occurs on manipulated soils in Olympic rain shadow, but not always ruderal ..... **ALNRUB/CAROBN** (CWWA000438)
> ALNRUB/CAROBN Ruderal, Rocchio et al. (2012) p. B-32

Populus trichocarpa and/or Alnus rubra seedlings and saplings dominate, with variable density. Alluvial bars ..... **ALNRUB Alluvial** (CWWA000300)
Ramm-Granberg et al. (2021) p. A-120

Exotic grasses dominant ..... **ALNRUB Nonnative** (Not tracked1),
= ALNRUB/Nonnative Grasses Ruderal, Rocchio et al. (2012) p. B-33

Populus tremuloides dominant

Populus tremuloides the dominant tall shrub. Talus slopes..... **POPTRE-PAXMYR** (CEGL008266)
Ramm-Granberg et al. (2021) p. A-151

Cornus stolonifera or C. occidentalis ≥ 10% or Alnus incana ≥ 25%. East Cascades. ..... **POPTRE/CORSER** (CEGL000582)
Crawford (2003) p. 24

Symphoricarpos albus prominent. East Cascades. ..... **POPTRE/SYMALB** (CEGL000609)
Ramm-Granberg et al. (2021) p. A-118

Betula papyrifera dominant, Acer circinatum + Mahonia nervosa ≥ 10%
..... **BETPAP-(THUPLI)/ACECIR/MAHNER** (CEGL008246)
Ramm-Granberg et al. (2021) p. A-59

Key to Conifer Forests and Woodlands

Larix lyallii ≥ 5%

Vaccinium deliciosum, Phyllodoce empetriformis, Cassiope mertensiana, or Luetkea pectinata ≥ 5%
..... **LARLYA/VACDEL-CASMER** (CEGL000952)
Ramm-Granberg et al. (2021) p. A-9

Vaccinium scoparium or Luzula hitchcockii ≥ 5% ..... **LARLYA/VACSCO/LUZGLA** (CEGL000951)
Ramm-Granberg et al. (2021) p. A-10

Pinus albicaulis ≥ 5%, open woodland or tree island in subalpine setting

Vaccinium scoparium or Vaccinium myrtillus ≥ 5%
..... **PINALB-ABILAS/VACSCO/LUZGLA** (CEGL005839)
Ramm-Granberg et al. (2021) p. A-12

Tsuga mertensiana ≥ 10%, Luzula hitchcockii ≥ 5%..... **PINALB-(TSUMER)/LUZGLA** (CEGL007352)

Juniperus communis ≥ 5% ..... **ABILAS-PINALB/JUNCOM** (CEGL002326)
Ramm-Granberg et al. (2021) p. A-11

Calamagrostis rubescens or Carex geyeri ≥ 5%..... **PINALB/CALRUB** (CEGL000753)
Ramm-Granberg et al. (2021) p. A-13

Festuca viridula ≥ 5% ..... **PINALB/FESVIR** (CEGL007314)
Ramm-Granberg et al. (2021) p. A-14

Picea sitchensis ≥ 10%

Tsuga heterophylla < 25%, Populus trichocarpa ≥ 5%, Oxalis oregana ≥ 5%. Valley bottom
..... **POPBAL-PICSIT-(ACEMAC)/OXAORE** (CEGL003418)
Ramm-Granberg et al. (2021) p. A-137

Carex obnupta ≥ 5% OR Lysichiton americanus ≥ 5% and Carex obnupta present. Wetland
..... **PICSIT/RUBSPE/CAROBN-LYSAME** (CEGL000400)
Ramm-Granberg et al. (2021) p. A-146

Pinus contorta and Vaccinium ovatum ≥ 10%. Stabilized dunes....**PINCON-PICSIT/VACOVAT** (CEGL000403)

Vaccinium ovatum ≥ 10%..... **PICSIT/VACOVAT** (CEGL007306)
Ramm-Granberg et al. (2021) p. A-87

Gaultheria shallon ≥ 10%

Pseudotsuga menziesii ≥ 15% ..... **PICSIT-PSEMEN/GAUSHA** (CEGL007308)

Pseudotsuga menziesii absent or trace ..... **PICSIT/GAUSHA** (CEGL005524)
Ramm-Granberg et al. (2021) p. A-85

Oxalis oregana ≥ 5%

Pseudotsuga menziesii ≥ 15% ..... **PICSIT-PSEMEN/OXAORE** (CEGL005528)

Pseudotsuga menziesii absent or trace ..... **PICSIT-TSUHET/POLMUN-OXAORE** (CEGL005530)
Ramm-Granberg et al. (2021) p. A-89

Rubus spectabilis ≥ 10%, upland..... **PICSIT-(ALNRUB)/RUBSPE/POLMUN** (CEGL007297)
Ramm-Granberg et al. (2021) p. A-125

Polystichum munitum ≥ 5%

Vaccinium parvifolium + Rhododendron menziesii ≥ 10% ..... **PICSIT/MENFER-VACPAR** (CEGL000056)

Pseudotsuga menziesii ≥ 15% ..... **PICSIT-PSEMEN/POLMUN** (CEGL007308)

Not as above..... **PICSIT-TSUHET/POLMUN** (CEGL003787)
Ramm-Granberg et al. (2021) p. A-90

Maianthemum dilatatum ≥ 10%..... **PICSIT/MAIDIL** (CEGL005525)
Ramm-Granberg et al. (2021) p. A-86

Tsuga mertensiana ≥ 10%, or stand is a tree island in subalpine parkland with Tsuga mertensiana ≥ 5%
Festuca viridula ≥ 10% ..... **ABILAS-TSUMER/FESVIR** (CEGL005639)
Ramm-Granberg et al. (2021) p. A-101

Elliottia pyroliflora ≥ 5%..... **TSUMER-ABIAMA-(CALNOO)/ELLPYR-VACMEM** (CEGL000503)
= TSUMER-ABIAMA-(CUPNOO)/ELLPYR-VACMEM, Crawford et al. (2009), p. A-182

Phyllodoce empetriformis + Vaccinium deliciosum ≥ 10%, both usually present
Abies lasiocarpa ≥ 5%, Pinus albicaulis < 1%..... **TSUMER-ABILAS/VACDEL-PHYEMP** (CEGL005583)
Ramm-Granberg et al. (2021) p. A-108

Abies lasiocarpa < 5%, Abies amabilis usually present .....**TSUMER/PHYEMP-VACDEL** (CEGL005579)
Ramm-Granberg et al. (2021) p. A-109

Rhododendron albiflorum ≥ 5% ..... **TSUMER-ABIAMA/RHOALB** (CEGL002632)
Ramm-Granberg et al. (2021) p. A-85

Rhododendron menziesii ≥ 5% ..... **ABIAMA-TSUMER/MENFER** (CEGL005628)
Ramm-Granberg et al. (2021) p. A-91

Vaccinium scoparium ≥ 5%.....**ABILAS-TSUMER/VACSCO** (CEGL005522)
Ramm-Granberg et al. (2021) p. A-102

Vaccinium ovalifolium ≥ 5%
Maianthemum dilatatum ≥ 3% ..... **TSUMER-ABIAMA/VACOVAL/MAIDIL** (CEGL002617)
= TSUMER-ABIAMA/VACOVAL/MAIDIL, Crawford et al. (2009), p. A-177

Streptopus lanceolatus or Tiarella trifoliata ≥ 3% ..... **ABIAMA-TSUMER/STRLAN** (CEGL005519)
Ramm-Granberg et al. (2021) p. A-92

Rubus pedatus or Xerophyllum tenax usually present
..... **TSUMER-ABIAMA/VACALA/RUBPED** (CEGL005580)
Ramm-Granberg et al. (2021) p. A-96

Xerophyllum tenax ≥ 5%
Vaccinium membranaceum present..... **TSUMER-ABIAMA/VACMEM/XERTEN** (CEGL000515)
Ramm-Granberg et al. (2021) p. A-97

Paxistima myrsinites and/or Vaccinium myrtillus usually present. East Cascades.
..... **TSUMER-ABIAMA/XERTEN** (CEGL000500)

Vaccinium membranaceum ≥ 5%
Streptopus lanceolatus or Tiarella trifoliata ≥ 3% ..... **ABIAMA-TSUMER/STRLAN** (CEGL005519)
Ramm-Granberg et al. (2021) p. A-92

Valeriana sitchensis ≥ 3%, Heracleum maximum < 10%
..... **TSUMER-ABIAMA/VACMEM/VALSIT** (CEGL005581)
Ramm-Granberg et al. (2021) p. A-98

Rubus lasiococcus usually present ..... **ABIAMA-TSUMER/VACMEM/RUBLAS** (CEGL005520)
Ramm-Granberg et al. (2021) p. A-93

Tiarella trifoliata or Streptopus lanceolatus ≥ 5% ..... **ABIAMA-TSUMER/STRLAN** (CEGL005519)
Ramm-Granberg et al. (2021) p. A-92

Abies lasiocarpa ≥ 5%. Herb layer dominated by Eucephalus ledophyllus, Lupinus latifolius, or other mesic forbs. ..... **TSUMER-ABILAS/EUCLED-LUPLAT** (CEGL007372)
= ABILAS-(TSUMER)/EUCLED-LUPARC Crawford et al. (2009), p. A-183

