

## Keys for Identifying Forest Series and Plant Associations of the Blue and Ochoco Mountains

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Initial Version: **APRIL 2004**

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**FORMATTING NOTE:** This document was designed in a half-page layout so it could be cut down to a 6" x 8" size, and stapled in both top corners, for easy field use.

## INTRODUCTION

This document provides classification keys for identifying potential vegetation types of the Blue and Ochoco Mountains of northeastern Oregon and southeastern Washington. **It is intended for experienced users of the Blue-Ochoco Mountains plant association field guide who need the Blue-Ochoco keys, but prefer to carry them in a less-bulky format than is provided by the entire field guide.**

*Potential vegetation* is defined as the community of plants that would become established if all successional sequences were completed, without interference by humans, under existing environmental conditions. Potential vegetation, the theoretical endpoint of plant succession in the absence of disturbance, is used to classify and characterize the potential natural plant communities capable of getting established and then maturing under existing climatic conditions.

A group of plant species that frequently occurs together is called a *plant community*. A climax (potential natural) plant community, which perpetuates itself in the absence of disturbance, is called a *plant association*. The plant association is the fundamental unit of potential vegetation classification. A plant association is named for the dominant overstory and undergrowth plants, such as the subalpine fir/grouse whortleberry plant association.

Plant association is a specific type of plant community represented by stands occurring in places where environments are so closely similar that there is a high degree of floristic uniformity in all vegetation layers (Daubenmire 1968). Not only is vegetation uniformity important for plant association identification, but many abiotic components (landform, soils, etc.) should also be consistent across the stands representing any individual association.

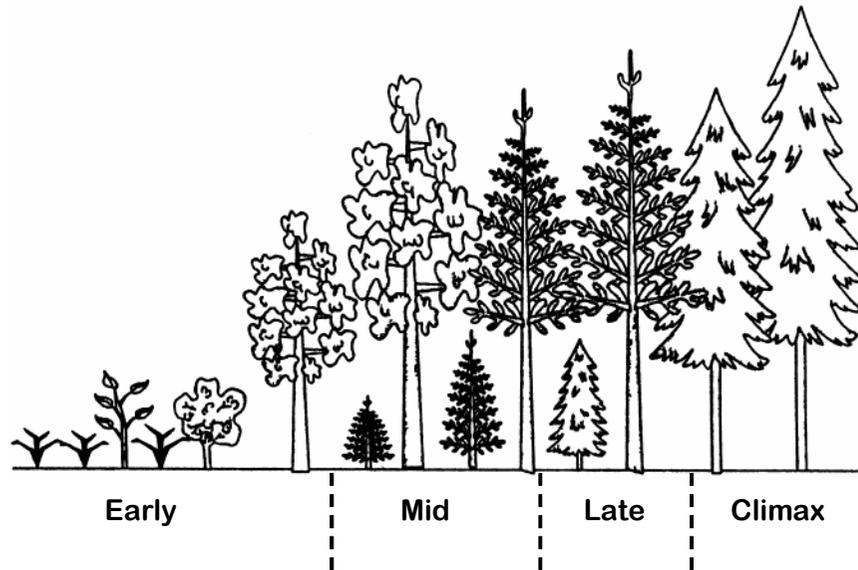
Plant associations with the same overstory dominants comprise a *series*, such as the subalpine fir series. The land area capable of supporting a plant association is a *habitat type*. Even though plant associations refer to climax plant communities and habitat types refer to the land areas they could potentially occupy, both are used as equivalent terms in the western United States (Powell et al. 2007).

**NOTE:** Confusion often exists about the distinction between existing vegetation and potential vegetation. *Existing vegetation* differs from potential vegetation because it represents conditions as they exist today – what a land manager finds on the ground and deals with on a daily basis.

This means that the two vegetation classification approaches – potential vegetation and existing vegetation – tend to be used in different ways and for different purposes: existing vegetation is well suited for meeting operational needs because it represents “what is” (current conditions), whereas potential vegetation is ideally suited for planning and assessment processes because it represents “what could be” (ecological site potential) (Westveld 1951).

Plant associations are seldom “born” in a climax condition. Climax stands result from a continuous progression of community types occurring in a successional sequence (the series of stages is called a *sere*); each stage in the successional sequence is called a *seral stage* (early-seral, mid-seral, late-seral, etc.). Figure 1 illus-

trates a common successional sequence involving four seral stages of a montane-zone plant association.



**Figure 1**—Seral stages for a montane-zone plant association. The series of stages shown in this diagram is called a sere. After a stand-initiating disturbance event such as crown fire or regeneration cutting, a new plant community gets established and it gradually transitions through a series of stages, progressing from a simpler, somewhat disorganized state (early-seral stage) to a relatively complex, highly organized state (the climax plant community). The early-seral stage is initially dominated by grasses, forbs, and shrubs (some ecologists refer to this non-tree phase as a very-early stage), but shade-intolerant tree species also get established in early-seral communities. The mid-seral stage has a mix of species, with early-seral species (ponderosa pine above) and mid-seral species (Douglas-fir above) present in almost equal amounts. Late-seral stands have both mid-seral and late-seral tree species present (white fir is the late-seral species above). Although truly climax stands are relatively uncommon in our disturbance-influenced ecosystems, they feature a species composition where early- or mid-seral tree species are scarce or absent, and composition is dominated almost entirely by the late-seral species.

The keys contained in this document were reproduced from “Plant Associations of the Blue and Ochoco Mountains” (R6-ERW-TP-036-92) by Charles Grier Johnson, Jr. and Rodrick R. Clausnitzer (published in 1992 by USDA Forest Service, Pacific Northwest Region, Wallowa-Whitman National Forest, Baker City, OR. 164 p.).

Potential vegetation type codes are highlighted in a green color. Type codes are followed by a status identifier (**STOC pct**, for example); the “pct” identifier refers to

the classification status of each potential vegetation type: pa is plant association; pc is plant community; and pct is plant community type.

Ecoclass codes are shown in yellow next to each type code (**GS10**, for example). Ecoclass codes are recorded on field forms and stored in vegetation databases. In most instances, the ecoclass codes in this document are the same ones included in Johnson and Clausnitzer (1992).

## NAMING CONVENTIONS

Potential vegetation types (PVT) are traditionally referenced by using scientific plant names (*Pseudotsuga menziesii/Symphoricarpos albus*), common plant names (Douglas-fir/common snowberry), alphanumeric acronyms (PSME/SYAL), and database codes (CDS622). When referring to a potential vegetation type in this document, the following naming conventions are used:

- Species in the same life form are separated with a dash (subalpine fir-whitebark pine), whereas species in different life forms are separated with a slash (grand fir/queencup beadlily).
- Alphanumeric acronyms are derived from scientific plant names: the first two letters of the genus name are combined with the first two letters of the species name and capitalized (ABGR for *Abies grandis*). If more than one species has the same code, then a number is added to differentiate between them (ABLA2 for *Abies lasiocarpa*). Acronyms included in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992) were generally derived from Garrison et al. (1976).
- Nomenclature for scientific plant names was revised when the U.S. Department of Agriculture adopted a new national taxonomy called the PLANTS database (USDA NRCS 2009). In this report, the PLANTS codes are not used because it is important to maintain a linkage between this document and the original field guide from which the keys were obtained (Johnson and Clausnitzer 1992); the field guide has never been revised and reprinted to include the newer PLANTS coding.
- All common names are shown in lower case letters except for proper names (Sandberg's bluegrass; Rocky Mountain maple).
- Ecoclass codes, used for recording PVTs on field forms and in databases, are described in Hall (1998, as supplemented).

## DOCUMENT CONTEXT

The keys in this document were reproduced from the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Keys are not included from other field guides for upland plant associations of the Blue Mountains, such as Johnson (2004), Johnson and Simon (1987), and Johnson and Swanson (2005).