Luzula hitchcockii ≥ 5%, Carex spectabilis absent or trace. Not documented in WA national parks in patches large enough for forest association. May occur in relatively dry portions of the Cascades.
..... **TSUMER-(ABIAMA-ABILAS)/LUZGLA** (CEGL007381)
= TSUMER-(ABIAMA-ABILAS)/LUZGLA, Crawford et al. (2009), p. A-174

Not as above, subalpine scrub or krummholz ..... **TSUMER** (CEGL005578)
Ramm-Granberg et al. (2021) p. A-110

Abies amabilis or Abies procera ≥ 10%
Lysichiton americanus ≥ 5%, Gaultheria shallon ≥ 10%, Thuja plicata ≥ 20%. Wetland
..... **TSUHET-THUPLI/VACOVAL-GAUSHA/LYSAME** (CEGL007939)
Ramm-Granberg et al. (2021) p. A-149

Oplopanax horridus ≥ 10%
Callitropsis nootkatensis ≥ 50% of total tree cover, avalanche chute
..... **CALNOO/OPLHOR** (CEGL000349)
Ramm-Granberg et al. (2021) p. A-123

Not as above ..... **ABIAMA-TSUHET/OPLHOR** (CEGL000004)
Ramm-Granberg et al. (2021) p. A-121

Rubus spectabilis ≥ 10%. Valley bottoms ..... **ABIAMA/RUBSPE-VACALA** (CWWA000200)
Ramm-Granberg et al. (2021) p. A-122

Abies lasiocarpa ≥ 15%
Xerophyllum tenax ≥ 5% ..... **ABILAS-(ABIAMA)/VACMEM/XERTEN** (CEGL008234)
Ramm-Granberg et al. (2021) p. A-99

Valeriana sitchensis or Arnica latifolia ≥ 1% or Rubus lasiococcus ≥ 5%
..... **ABILAS-ABIAMA/VACMEM/VALSIT** (CEGL002612)
Ramm-Granberg et al. (2021) p. A-100

Rhododendron albiflorum ≥ 5% ..... **ABIAMA/RHOALB** (CEGL000225)
Ramm-Granberg et al. (2021) p. A-94

Rhododendron menziesii ≥ 5% ..... **ABIAMA/MENFER** (CEGL000224)
Ramm-Granberg et al. (2021) p. A-82

Rhododendron macrophyllum ≥ 10%
Vaccinium ovalifolium ≥ 10%. Cornus unalaschkensis ≥ 3% , Achlys triphylla present. Relatively cool/moist sites ..... **ABIAMA-PSEMEN/RHOMAC/CORUNA** (CEGL005513)

Cornus unalaschkensis and Achlys triphylla minor or absent. Drier/warmer than above.
..... **ABIAMA-(PSEMEN,TSUHET)/RHOMAC** (CEGL005548)

Oxalis oregana ≥ 5%
Struthiopteris spicant + Maianthemum dilatatum ≥ 1%[OLYM]
..... **TSUHET-ABIAMA/OXAORE-BLESPI** (CEGL005564)
Ramm-Granberg et al. (2021) p. A-76

Achlys triphylla, Cornus unalaschkensis, Anemone deltoidea, and Vancouveria hexandra common.
..... **TSUHET-ABIAMA-PSEMEN/OXAORE** (CEGL005569)
= ABAM/OXOR, McCain & Diaz (2002a) p. 55

Polystichum munitum ≥ 5% ..... **ABIAMA/POLMUN** (CEGL000006)
Ramm-Granberg et al. (2021) p A-71

Gaultheria shallon ≥ 5%
Struthiopteris spicant ≥ 1%, Pseudotsuga menziesii usually absent
Thuja plicata ≥ 15%..... **TSUHET-THUPLI/GAUSHA/BLESPI** (CEGL005577)
Ramm-Granberg et al. (2021) p. A-78

Not as above ..... **TSUHET-(ABIAMA)/GAUSHA/BLESPI** (CEGL005549)
Ramm-Granberg et al. (2021) p. A-72

Not as above..... **TSUHET-ABIAMA-PSEMEN/GAUSHA** (CEGL005567)
Ramm-Granberg et al. (2021) p. A-74

Vaccinium membranaceum ≥ 5%
Xerophyllum tenax ≥ 5%..... **ABIAMA-(PSEMEN-ABIPRO)/VACMEM/XERTEN** (CEGL000239)
Ramm-Granberg et al. (2021) p. A-79

Valeriana sitchensis or Arnica latifolia ≥ 2% or Rubus lasiococcus ≥ 5%
.....**ABIAMA-(TSUHET)/VACMEM/ORTSEC** (CEGL005516)
Ramm-Granberg et al. (2021) p. A-81

Tiarella trifoliata + Maianthemum stellatum ≥ 5%
..... **ABIAMA-(PSEMEN-ABIPRO)/VACMEM/XERTEN** (CEGL000239)
Ramm-Granberg et al. (2021) p. A-79

Vaccinium ovalifolium ≥ 5%..... **ABIAMA-(TSUHET)/VACMEM-VACALA** (CEGL005517)
Ramm-Granberg et al. (2021) p. A-80

Clintonia uniflora, Rubus lasiococcus, or Orthilia secunda present
.....**ABIAMA-(TSUHET)/VACMEM/ORTSEC** (CEGL005516)
Ramm-Granberg et al. (2021) p. A-81

Vaccinium ovalifolium ≥ 5%
Tiarella trifoliata + Streptopus lanceolatus + Maianthemum dilatatum ≥ 3%
..... **TSUHET-ABIAMA/VACALA/TIATRI** (CEGL005566)
Ramm-Granberg et al. (2021) p. A-77

Struthiopteris spicant ≥ 5%, Thuja plicata ≥ 15%
..... **TSUHET-ABIAMA-(THUPLI)/VACALA/BLESPI** (CEGL007319)
Ramm-Granberg et al. (2021) p. A-73

Clintonia uniflora + Rubus pedatus + Cornus unalaschkensis + Erythronium montanum ≥ 3%
..... **TSUHET-ABIAMA/VACALA/RUBPED** (CEGL005565)
Ramm-Granberg et al. (2021) p. A-84

Vaccinium parvifolium, Mahonia nervosa, AND Achlys triphylla ≥ 5%, Vaccinium ovalifolium present, Gaultheria shallon absent.
..... **TSUHET-PSEMEN-ABIAMA/VACPAR/ACHTRI** (CEGL005575)
= CWH vm 2 /04, Green & Klinka (1994), p. 59, 158

Not as above..... **TSUHET-ABIAMA-(PSEMEN)/VACALA** (CEGL005518)
Ramm-Granberg et al. (2021) p. A-83

Xerophyllum tenax ≥ 5%, Vaccinium membranaceum present
.....**ABIAMA-(PSEMEN-ABIPRO)/VACMEM/XERTEN** (CEGL000239)
Ramm-Granberg et al. (2021) p. A-79

Achlys triphylla ≥ 5% OR Acer circinatum ≥ 10% and Achlys triphylla present
Tiarella trifoliata + Maianthemum stellatum ≥ 5%
..... **ABIAMA-(PSEMEN)/ACHTRI-TIATRI** (CEGL005512)
Ramm-Granberg et al. (2021) p. A-67

Vaccinium parvifolium, Mahonia nervosa, AND Achlys triphylla ≥ 5%, Vaccinium ovalifolium present, Gaultheria shallon and Acer circinatum absent.

..... **TSUHET-PSEMEN-ABIAMA/VACPAR/ACHTRI** (CEGL005575)
= CWH vm 2 /04, Green & Klinka (1994), p. 59, 158

Not as above..... **ABIAMA-PSEMEN/ACHTRI** (CEGL005511)
Ramm-Granberg et al. (2021) p. A-68

Mahonia nervosa ≥ 5%
Vaccinium parvifolium, Mahonia nervosa AND Achlys triphylla ≥ 5%, Vaccinium ovalifolium present, Gaultheria shallon and Acer circinatum absent.
..... **TSUHET-PSEMEN-ABIAMA/VACPAR/ACHTRI** (CEGL005575)

Not as above..... **TSUHET-ABIAMA-PSEMEN/MAHNER** (CEGL000217)
Ramm-Granberg et al. (2021) p. A-75

Tiarella trifoliata + Streptopus lanceolatus + Rubus pedatus + Struthiopteris spicant ≥ 5%, Rubus spectabilis < 20%..... **ABIAMA-TSUHET/RUBPED-TIATRI** (CEGL005515)
Ramm-Granberg et al. (2021) p. A-70

Total cover of shrubs and herbs < 15%
Rubus pedatus + Struthiopteris spicant + Streptopus lanceolatus + Tiarella trifoliata ≥ 1%, herb-dominant
..... **ABIAMA-TSUHET/RUBPED-TIATRI** (CEGL005515)
Ramm-Granberg et al. (2021) p. A-70

Vaccinium ovalifolium ≥ Vaccinium membranaceum
..... **TSUHET-ABIAMA-(PSEMEN)/VACALA** (CEGL005518)
Ramm-Granberg et al. (2021) p. A-83

Orthilia secunda or Chimaphila menziesii usually present
..... **ABIAMA-TSUHET/(ORTSEC-CHIMEN)** (CEGL008232)
Ramm-Granberg et al. (2021) p. A-69

Tsuga heterophylla or Thuja plicata ≥ 10%
Lysichiton americanus ≥ 5%. Wetland
Gaultheria shallon and Thuja plicata each ≥ 10%
Sphagnum spp. ≥ 10%, open woodland with stunted trees. Wetland
..... **THUPLI-TSUHET/LYSAME/SPHAGN** (CEGL001787)
Ramm-Granberg et al. (2021) p. A-187

Not as above..... **TSUHET-THUPLI/VACOVAL-GAUSHA/LYSAME** (CEGL007939)
Ramm-Granberg et al. (2021) p. A-149

Rubus spectabilis or Athyrium filix-femina present
..... **TSUHET-(THUPLI-ALNRUB)/LYSAME-ATHFIL** (CEGL007322)
Ramm-Granberg et al. (2021) p. A-147

Oplopanax horridus ≥ 10%. Riparian ..... **TSUHET-(PSEMEN)/OPLHOR/POLMUN** (CEGL000497)
Ramm-Granberg et al. (2021) p. A-148

Arctostaphylos nevadensis ≥ 10% ..... **PSEMEN-PINCON/ARCNEV** (CEGL008275)
Ramm-Granberg et al. (2021) p. A-29

Rhododendron macrophyllum ≥ 10%
Polystichum munitum >3%, Vaccinium ovatum absent.
..... **PSEMEN-TSUHET/RHOMAC/POLMUN** (CEGL005545)

Vaccinium ovalifolium + Cornus unalaschkensis ≥ 10%, Gaultheria shallon <3%.
..... **TSUHET-PSEMEN/RHOMAC-VACALA/CORUNA** (CEGL005571)

Not as above..... **PSEMEN-TSUHET/RHOMAC** (CEGL005544)
Ramm-Granberg et al. (2021) p. A-52

> PSME-THPL/RHMA, Chappell (2006a) p. 97

Rubus spectabilis ≥ 10%, not riparian or floodplain
..... **PSEMEN-TSUHET-(ALNRUB)/RUBSPE** (CEGL005534)
Ramm-Granberg et al. (2021) p. A-33

Oxalis oregana ≥ 5%
Pseudotsuga menziesii ≥ 10%, Vaccinium ovalifolium ≥ 5%
.....**TSUHET-PSEMEN/VACALA/OXAORE** (CEGL005588)
Ramm-Granberg et al. (2021) p. A-41

Vaccinium ovalifolium ≥ 10%, Pseudotsuga menziesii < 10%
..... **TSUHET/VACALA/OXAORE** (CEGL005587)
Ramm-Granberg et al. (2021) p. A-44

Gaultheria shallon ≥ 5% ..... **TSUHET/GAUSHA/POLMUN-BLESPI** (CEGL007301)
Ramm-Granberg et al. (2021) p. A-42

Struthiopteris spicant or Vaccinium ovalifolium present, Mahonia nervosa and/or Pseudotsuga menziesii absent..... **TSUHET/POLMUN-OXAORE** (CEGL005586)
Ramm-Granberg et al. (2021) p. A-43
>< PSME-THPL/OXOR, Chappell (2006a) p. 95

Mahonia nervosa ≥ 10%. Low confidence in this association concept.
.....**PSEMEN-TSUHET/MAHNER/OXAORE** (CEGL000098)

Not as above..... **PSEMEN-TSUHET/POLMUN-OXAORE** (CEGL005568)
Ramm-Granberg et al. (2021) p. A-37
>< PSME-THPL/OXOR, Chappell (2006a) p. 95

Gaultheria shallon ≥ 10%, Struthiopteris spicant ≥ 1%, Pseudotsuga menziesii not prominent
Vaccinium ovatum ≥ 5% ..... **THUPLI-TSUHET/VACOVAT-GAUSHA** (CEGL008282)
Ramm-Granberg et al. (2021) p. A-88

Vaccinium ovalifolium ≥ 5%. Herb layer may be sparse. Well-developed moss layer.
..... **TSUHET-THUPLI/VACOVAL/HYLSPL** (CEGL002778)

Polystichum munitum ≥ 5% ..... **TSUHET/GAUSHA/POLMUN-BLESPI** (CEGL007301)
Ramm-Granberg et al. (2021) p. A-42

Thuja plicata ≥ 15% ..... **TSUHET-THUPLI/GAUSHA/BLESPI** (CEGL005577)
Ramm-Granberg et al. (2021) p. A-78

Not as above.....**TSUHET-(ABIAMA)/GAUSHA/BLESPI** (CEGL005549)
Ramm-Granberg et al. (2021) p. A-72

Vaccinium ovalifolium ≥ 5%
Xerophyllum tenax ≥ 5%, Abies lasiocarpa and Callitropsis nootkatensis absent
.....**PSEMEN-TSUHET/VACALA/XERTEN** (CEGL005547)
Ramm-Granberg et al. (2021) p. A-53

Polystichum munitum ≥ 5% ..... **TSUHET-(PSEMEN)/VACALA/POLMUN** (CEGL005573)
Ramm-Granberg et al. (2021) p. A-39

Vaccinium parvifolium, Mahonia nervosa, AND Achlys triphylla ≥ 5%, Vaccinium ovalifolium present, Gaultheria shallon absent.
..... **TSUHET-PSEMEN-ABIAMA/VACPAR/ACHTRI** (CEGL005575)
= CWH vm 2 /04, Green & Klinka (1994), p. 59, 158

Mahonia nervosa or Gaultheria shallon ≥ 5%
..... **TSUHET-(PSEMEN)/VACALA-MAHNER-(GAUSHA)** (CEGL005574)
Ramm-Granberg et al. (2021) p. A-56

Not as above..... **TSUHET-(PSEMEN)/VACALA/CORUNA** (CEGL005572)
Ramm-Granberg et al. (2021) p. A-57

Polystichum munitum ≥ 10%
Struthiopteris spicant ≥ 5%, Tiarella trifoliata < 1%
Pseudotsuga menziesii ≥ 15%..... **TSUHET-(THUPLI,PSEMEN)/POLMUN-BLESPI** (CEGL002843)

Pseudotsuga menziesii <15% ..... **TSUHET/POLMUN-BLESPI** (CEGL005559)
Ramm-Granberg et al. (2021) p. A-38

Tiarella trifoliata + Athyrium filix-femina ≥ 1% AND ≥ Mahonia nervosa + Gaultheria shallon
..... **TSUHET-(PSEMEN-THUPLI)/POLMUN-ATHFIL** (CEGL005576)
Ramm-Granberg et al. (2021) p. A-40
= TSHE-PSME/POMU-DREX, Chappell (2006a) p. 135

Gaultheria shallon ≥ 5% ..... **PSEMEN-TSUHET/GAUSHA/POLMUN** (CEGL005536)
Ramm-Granberg et al. (2021) p. A-35

Vaccinium parvifolium, Mahonia nervosa, AND Achlys triphylla ≥ 5%, Vaccinium ovalifolium present, Gaultheria shallon absent.
..... **TSUHET-PSEMEN-ABIAMA/VACPAR/ACHTRI** (CEGL005575)
= CWH vm 2 /04, Green & Klinka (1994), p. 59, 158

Mahonia nervosa ≥ 5%..... **PSEMEN-TSUHET/MAHNER-POLMUN** (CEGL005543)
Ramm-Granberg et al. (2021) p. A-36
= PSME-TSHE/MANE-POMU, Chappell (2006a) p. 109

Rubus spectabilis ≥ 2% OR Tiarella trifoliata + Struthiopteris spicant + Athyrium filix-femina + Dryopteris expansa ≥ 3% ..... **TSUHET-(PSEMEN-THUPLI)/POLMUN-ATHFIL** (CEGL005576)
Ramm-Granberg et al. (2021) p. A-40
= TSHE-PSME/POMU-DREX, Chappell (2006a) p. 135

Corylus cornuta + Holodiscus discolor ≥3% and >> Gaultheria shallon. Likely restricted to SW WA.
..... **PSEMEN-(TSUHET)/ACECIR-CORCOR/POLMUN** (CEGL007351)
= TSHE/ACCI-COCO6, McCain & Diaz (2002b) p. 122

Pseudotsuga menziesii present..... **PSEMEN-TSUHET/(ACECIR)/POLMUN** (CEGL005542)
Ramm-Granberg et al. (2021) p. A-34

Gaultheria shallon ≥ 10%
Polystichum munitum ≥ 3% ..... **PSEMEN-TSUHET/GAUSHA/POLMUN** (CEGL005536)
Ramm-Granberg et al. (2021) p. A-35

Rhododendron macrophyllum ≥ 5% ..... **PSEMEN-TSUHET/RHOMAC** (CEGL005544)
Ramm-Granberg et al. (2021) p. A-52
> PSME-THPL/RHMA, Chappell (2006a) p. 97

Holodiscus discolor ≥ 2% ..... **PSEMEN-TSUHET/GAUSHA-HOLDIS** (CEGL005537)
= PSEMEN-TSUHET/GAUSHA-HOLDIS, Ramm-Granberg et al. (2021) p. A-61
= PSME-TSHE/GASH-HODI, Chappell (2006a) p. 99

Xerophyllum tenax ≥ 2%..... **PSEMEN-TSUHET/GAUSHA/XERTEN** (CEGL007333)
Ramm-Granberg et al. (2021) p. A-50

Mahonia nervosa ≥ 5%..... **PSEMEN-TSUHET/GAUSHA-MAHNER** (CEGL005538)
Ramm-Granberg et al. (2021) p. A-49
= PSME-TSHE/GASH-MANE, Chappell (2006a) p. 101