In addition, this document does not provide keys or ecoclass codes for wetland environments of the Blue Mountains, which are described in Crowe and Clausnitzer (1997) and Wells (2006).

The References section of this document contains literature citations for potential vegetation classification field guides for the Blue Mountains.

**KEY TO BLUE-OCHOCO MOUNTAINS SERIES**

This key pertains to the series level of the Blue-Ochoco Mountains field guide. Note that series is the upper level in a three-level hierarchy of fine-scale potential vegetation units – series is the upper level, potential vegetation types (plant associations, plant communities, plant community types) are the middle level, and phases, which were not used when developing Blue Mountains potential vegetation classifications, are the lowest level (Powell et al. 2007: fig. 2).

A series includes every potential vegetation type with the same dominant species at climax. The subalpine fir series, for example, includes every plant association where subalpine fir is presumed to be the dominant overstory tree species when a stand has reached the climax stage described in figure 1.

This key begins by separating vegetation into two broad categories of physiognomy or lifeform – forest (tree dominated stands) and nonforest (shrubland or grassland types).

NOTE: Page number references below refer to pages in this document.

- 1a. Trees present with coverage equal to or exceeding 10% ..... 2
- 1b. Trees absent or present with coverage less than 10% ..... 11
  - 2a. Whitebark pine (PIAL) present and reproducing with total coverage equal to or exceeding 10%   **See subalpine fir series key**   pg. 7
  - 2b. Whitebark pine absent or present with coverage less than 10% ..... 3
- 3a. Subalpine fir (ABLA2) present and reproducing with total coverage equal to or exceeding 10%   **See subalpine fir series key**   pg. 7
- 3b. Subalpine fir absent or present with coverage less than 10% ..... 4
  - 4a. Grand fir (ABGR) present and reproducing with total coverage equal to or exceeding 10%   **See grand fir series key**   pg. 10
  - 4b. Grand fir absent or present with coverage less than 10% ..... 5
- 5a. Lodgepole pine (PICO) present with coverage equal to or exceeding 5% ..... 6

6a. Lodgepole pine reproducing in the absence of true fir (ABLA2, ABGR) species	<b>See lodgepole pine series key</b>	pg. 13
6b. Lodgepole pine present with reproducing true fir species.....		7
7a. Subalpine fir present and reproducing	<b>See subalpine fir series key</b>	pg. 7
7b. Grand fir present and reproducing	<b>See grand fir series key</b>	pg. 10
5b. Lodgepole pine absent or present with coverage less than 5%.....		8
8a. Douglas-fir (PSME) present and reproducing with total coverage equal to or exceeding 10%	<b>See Douglas-fir series key</b>	pg. 14
8b. Douglas-fir absent or present with coverage less than 10%.....		9
9a. Ponderosa pine (PIPO) present and reproducing with total coverage equal to or exceeding 10%	<b>See ponderosa pine series key</b>	pg. 15
9b. Ponderosa pine absent or present with coverage less than 10% .....		10
10a. Western juniper (JUOC) present and reproducing with total coverage equal to or exceeding 10%	<b>See western juniper series key</b>	pg. 17
10b. Western juniper absent or present with coverage less than 10% .....		11
11a. Shrubs present with coverage equal to or exceeding 5%	<b>See shrubland series key</b>	pg. 18
11b. Shrubs absent or present with coverage less than 5%	<b>See grassland series key</b>	pg. 20

## KEY TO SUBALPINE FIR (ABLA2) SERIES

Subalpine fir must be present and reproducing successfully; total coverage must equal or exceed 10%; lodgepole pine co-dominated or dominated stands may be assigned to plant associations in this series where subalpine fir is present and reproducing. Whitebark pine stands are assigned to plant communities in this series.

NOTES: Page number references in this key refer to type descriptions in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Ecoclass codes were not included in the original keys but are added here to assist with field use of this document.