Vaccinium parvifolium usually present ..... **PSEMEN-TSUHET/GAUSHA-VACPAR** (CEGL005539)
Ramm-Granberg et al. (2021) p. A-62

Polystichum munitum and Struthiopteris spicant each ≥ 5%
Pseudotsuga menziesii ≥ 15% ..... **TSUHET-(THUPLI,PSEMEN)/POLMUN-BLESPI** (CEGL002843)

Pseudotsuga menziesii usually < 15% ..... **TSUHET/POLMUN-BLESPI** (CEGL005559)
Ramm-Granberg et al. (2021) p. A-38

Achlys triphylla ≥ 5%, Tiarella trifoliata < 5%, Gymnocarpium dryopteris <1%
Vaccinium parvifolium, Mahonia nervosa, AND Achlys triphylla ≥ 5%, Vaccinium ovalifolium present, Gaultheria shallon absent.
..... **TSUHET-PSEMEN-ABIAMA/VACPAR/ACHTRI** (CEGL005575)
= CWH vm 2 /04, Green & Klinka (1994), p. 59, 158

Cornus nuttallii ≥ 5%. Low confidence in association concept.
..... **PSEMEN/CORNUT/ACHTRI** (CEGL007355)
= TSHE/CONU/ACTR, Topik et al. (1986), p. 122

Not as above..... **PSEMEN-TSUHET/ACHTRI** (CEGL005535)
Ramm-Granberg et al. (2021) p. A-48

Xerophyllum tenax ≥ 5%
Abies lasiocarpa ≥ 10% ..... **ABILAS-(ABIAMA)/VACMEM/XERTEN** (CEGL008234)
Ramm-Granberg et al. (2021) p. A-99

Not as above (Vaccinium ovalifolium may be absent)
..... **PSEMEN-TSUHET/VACALA/XERTEN** (CEGL005547)
Ramm-Granberg et al. (2021) p. A-53

Tiarella trifoliata + Gymnocarpium dryopteris ≥ 5% ..... **TSUHET-(PSEMEN)/TIATRI-GYMDRY** (CEGL007305)
Ramm-Granberg et al. (2021) p. A-17

Mahonia nervosa ≥ 5%
Polystichum munitum ≥ 3% ..... **PSEMEN-TSUHET/MAHNER-POLMUN** (CEGL005543)
Ramm-Granberg et al. (2021) p. A-36
= PSME-TSHE/MANE-POMU, Chappell (2006a) p. 109

Gaultheria shallon ≥ 5% ..... **PSEMEN-TSUHET/GAUSHA-MAHNER** (CEGL005538)
Ramm-Granberg et al. (2021) p. A-49
= PSME-TSHE/GASH-MANE, Chappell (2006a) p. 101

Not as above..... **PSEMEN-TSUHET/MAHNER** (CEGL005541)
Ramm-Granberg et al. (2021) p. A-51
= PSME-TSHE/MANE, Chappell (2006a) p. 107

Tiarella trifoliata or Gymnocarpium dryopteris present
..... **TSUHET-(PSEMEN)/TIATRI-GYMDRY** (CEGL007305)
Ramm-Granberg et al. (2021) p. A-17

Acer circinatum ≥ 5%
Mahonia nervosa ≥ 3%, Vaccinium membranaceum < 5%... **PSEMEN-TSUHET/MAHNER** (CEGL005541)
Ramm-Granberg et al. (2021) p. A-51
= PSME-TSHE/MANE, Chappell (2006a) p. 107

Paxistima myrsinites ≥ 1%, Cornus unalaschkensis absent
..... **PSEMEN-(TSUHET)/ACECIR-PAXMYR** (CEGL008271)
Ramm-Granberg et al. (2021) p. A-24

Paxistima myrsinites ≥ 5%, Mahonia nervosa ≥ 3% ..... **PSEMEN-TSUHET/MAHNER** (CEGL005541)
Ramm-Granberg et al. (2021) p. A-51
= PSME-TSHE/MANE, Chappell (2006a) p. 107

Vaccinium membranaceum ≥ 5% ..... **PSEMEN-(THUPLI-ABIGRA)/VACMEM** (CEGL008270)
Ramm-Granberg et al. (2021) p. A-46

Shrubs + herbs < 10%, Chimaphila menziesii, Chimaphila umbellata, or Corallorhiza sp. present, moist site indicators absent. Mahonia nervosa usually present. May be entirely depauperate

..... **TSUHET-PSEMEN/MAHNER-CHIMEN** (CEGL005570)
Ramm-Granberg et al. (2021) p. A-58

Betula papyrifera codominant..... **BETPAP-(THUPLI)/ACECIR/MAHNER** (CEGL008246)
Ramm-Granberg et al. (2021) p. A-59

Abies lasiocarpa ≥ 10%, or stand is a tree island in subalpine parkland with Abies lasiocarpa ≥ 5%, OR Picea engelmannii ≥ 10% and > Abies grandis

Acer circinatum ≥ 5, open canopy on talus ..... **ABILAS-PSEMEN/ACECIR** (CEGL000921)
Ramm-Granberg et al. (2021) p. A-18

Mahonia nervosa or Achlys triphylla ≥ 5%, Pseudotsuga menziesii present
..... **ABILAS-PSEMEN/MAHNER** (CEGL008237)
Ramm-Granberg et al. (2021) p. A-45

Veratrum viride ≥ 10%..... **ABILAS/VALSIT-RUBLAS** (CEGL000345)
Ramm-Granberg et al. (2021) p. A-104

Vaccinium deliciosum ≥ 5%
Erythronium montanum ≥ 1%, Tsuga mertensiana ≥ 5%
..... **TSUMER-ABILAS/VACDEL-PHYEMP** (CEGL005583)
Ramm-Granberg et al. (2021) p. A-108

Not as above..... **ABILAS/VACDEL** (CEGL005636)
Ramm-Granberg et al. (2021) p. A-103

Phyllodoce empetriformis and Vaccinium scoparium each ≥ 5%, herbaceous cover low or absent
..... **ABILAS/VALSIT-RUBLAS** (CEGL000345)
Ramm-Granberg et al. (2021) p. A-104

Rhododendron albiflorum ≥ 5%
Picea engelmannii, Vaccinium scoparium, or Vaccinium myrtillus ≥ 1%
..... **ABILAS-(PICENG)/RHOALB** (CEGL008286)
Ramm-Granberg et al. (2021) p. A-3

Rubus lasiococcus or Lupinus latifolius usually present ..... **ABILAS/RHOALB/RUBLAS** (CEGL005635)
Ramm-Granberg et al. (2021) p. A-2

Vaccinium scoparium ≥ 5%
Valeriana sitchensis or Luzula hitchcockii ≥ 1%
..... **ABILAS-(CALNOO)/VACSCO/VALSIT** (CEGL008264)
Ramm-Granberg et al. (2021) p. A-1

Phyllodoce empetriformis ≥ 5%, herbaceous cover low or absent
..... **ABILAS/PHYEMP** (CEGL000920)
Ramm-Granberg et al. (2021) p. A-113

Festuca viridula ≥ 10%, shrub and dwarf-shrubs < 5% ..... **ABILAS-TSUMER/FESVIR** (CEGL005639)
Ramm-Granberg et al. (2021) p. A-101

Valeriana sitchensis or Arnica latifolia ≥ 5%
Veratrum viride ≥ 5% ..... **ABILAS/VALSIT-RUBLAS** (CEGL000345)
Ramm-Granberg et al. (2021) p. A-104

Vaccinium membranaceum ≥ 5%..... **ABILAS-ABIAMA/VACMEM/VALSIT** (CEGL002612)
Ramm-Granberg et al. (2021) p. A-100

Not as above..... **ABILAS/VALSIT-RUBLAS** (CEGL000345)
Ramm-Granberg et al. (2021) p. A-104

Rubus lasiococcus ≥ 5% or Erythronium montanum ≥ 10% ..... **ABILAS/VALSIT-RUBLAS** (CEGL000345)
Ramm-Granberg et al. (2021) p. A-104

Vaccinium membranaceum ≥ 5%
Xerophyllum tenax ≥ 5% ..... **ABILAS-(ABIAMA)/VACMEM/XERTEN** (CEGL008234)
Ramm-Granberg et al. (2021) p. A-99

Abies amabilis ≥ 1%, Valeriana sitchensis or Veratrum viride present
..... **ABILAS-ABIAMA/VACMEM/VALSIT** (CEGL002612)
Ramm-Granberg et al. (2021) p. A-100

Calamagrostis rubescens or Carex geyeri ≥ 1% ..... **ABILAS/VACMEM** (CEGL000342)
Ramm-Granberg et al. (2021) p. A-5

Lupinus latifolius ≥ 1% ..... **ABILAS/VACMEM/LUPARC** (CEGL005637)
Ramm-Granberg et al. (2021) p. A-4

Juniperus communis ≥ 5% and > Lupinus latifolius, Lomatium martindalei usually present
..... **ABILAS-(PINCON)/JUNCOM-LOMMAR** (CEGL005638)
Ramm-Granberg et al. (2021) p. A-111

Lupinus latifolius ≥ 3%, Valeriana sitchensis, Luzula hitchcockii, Carex spectabilis < 3%
..... **ABILAS-(PINCON)/LUPARC** (CEGL000316)
Ramm-Granberg et al. (2021) p. A-112

Vaccinium scoparium + Vaccinium myrtillus ≥ 10%, Picea engelmannii present
..... **ABILAS-PICENG/VACSCO** (CEGL000344)
Ramm-Granberg et al. (2021) p. A-6

Arnica latifolia or Valeriana sitchensis ≥ 1% ..... **ABILAS/VALSIT-RUBLAS** (CEGL000345)
Ramm-Granberg et al. (2021) p. A-104

Pedicularis racemosa, Polemonium pulcherrimum, Bistorta bistortoides ≥ 1%
..... **ABILAS-(PINCON)/LUPARC** (CEGL000316)
Ramm-Granberg et al. (2021) p. A-112

Callitropsis nootkatensis ≥ 10%
Oplopanax horridus ≥ 10%, avalanche chute ..... **CALNOO/OPLHOR** (CEGL000349)
Ramm-Granberg et al. (2021) p. A-123

Valeriana sitchensis ≥ 5%, Abies lasiocarpa often prominent, forest setting
..... **ABILAS-ABIAMA/VACMEM/VALSIT** (CEGL002612)
Ramm-Granberg et al. (2021) p. A-100

Tiarella trifoliata + Streptopus lanceolatus + Rubus pedatus ≥ 2%, Abies lasiocarpa not prominent, avalanche chute ..... **CALNOO-(ACECIR-PAXMYR)** (CEGL008256)
Ramm-Granberg et al. (2021) p. A-107

Abies grandis ≥ 10%
Oplopanax horridus ≥ 10% ..... **TSUHET-(PSEMEN)/OPLHOR/POLMUN** (CEGL000497)
Ramm-Granberg et al. (2021) p. A-148

Polystichum munitum ≥ 5%
Gaultheria shallon or Mahonia nervosa ≥ 5%
..... **PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN** (CEGL005634)
> PSEMEN-ABIGRA/MAHNER-GAUSHA/POLMUN, Ramm-Granberg et al. (2021) p. A-114
> PSME/COCO/POMU-TITR, Chappell (2006a) p. 75
~= PSME-ABGR/COCO/POMU, Chappell (2006a) p. 61

Acer circinatum ≥ 10% ..... **PSEMEN-ABIGRA/ACECIR/POLMUN** (CEGL005631)
Ramm-Granberg et al. (2021) p. A-47

Vaccinium membranaceum ≥ 5% ..... **PSEMEN-(THUPLI-ABIGRA)/VACMEM** (CEGL008270)
Ramm-Granberg et al. (2021) p. A-46

Acer circinatum ≥ 5%, Paxistima myrsinites present
..... **PSEMEN-(ABIGRA)/ACECIR-PAXMYR** (CEGL008267)
Ramm-Granberg et al. (2021) p. A-22

Pseudotsuga menziesii ≥ 10%
Pinus contorta ≥ 25% ..... **PINCON key, p. 36**

Polystichum munitum ≥ 10%
Gaultheria shallon or Mahonia nervosa ≥ 5% ..... **PSEMEN/GAUSHA-MAHNER/POLMUN** (CEGL007365)
= PSME/GASH/POMU, Chappell (2006a) p. 81

Corylus cornuta + Holodiscus discolor ≥3% and >> Gaultheria shallon. Likely restricted to SW WA.
..... **PSEMEN-(TSUHET)/ACECIR-CORCOR/POLMUN** (CEGL007351)
= TSHE/ACCI-COCO6, McCain & Diaz (2002b) p. 122

Acer circinatum ≥ 10% ..... **PSEMEN-TSUHET/(ACECIR)/POLMUN** (CEGL005542)
Ramm-Granberg et al. (2021) p. A-34

Arctostaphylos nevadensis ≥ 10%, Pinus contorta > Pinus ponderosa
..... **PSEMEN-PINCON/ARCNEV** (CEGL008275)
Ramm-Granberg et al. (2021) p. A-29

Arctostaphylos nevadensis ≥ 10%, Pinus ponderosa > Pinus contorta. East Cascades.
..... **PSEMEN-PINPON/ARCNEV-PAXMYR** (CEGL008276)
Ramm-Granberg et al. (2021) p. A-25

Arctostaphylos uva-ursi ≥ 10%, Racomitrium spp. or Cladonia spp. ≥ 1%, west of Cascade Crest
..... **PSEMEN-(PINCON)/ARCUVA/RACCAN** (CEGL007345)
Ramm-Granberg et al. (2021) p. A-60

Gaultheria shallon ≥ 5%, Holodiscus discolor ≥ 2% ..... **PSEMEN/GAUSHA-HOLDIS** (CEGL005531)
= PSME/GASH-HODI, Chappell (2006a) p. 79

Gaultheria shallon ≥ 5%, Vaccinium parvifolium present ..... **PSEMEN/GAUSHA-VACPAR** (CEGL005532)
Ramm-Granberg et al. (2021) p. A-66

Mahonia nervosa ≥ 5%
Acer circinatum ≥ 10% ..... **PSEMEN/ACECIR/MAHNER** (CEGL008272)
Ramm-Granberg et al. (2021) p. A-54

Holodiscus discolor + Rosa gymnocarpa ≥ 5%, Polystichum munitum or Festuca occidentalis ≥ 1%, Calamagrostis rubescens absent, west of Cascade Crest
..... **PSEMEN/HOLDIS-ROSGYM/FESOCC** (CEGL000456)
Ramm-Granberg et al. (2021) p. A-113
= PSME/ROGY-HODI, Chappell (2006a) p. 87

Achlys triphylla ≥ 1% ..... **PSEMEN/MAHNER/ACHTRI** (CEGL008273)
Ramm-Granberg et al. (2021) p. A-55

Calamagrostis rubescens or Carex geyeri present, Spiraea lucida ≥ 1%. East Cascades.
..... **PSEMEN/HOLDIS/CALRUB** (CEGL008268)
Ramm-Granberg et al. (2021) p. A-26

Vaccinium membranaceum ≥ 5%
Vaccinium parvifolium ≥ 1% ..... **PSEMEN-(THUPLI-ABIGRA)/VACMEM** (CEGL008270)
Ramm-Granberg et al. (2021) p. A-46

Calamagrostis rubescens or Carex geyeri ≥ 1%. East Cascades..... **PSEMEN/VACMEM** (CEGL000466)
Ramm-Granberg et al. (2021) p. A-16

Acer circinatum ≥ 5%
Cryptogramma acrostichoides usually present. Open woodland on talus.
.....**PSEMEN/ACECIR-(HOLDIS)** (CEGL008238)
Ramm-Granberg et al. (2021) p. A-63

Holodiscus discolor + Rosa gymnocarpa ≥ 5%, Polystichum munitum or Festuca occidentalis present
.....**PSEMEN/HOLDIS-ROSGYM/FESOCC** (CEGL000456)
Ramm-Granberg et al. (2021) p. A-113
= PSME/ROGY-HODI, Chappell (2006a) p. 87

Paxistima myrsinites present..... **PSEMEN-(ABIGRA)/ACECIR-PAXMYR** (CEGL008267)
Ramm-Granberg et al. (2021) p. A-22

Symphoricarpos albus ≥ 5%, Spiraea lucida ≥ 2%. East Cascades.
..... **PSEMEN-(PINPON)/SYMALB** (CEGL008269)
Ramm-Granberg et al. (2021) p. A-23

Holodiscus discolor + Rosa gymnocarpa ≥ 5%
Spiraea lucida, Calamagrostis rubescens, or Arnica cordifolia present
.....**PSEMEN/HOLDIS/CALRUB** (CEGL008268)
Ramm-Granberg et al. (2021) p. A-26

Polystichum munitum, Lathyrus nevadensis, Symphoricarpos mollis, Bromus vulgaris, Adenocaulon bicolor, or Festuca occidentalis present..... **PSEMEN/HOLDIS-ROSGYM/FESOCC** (CEGL000456)
Ramm-Granberg et al. (2021) p. A-113
= PSME/ROGY-HODI, Chappell (2006a) p. 87

Paxistima myrsinites ≥ 5% ..... **PSEMEN/PAXMYR-SPIBET** (CEGL008274)
Ramm-Granberg et al. (2021) p. A-27

Calamagrostis rubescens ≥ 5% .....**PSEMEN/CALRUB** (CEGL000429)
Ramm-Granberg et al. (2021) p. A-28

Not as above, open woodland on talus.....**PSEMEN/ACECIR-(HOLDIS)** (CEGL008238)
Ramm-Granberg et al. (2021) p. A-63

Pinus ponderosa ≥ 10%
Arctostaphylos nevadensis ≥ 10%. East Cascades..... **PSEMEN-PINPON/ARCNEV-PAXMYR** (CEGL008276)
Ramm-Granberg et al. (2021) p. A-25

Pinus contorta ≥ 10%
Juniperus communis ≥ 5%. Ultramafic/serpentine indicators such as Aspidotis densa, Carex scirpoidea ssp. scirpoidea, and Adiantum aleuticum present. Provisional association currently documented only in the Twin Sisters Range of the North Cascades.....**PINCON/JUNCOM/CARSCI** (CTWA003390)

Rhododendron groenlandicum + Kalmia microphylla ≥ 10%
..... **PINCON/LEDGRO/SPHAGN** (CEGL003337)
Ramm-Granberg et al. (2021) p. A-185

Arctostaphylos uva-ursi ≥ 10%, Racomitrium spp. or Cladonia spp. ≥ 1%, west of Cascade Crest
.....**PSEMEN-(PINCON)/ARCUVA/RACCAN** (CEGL007345)
Ramm-Granberg et al. (2021) p. A-60