- 1a. Fool's huckleberry (MEFE) present with coverage equal to or exceeding 10% **ABLA2/MEFE pa CES221** pg. 31
- 1b. Fools' huckleberry absent or with coverage less than 10%.....2
- 2a. White rhododendron (RHAL) present with coverage equal to or exceeding 5% **ABLA2/RHAL pct CES214** pg. 42
- 2b. White rhododendron absent or with coverage less than 5% .....3
- 3a. False bugbane (TRCA3) present and well distributed throughout the stand with coverage equal to or exceeding 1% **ABLA2/TRCA3 pa CEF331** pg. 25
- 3b. False bugbane absent or with coverage less than 1% .....4
- 4a. Queen's cup beadlily (CLUN) present and well distributed throughout the stand with coverage equal to or exceeding 1% **ABLA2/CLUN pa CES314** pg. 27
- 4b. Queen's cup beadlily absent or with coverage less than 1%.....5
- 5a. Twinflower (LIBO2) present and well distributed throughout the stand with coverage equal to or exceeding 1% **ABLA2/LIBO2 pa CES414** pg. 29
- 5b. Twinflower absent or with coverage less than 1%.....6
- 6a. Big huckleberry (VAME) present with coverage equal to or exceeding 5%.....7
- 7a. Lodgepole pine (PICO) dominant or co-dominant with subalpine fir .....8
- 8a. Pinegrass (CARU) coverage equal to or exceeding 1% **PICO(ABLA2)/VAME/CARU pct CLS516** p. 42

8b. Pinegrass absent or coverage less than 1%	<b>PICO(ABLA2)/VAME pct</b>	<b>CLS514</b>	pg. 42
7b. Lodgepole pine absent or subordinate; subalpine fir dominant	<b>ABLA2/VAME pa</b>	<b>CES311</b>	pg. 33
6b. Big huckleberry absent or with coverage less than 5% .....			9
9a. Heartleaf arnica (ARCO) present with coverage equal to or exceeding 10%	<b>ABLA2/ARCO pct</b>	<b>CEF412</b>	pg. 39
9b. Heartleaf arnica absent or with coverage less than 10%.....			10
10a. Alpine fleecflower (POPH) present with coverage equal to or exceeding 5%	<b>ABLA2-PIAL/POPH pct</b>	<b>CAF2</b>	pg. 42
10b. Alpine fleecflower absent or with coverage less than 5% .....			11
11a. Drummond's rush (JUDR) present with coverage equal to or exceeding 5%	<b>ABLA2-PIAL/JUDR pct</b>	<b>CAG3</b>	pg. 43
11b. Drummond's rush absent or with coverage less than 5% .....			12
12a. Grouse huckleberry (VASC) present with coverage equal to or exceeding 5%.....			13
13a. Lodgepole pine dominant or co-dominant with subalpine fir	<b>PICO(ABLA2)/VASC pct</b>	<b>CLS418</b>	pg. 41
13b. Lodgepole pine absent or subordinate; subalpine fir dominant	<b>ABLA2/VASC pa</b>	<b>CES411</b>	pg. 35
12b. Grouse huckleberry absent or with coverage less than 5%.....			14
14a. Elk sedge (CAGE) present with coverage equal to or exceeding 5% .....			15
15a. Lodgepole pine (PICO) dominant or co-dominant with subalpine fir	<b>PICO(ABLA2)/CAGE pct</b>	<b>CLG322</b>	pg. 43
15b. Lodgepole pine absent or subordinate; subalpine fir dominant	<b>ABLA2/CAGE pa</b>	<b>CAG111</b>	pg. 37
14b. Elk sedge absent or with coverage less than 5% .....			16

- 16a. Skunk-leaved polemonium (POPU) present with coverage equal to or exceeding 5%  
**ABLA2-PIAL/POPU pct CAF0** pg. 43
- 16b. Skunk-leaved polemonium (POPU) absent or with coverage less than 5%; western needlegrass (STOC) present with coverage equal to or exceeding 5% ..... 17
- 17a. Lodgepole pine dominant or co-dominant with subalpine fir  
**PICO(ABLA2)/STOC pct CLG11** pg. 43
- 17b. Lodgepole pine absent or subordinate; subalpine fir dominant  
**ABLA2/STOC pct CAG4** pg. 40

## KEY TO GRAND FIR (ABGR) SERIES

Grand fir must be present and successfully reproducing; total coverage must equal or exceed 10%; lodgepole pine co-dominated or dominated stands may be assigned to plant associations in this series where grand fir is present and reproducing.