Gaultheria shallon ≥ 5% ..... **PINCON-PSEMEN/GAUSHA** (CEGL000150)
Ramm-Granberg et al. (2021) p. A-30
= PICO-PSME/GASH, Chappell (2006a) p. 53

Vaccinium membranaceum ≥ 5% ..... **PINCON/VACMEM** (CEGL000169)
Ramm-Granberg et al. (2021) p. A-8

Arctostaphylos nevadensis ≥ 10% ..... **PSEMEN-PINCON/ARCNEV** (CEGL008275)
Ramm-Granberg et al. (2021) p. A-29

Juniperus communis ≥ 5% and > Lupinus latifolius, Abies lasiocarpa present
..... **ABILAS-(PINCON)/JUNCOM-LOMMAR** (CEGL005638)
Ramm-Granberg et al. (2021) p. A-111

Lupinus latifolius ≥ 3%, Abies lasiocarpa present..... **ABILAS-(PINCON)/LUPARC** (CEGL000316)
Ramm-Granberg et al. (2021) p. A-112

Paxistima myrsinites ≥ 5% or Calamagrostis rubescens ≥ 1%. East Cascades.
..... **PINCON/CALRUB** (CEGL000139)
Ramm-Granberg et al. (2021) p. A-7

Key to Upland Shrublands

Tsuga mertensiana dominant, subalpine scrub or krummholz..... **TSUMER** (CEGL005578)
Ramm-Granberg et al. (2021) p. A-110

Abies lasiocarpa dominant or codominant with Callitropsis nootkatensis, subalpine scrub or krummholz, not avalanche-related..... **ABILAS-(CALNOO)** (CEGL008259)
Ramm-Granberg et al. (2021) p. A-106

Pinus albicaulis dominant, subalpine scrub or Krummholz. Provisional association. ..... **PINALB**
Ramm-Granberg et al. (2021) p. A-15

Populus tremuloides the dominant tall shrub, talus slopes ..... **POPTRE-PAXMYR** (CEGL008266)
Ramm-Granberg et al. (2021) p. A-151

Acer macrophyllum the dominant tall shrub, Acer circinatum or Acer glabrum often codominate
Rubus nutkanus + Maianthemum racemosum ≥ 5%, mesic toes slope or moist avalanche chute
..... **ACEMAC/RUBPAR/MAIRAC** (CEGL008239)
Ramm-Granberg et al. (2021) p. A-20

Paxistima myrsinites present, debris apron or dry avalanche chute
..... **ACEMAC/ACECIR-PAXMYR-(CORCOR)** (CEGL008233)
Ramm-Granberg et al. (2021) p. A-10

Shrub-form Callitropsis nootkatensis (scrubby, but not krummholz) ≥ 15%, Alnus viridis + Oplopanax horridus ≥ 10%, avalanche chute..... **CALNOO/OPLHOR** (CEGL000349)
Ramm-Granberg et al. (2021) p. A-123

Alnus viridis ≥ 10%
Oplopanax horridus ≥ 10% or Rubus spectabilis or Ribes bracteosum present, often avalanche chute
..... **ALNVIR-RUBSPE-(OPLHOR)** (CWWA000045)
Ramm-Granberg et al. (2021) p. A-190

Acer circinatum ≥ 10% .....**ALNVIR-ACECIR** (CEGL001155)
Ramm-Granberg et al. (2021) p. A-191

Thalictrum occidentale + Viola glabella + Hydrophyllum fendleri + Heracleum maximum + other mesic forbs ≥ 5% AND Athyrium filix-femina < 1%. Sambucus racemosa, Rubus nutkanus, Sorbus spp. usually present AND Athyrium filix-femina and other ferns absent or minor .....**ALNVIR Mesic** (CEGL006657)
Ramm-Granberg et al. (2021) p. A-205

Acer circinatum dominant
Rubus spectabilis, Oplopanax horridus, Athyrium filix-femina, Tolmiea menziesii, Maianthemum stellatum or Stachys cooleyae present. Riparian..... **ACECIR/ATHFIL-TOLMEN** (CEGL003291)
Ramm-Granberg et al. (2021) p. A-189

Acer macrophyllum prominent ..... **ACEMAC/ACECIR-PAXMYR-(CORCOR)** (CEGL008233)
Ramm-Granberg et al. (2021) p. A-10

Not as above. Little or no understory. Pteridium aquilinum, Ribes bracteosum, Rubus nutkanus, Achlys triphylla, Linnaea borealis, Mahonia nervosa, Rosa pisocarpa often present but usually < 10% each
.....**ACECIR/(PTEAQU)** (CWWA000204)
Ramm-Granberg et al. (2021) p. A-188

Salix sitchensis dominant. Riparian..... **SALSIT/EQUARV-PETFRI** (CEGL003296)
Ramm-Granberg et al. (2021) p. A-195

Rubus nutkanus dominant, Chamaenerion angustifolium or Pteridium aquilinum ≥ 1%
.....**RUBPAR/CHAANG-HERMAX** (CEGL001127)
Ramm-Granberg et al. (2021) p. A-152

Oplopanax horridus dominant ..... **OPLHOR Pacific** (CWWA000114)
Ramm-Granberg et al. (2021) p. A-193

Spiraea splendens dominant; Carex spectabilis or Bistorta bistortoides dominate or codominate herb layer
..... **SPISPL/CARSPE-(POLBIS)** (CEGL008281)
Ramm-Granberg et al. (2021) p. A-155

Vaccinium membranaceum + Vaccinium deliciosum ≥ 15% and Xerophyllum tenax ≥ 5%
..... **VACMEM/XERTEN** (CEGL005891)
Ramm-Granberg et al. (2021) p. A-158

Vaccinium membranaceum ≥ 15%, Xerophyllum tenax absent..... **VACMEM-(SORSIT)/(CALRUB)** (CEGL008284)
Ramm-Granberg et al. (2021) p. A-157

Arctostaphylos columbiana the dominant shrub..... **ARCCOL** (CEGL008247)
Ramm-Granberg et al. (2021) p. A-171
= ARCO, Chappell (2006b) p. 36

Ceanothus velutinus ≥ 15%
Prunus emarginata and/or Amelanchier alnifolia codominant, Maianthemum racemosum, Eucephalus engelmannii, and or Prosartes hookeri usually present ..... **CEAVEL-AMEALN/MAIRAC** (CEGL008241)
Ramm-Granberg et al. (2021) p. A-180

Not as above, Calamagrostis rubescens usually dominates herb layer .....**CEAVEL** (CEGL002167)
Ramm-Granberg et al. (2021) p. A-181

Salix scouleriana and/or Acer glabrum dominant, Amelanchier alnifolia and/or Paxistima myrsinites usually prominent to codominant..... **SALSCO-ACEGLA-(CEAVEL)** (CEGL008236)
Ramm-Granberg et al. (2021) p. A-182

Paxistima myrsinites ≥ 10%, Phlox diffusa ≥ 5% ..... **PAXMYR/PHLDIF** (CEGL008277)
Ramm-Granberg et al. (2021) p. A-161

Sorbus sitchensis ≥ 10%, Phyllodoce empetriformis or Vaccinium deliciosum ≥ 5%, often avalanche chute/slope
..... **SORSIT/VACDEL-(PHYEMP)** (CEGL008280)
Ramm-Granberg et al. (2021) p. A-154

Symphoricarpos albus ≥ 10%, Holodiscus discolor ≥ 3%, avalanche chute or debris apron
..... **SYMALB-HOLDIS** (CEGL008285)
Ramm-Granberg et al. (2021) p. A-153

Gaultheria shallon ≥ 25%, coastal bluffs .....**GAUSHA-VACOVAT/PTEAQU** (CEGL000972)
Ramm-Granberg et al. (2021) p. A-163

Acer circinatum and/or Holodiscus discolor most abundant, open woodland on talus
..... **PSEMEN/ACECIR-(HOLDIS)** (CEGL008238)
Ramm-Granberg et al. (2021) p. A-63

Key to Upland Dwarf-shrublands

Salix cascadensis dominant ..... **SALCAS/FESBRA** (CEGL001433)
= SALCAS-FESBRA, Crawford et al. (2009), p. A-312

Salix nivalis dominant ..... **SALNIV/FESBRA** (CEGL001434)

Kalmia microphylla dominant, Carex nigricans ≥ 10%, Vaccinium deliciosum and Phyllodoce empetriformis often present ..... **KALMIC/CARNIG** (CEGL001402)
Ramm-Granberg et al. (2021) p. A-198

Empetrum nigrum dominant, alpine..... **EMPNIG-LUPSEL** (CEGL001400)
Ramm-Granberg et al. (2021) p. A-210

Arctostaphylos uva-ursi or Arctostaphylos nevadensis the dominant dwarf-shrub
Dasiphora fruticosa, Empetrum nigrum, Carex nigricans, and/or Artemisia furcata present, alpine
..... **ARCUVA** (CEGL001392)
Ramm-Granberg et al. (2021) p. A-217

Paxistima myrsinites, Calamagrostis rubescens, and/or Pseudoroegneria spicata prominent, middle elevations
..... **ARC(NEV,UVA)-PAXMYR/PSESPI** (CEGL008249)
Ramm-Granberg et al. (2021) p. A-159

Juniperus communis, Penstemon davidsonii, and Arctostaphylos nevadensis absent, Fragaria virginiana or Festuca roemeri present, low to middle elevations ..... **ARCUVA-FRAVIR-(FESROE)** (CEGL008242)
Ramm-Granberg et al. (2021) p. A-169

Phyllodoce glanduliflora ≥ 10% ..... **PHYGLA/OREALP** (CEGL001408)
Ramm-Granberg et al. (2021) p. A-211

Phyllodoce empetriformis ≥ 10%
Lupinus latifolius > Vaccinium deliciosum + Cassiope mertensiana, at or above treeline
..... **PHYEMP/LUPLAT** (CEGL001406)
Ramm-Granberg et al. (2021) p. A-214

Vaccinium deliciosum > Cassiope mertensiana, tree cover often ≥ 5%, subalpine parkland
..... **PHYEMP-VACDEL** (CEGL001407)
Ramm-Granberg et al. (2021) p. A-213

Vaccinium deliciosum < Cassiope mertensiana, trees usually absent, alpine
..... **CASMER-PHYEMP** (CEGL001398)
Ramm-Granberg et al. (2021) p. A-212

Cassiope mertensiana ≥ 10%
Vaccinium deliciosum > Cassiope mertensiana, tree cover often ≥ 5%, subalpine parkland
..... **PHYEMP-VACDEL** (CEGL001407)
Ramm-Granberg et al. (2021) p. A-213

Not as above ..... **CASMER-PHYEMP** (CEGL001398)
Ramm-Granberg et al. (2021) p. A-212

Vaccinium membranaceum + Vaccinium deliciosum ≥ 15% and Xerophyllum tenax ≥ 5%
..... **VACMEM/XERTEN** (CEGL005891)
Ramm-Granberg et al. (2021) p. A-158

Spiraea splendens dominant; Carex spectabilis or Bistorta bistortoides dominate or codominate herb layer
..... **SPISPL/CARSPE-(POLBIS)** (CEGL008281)
Ramm-Granberg et al. (2021) p. A-155

Vaccinium deliciosum dominant

Tauschia stricklandii ≥ 5% ..... **TAUSTR-VACDEL** (CEGL001994)
Ramm-Granberg et al. (2021) p. A-215

Festuca viridula prominent ..... **VAC(DEL,SCO)/FESVIR** (CEGL008283)
Ramm-Granberg et al. (2021) p. A-156

Spiraea splendens codominant ..... **SPISPL/CARSPE-(POLBIS)** (CEGL008281)
Ramm-Granberg et al. (2021) p. A-155

Phyllodoce empetriformis + Cassiope mertensiana < 10%, Vaccinium deliciosum clearly > herbaceous cover, otherwise see Upland Herbaceous Vegetation Key (p. 42) ..... **VACDEL** (CEGL001427)
Ramm-Granberg et al. (2021) p. A-216

Vaccinium scoparium dominant, Festuca viridula prominent
..... **VAC(DEL,SCO)/FESVIR** (CEGL008283)
Ramm-Granberg et al. (2021) p. A-156

Juniperus communis dominant ..... **JUNCOM-PHLDIF** (CEGL008261)
Ramm-Granberg et al. (2021) p. A-160
= JUCO-(PHDI), Chappell (2006b) p. 35

Dasiphora fruticosa ≥ 10% ..... **DASFRU-(PHLDIF)** (CEGL008252)
Ramm-Granberg et al. (2021) p. A-220

Key to Upland Herbaceous Vegetation

Adiantum aleuticum ≥ 5%. Carex scirpoidea ssp. scirpoidea present. Provisional association currently documented only from the Twin Sisters Range in the North Cascades ..... **ADIPED-CARSCI** (CTWA003391)

Calamagrostis nutkaensis dominant..... **CALNUT-ELYGLA** (CEGL001564)
Ramm-Granberg et al. (2021) p. A-162
= CANU-VIGI-(EQTE), Chappell (2006b) p. 18

Carex breweri dominant ..... **CARBRE** (CEGL001805)
Ramm-Granberg et al. (2021) p. A-234

Carex proposita dominant ..... **CARPRO** (CEGL001859)

Carex nardina dominant ..... **CARNAR** (CEGL001812)

Carex phaeocephala dominant..... **CARPHA** (CTWA003384)
= CARPHA, Crawford et al. 2009, p. 317

Juncus parryi dominant
Lewisia columbiana ≥ 3%..... **LEWCOL-(JUNPAR)** (CEGL008248)
Ramm-Granberg et al. (2021) p. A-225

Not as above ..... **JUNPAR-(POLBIS)** (CEGL008257)
Ramm-Granberg et al. (2021) p. A-230

Luetkea pectinata dominant ..... **LUEPEC-SAXTOL** (CEGL001918)
Ramm-Granberg et al. (2021) p. A-232

Antennaria lanata dominant
Juncus parryi codominant ..... **JUNPAR-(POLBIS)** (CEGL008257)
Ramm-Granberg et al. (2021) p. A-230

Not as above ..... **ANTLAN** (CEGL001949)
Ramm-Granberg et al. (2021) p. A-229

Festuca roemeri ≥ 10%
Phlox diffusa ≥ 1%, or Arenaria capillaris and/or Delphinium glareosum present, alpine/subalpine
..... **FESVIR-(PHLDIF-ARECAP)** (CEGL008255)
Ramm-Granberg et al. (2021) p. A-235

Plectritis congesta ≥ 5%..... **FESROE-PLECON** (CTWA003389)
= FERO-PLCO, Chappell (2006a) p. 45
= FERO-PLCO, Chappell (2006b) p. 23

Cerastium arvense or Koeleria macrantha usually present
..... **FESROE-(DANCAL-KOEMAC)** (CEGL003349)
= FESROE-CERARV-KOEMAC, Ramm-Granberg et al. (2021) p. A-165
= FERO-(CEAR-KOMA), Chappell (2006a) p. 43
= FERO-(CEAR-KOMA), Chappell (2006b) p. 22
> FERU-FERO-ASDE, Chappell (2006a) p. 49
> FERU-FERO-ASDE, Chappell (2006b) p. 24

Bromus sitchensis dominant, Carex phaeocephala usually prominent to codominant, avalanche chutes.
Provisional association..... **BROSIT-CARPHA**
Ramm-Granberg et al. (2021) p. A-227

Festuca viridula ≥ 10%
Valeriana sitchensis ≥ 10% ..... **VALSIT-LIGGRA** (CEGL001997)
Ramm-Granberg et al. (2021) p. A-177

Eucephalus (engelmannii, ledophyllus) ≥ 5% ..... **FESVIR-EUC(ENG,LED)** (CEGL001632)

Ramm-Granberg et al. (2021) p. A-174

Eremogone capillaris and/or Phlox diffusa ≥ 5%, Carex spectabilis < 5%
..... **FESVIR-(PHLDIF-ARECAP)** (CEGL008255)
Ramm-Granberg et al. (2021) p. A-235

Lupinus latifolius ≥ 5% ..... **FESVIR-LUPLAT** (CEGL001635)
Ramm-Granberg et al. (2021) p. A-175

Saussurea americana ≥ 10% ..... **SAUAME-HERMAX** (CEGL001945)
Ramm-Granberg et al. (2021) p. A-202

Veratrum viride dominant ..... **VALSIT-VERVIR** (CEGL001998)
Ramm-Granberg et al. (2021) p. A-178

Carex spectabilis ≥ 10%
Phlox diffusa ≥ 3%, Lupinus lepidus var. lobbii or Pedicularis contorta ≥ 2%, alpine
.....**PHLDIF-LUPSEL-(PEDCON)** (CEGL008265)
Ramm-Granberg et al. (2021) p. A-236

Carex nigricans present, Potentilla flabellifolia ≥ 5% and > Caltha leptosepala and Leptarrhena pyrolifolia, Salix commutata and other high elevation dwarf willows typically absent.
.....**CARSPE-POTFLA** (CEGL001829)
Ramm-Granberg et al. (2021) p. A-200

Lupinus latifolius and Bistorta bistortoides present (at least one ≥ 5%), subalpine
..... **CARSPE-POLBIS** (CEGL001828)
Ramm-Granberg et al. (2021) p. A-228

Veratrum viride ≥ 5%..... **VALSIT-VERVIR** (CEGL001998)
Ramm-Granberg et al. (2021) p. A-178

Valeriana sitchensis ≥ 15% ..... **VALSIT-CARSPE** (CEGL001996)
Ramm-Granberg et al. (2021) p. A-176

Eucephalus ledophyllus ≥ 5%, Festuca viridula > Carex spectabilis
.....**FESVIR-EUC(ENG,LED)** (CEGL001632)
Ramm-Granberg et al. (2021) p. A-174

Lupinus latifolius or Bistorta bistortoides ≥ 1% ..... **CARSPE-POLBIS** (CEGL001828)
Ramm-Granberg et al. (2021) p. A-228

Xerophyllum tenax ≥ 15%, Vaccinium membranaceum + Vaccinium deliciosum ≥ 10%
.....**VACMEM/XERTEN** (CEGL005891)
Ramm-Granberg et al. (2021) p. A-158

Valeriana sitchensis ≥ 10%
Festuca viridula, Ligusticum grayi, or Eucephalus ledophyllus ≥ 3% ..... **VALSIT-LIGGRA** (CEGL001997)
Ramm-Granberg et al. (2021) p. A-177

Carex spectabilis ≥ 5%..... **VALSIT-CARSPE** (CEGL001996)
Ramm-Granberg et al. (2021) p. A-176

Carex nigricans ≥ 10%
Kalmia microphylla ≥ 5%, Vaccinium deliciosum and Phyllodoce empetriformis often present
.....**KALMIC/CARNIG** (CEGL001402)
Ramm-Granberg et al. (2021) p. A-198

Carex nigricans ≥ 25%, Caltha leptosepala absent ..... **CARNIG** (CEGL001816)
Ramm-Granberg et al. (2021) p. A-199

Micranthes tolmiei and/or Luzula piperi prominent, rocky sites .....**SAXTOL-LUZPIP** (CEGL001986)
Ramm-Granberg et al. (2021) p. A-233

Eucephalus paucicapitatus dominant..... **EUCPAU-(PHAHAS-CASMIN)** (CEGL008254)
Ramm-Granberg et al. (2021) p. A-222

Phlox diffusa ≥ 10%
Lupinus lepidus var. lobbii dominant. Carex proposita ≥ 5%, alpine .....**CARPRO** (CEGL001859)

Lupinus lepidus var. lobbii or Pedicularis contorta ≥ 2%, alpine...**PHLDIF-LUPSEL-(PEDCON)** (CEGL008265)
Ramm-Granberg et al. (2021) p. A-236

Carex phaeocephala ≥ 1%, Arenaria capillaris, subalpine and lower..... **PHLDIF-(LOMMAR)** (CEGL008262)
Ramm-Granberg et al. (2021) p. A-224
= PHDI-(LOMA-PESU), Chappell (2006b) p. 29

Festuca roemeri ≥ 5%, subalpine/alpine..... **FESVIR-(PHLDIF-ARECAP)** (CEGL008255)
Ramm-Granberg et al. (2021) p. A-235

Luina hypoleuca ≥ 1%, unstable slopes..... **LUIHYP-(LOMMAR-CASPAR)** (CEGL008260)
Ramm-Granberg et al. (2021) p. A-223

Lomatium martindalei present, subalpine and lower ..... **PHLDIF-(LOMMAR)** (CEGL008262)
Ramm-Granberg et al. (2021) p. A-224
= PHDI-(LOMA-PESU), Chappell (2006b) p. 29

Heracleum maximum dominant..... **HERMAX** (CEGL005857)
Ramm-Granberg et al. (2021) p. A-201

Luina hypoleuca dominant..... **LUIHYP-(LOMMAR-CASPAR)** (CEGL008260)
Ramm-Granberg et al. (2021) p. A-223

Paxistima myrsinites dominant (or most abundant), Saxifraga divergens often present.
.....**PAXMYR/PHLDIF** (CEGL008277)
Ramm-Granberg et al. (2021) p. A-161

Artemisia ludoviciana dominant..... **ARTLUD-LOMMAR** (CEGL008245)
Ramm-Granberg et al. (2021) p. A-218

Polygonum davisiae dominant..... **ERIPYR-POLDAV** (CEGL008258)
Ramm-Granberg et al. (2021) p. A-231

Danthonia intermedia ≥ 10%
Potentilla flabellifolia or Oreostemma alpigenum codominant ..... **DANINT-POTFLA-(FESVIR)** (CEGL008250)
Ramm-Granberg et al. (2021) p. A-172

Racomitrium spp. dominates nonvascular layer .....**DANINT-RACCAN** (CEGL008243)
Ramm-Granberg et al. (2021) p. A-164

Koeleria macrantha ≥ 10% or dominant ..... **KOEMAC-(AGRPAL-RACCAN)** (CEGL008251)
Ramm-Granberg et al. (2021) p. A-167
= KOMA-(AGPA), Chappell (2006b) p. 26

Pseudoroegneria spicata ≥ 10% or dominant ..... **PSESPI-(CALRUB)/(RACCAN)** (CEGL008278)
Ramm-Granberg et al. (2021) p. A-150

Athyrium distentifolium ssp. americanum the most abundant vascular plant
.....**ATHAME-CRYACR** (CEGL005900)
Ramm-Granberg et al. (2021) p. A-208

Carex scirpoidea dominant, Valeriana sitchensis and/or Veratrum viride present.

.....**VALSIT-VERVIR** (CEGL001998)
Ramm-Granberg et al. (2021) p. A-178

Exotic pasture grasses (e.g., Agrostis stolonifera, Agrostis capillaris, Holcus lanatus) dominant
.....**AGR(CAP,STO)** (CEGL001558)
Ramm-Granberg et al. (2021) p. A-179

Key to Upland Bryophyte and Sparse Vegetation

Lewisia columbiana most abundant herb ..... **LEWCOL-(JUNPAR)** (CEGL008248)
Ramm-Granberg et al. (2021) p. A-225

Luetkea pectinata dominant vascular plant ..... **LUEPEC-SAXTOL** (CEGL001918)
Ramm-Granberg et al. (2021) p. A-232

Micranthes tolmiei and Luzula piperi present (Carex nigricans may have higher cover), rocky alpine sites
..... **SAXTOL-LUZPIP** (CEGL001986)
Ramm-Granberg et al. (2021) p. A-233

Eriogonum pyrolifolium and/or Polygonum davisiae dominant vascular plant
..... **ERIPYR-POLDAV** (CEGL008258)
Ramm-Granberg et al. (2021) p. A-231

Athyrium distentifolium ssp. americanum dominant vascular plant..... **ATHAME-CRYACR** (CEGL005900)
Ramm-Granberg et al. (2021) p. A-208

Chamaenerion latifolium and/or Oxyria digyna dominant vascular plants, Valeriana sitchensis may codominate
..... **CHALAT-OXYDIG-(VALSIT)** (CEGL008263)
Ramm-Granberg et al. (2021) p. A-219

Elmera racemosa dominant vascular plant ..... **ELMRAC** (CEGL008253)
Ramm-Granberg et al. (2021) p. A-221

Dasiphora fruticosa dominant vascular plant ..... **DASFRU-(PHLDIF)** (CEGL008252)
Ramm-Granberg et al. (2021) p. A-220

Racomitrium spp. dominant, Penstemon davidsonii present ..... **RACCAN-(PENDAV)** (CEGL008244)
Ramm-Granberg et al. (2021) p. A-170

Phlox diffusa ≥ 10%, Carex phaeocephala ≥ 1%, Arenaria capillaris usually present, subalpine
..... **PHLDIF-(LOMMAR)** (CEGL008262)
Ramm-Granberg et al. (2021) p. A-224
= PHDI-(LOMA-PESU), Chappell (2006b) p. 29

Juniperus communis dominant vascular plant ..... **JUNCOM-PHLDIF** (CEGL008261)
Ramm-Granberg et al. (2021) p. A-160
= JUCO-(PHDI), Chappell (2006b) p. 35

Saxifraga bronchialis dominant vascular plant ..... **SAXBRO** (CEGL005902)
Ramm-Granberg et al. (2021) p. A-209

Luina hypoleuca dominant vascular plant ..... **LUIHYP-(LOMMAR-CASPAR)** (CEGL008260)
Ramm-Granberg et al. (2021) p. A-223

Artemisia ludoviciana dominant vascular plant ..... **ARTLUD-LOMMAR** (CEGL008245)
Ramm-Granberg et al. (2021) p. A-218

Phlox diffusa dominant vascular plant..... **PHLDIF-(LOMMAR)** (CEGL008262)
Ramm-Granberg et al. (2021) p. A-224
= PHDI-(LOMA-PESU), Chappell (2006b) p. 29

Carex spectabilis dominant vascular plant ..... **LUEPEC-SAXTOL** (CEGL001918)
Ramm-Granberg et al. (2021) p. A-232

Valeriana sitchensis dominant vascular plant ..... **VALSIT-CARSPE** (CEGL001996)
Ramm-Granberg et al. (2021) p. A-176

Polygonum minimum dominant vascular plant, Racomitrium elongatum dominant moss. Provisional association. ..... **POLMIN-RACELO**
Ramm-Granberg et al. (2021) p. A-168

Cladina spp. and Selaginella wallacei codominate. Other mosses and lichens common. ..... **SELWAL/CLADINA** (CTWAPGW550)

Penstemon davidsonii most abundant vascular plant. Alpine. Provisional association. ..... **PENDAV**
Ramm-Granberg et al. (2021) p. A-226

Arnica ovata most abundant vascular plant. Provisional association..... **ARNXDIV Lithomorphic**
Crawford et al. (2009) p. A-333

Astragalus australis var. cottonii most abundant vascular plant. Provisional association..... **ASTCOT Lithomorphic**
Crawford et al. (2009) p. A-334

Delphinium glareosum most abundant vascular plant. Provisional association..... **DELGLA Lithomorphic**
Crawford et al. (2009) p. A-329

Campanula piperi most abundant vascular plant. Provisional association. ..... **CAMPIP Lithomorphic**
Crawford et al. (2009) p. A-323

Petrophytum hendersonii most abundant vascular plant. Provisional association. ..... **PETHEN Lithomorphic**
Crawford et al. (2009) p. A-341

Stand does not key to an existing association

Relax cover estimate cutoffs and try once again..... **Return to the top of the key**

Stand is dominated by nonnative plants OR dominated by an assemblage of native plants that is the result of anthropogenic disturbance and does not have a known natural analogue . **Undescribed Ruderal Association**

Stand is dominated by native plants AND anthropogenic disturbance is absent or minor ..... **Undescribed Native Association**

Release Notes

- Version 1.0 (December 9, 2025)

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