NOTES: Page number references in this key refer to type descriptions in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Ecoclass codes were not included in the original keys but are added here to assist with field use of this document.

- 1a. Oakfern (GYDR) present with coverage equal to or exceeding 5%  
**ABGR/GYDR pa CWF611** pg. 45
- 1b. Oakfern absent or with coverage less than 5% .....2
- 2a. Ginger (ASCA3) or sword fern (POMU) present and well distributed throughout the stand with coverage equal to or exceeding 1%  
**ABGR/POMU-ASCA3 pa CWF612** pg. 47
- 2b. Ginger or sword fern absent or with coverage less than 1% .....3
- 3a. False bugbane (TRCA3) present and well distributed throughout the stand with coverage equal to or exceeding 1%  
**ABGR/TRCA3 pa CWF512** pg. 49
- 3b. False bugbane absent or with coverage less than 1% .....4
- 4a. Sitka alder (ALSI) present and dominant as a tall shrub beneath a lodgepole pine overstory  
**PICO(ABGR)/ALSI pct CLS58** pg. 78
- 4b. Sitka alder absent or subordinate in the shrub layer .....5
- 5a. Pacific yew (TABR) present and well distributed throughout the stand with coverage equal to or exceeding 1% .....6
- 6a. Queen's cup beadlily (CLUN) present with coverage equal to or exceeding 5%  
**ABGR/TABR/CLUN pa CWC811** pg. 51
- 6b. Queen's cup beadlily absent or with coverage less than 5%  
**ABGR/TABR/LIBO2 pa CWC812** pg. 53
- 5b. Pacific yew absent or with coverage less than 1% .....7
- 7a. Rocky Mountain maple (ACGL) present with coverage equal to or exceeding 5%  
**ABGR/ACGL pa CWS541** pg. 55

7b. Rocky Mountain maple absent or with coverage less than 5% .....	8
8a. Queen's cup beadlily (CLUN) present and well distributed throughout the stand with coverage equal to or exceeding 1% <b>ABGR/CLUN pa CWF421</b>	pg. 57
8b. Queen's cup beadlily absent or with coverage less than 1%.....	9
9a. Twinflower (LIBO2) present and well distributed throughout the stand with coverage equal to or exceeding 1% .....	10
10a. Big huckleberry (VAME) present with coverage equal to or exceeding 5%.....	11
11a. Lodgepole pine (PICO) co-dominant or dominant with grand fir <b>PICO(ABGR)/VAME-LIBO2 pct CLF211</b>	p. 76
11b. Lodgepole pine absent or subordinate; grand fir dominant <b>ABGR/LIBO2 pa CWF312</b>	pg. 59
10b. Big huckleberry absent or with coverage less than 5% .....	12
12a. Grouse huckleberry (VASC) present with coverage equal to or exceeding 5% <b>ABGR/VASC-LIBO2 pa CWS812</b>	pg. 63
12b. Grouse huckleberry absent or with coverage less than 5%.....	13
13a. Pinemat manzanita (ARNE) dominant as an understory shrub with lodgepole pine overstory <b>PICO(ABGR)/ARNE pct CLS57</b>	pg. 77
13b. Pinemat manzanita absent or subordinate in the shrub layer <b>ABGR/LIBO2 pa CWF312</b>	pg. 59
9b. Twinflower absent or with coverage less than 1%.....	14
14a. Big huckleberry (VAME) present with coverage equal to or exceeding 5%.....	15
15a. Lodgepole pine (PICO) co-dominant or dominant with grand fir .....	16
16a. Pinegrass (CARU) present with coverage equal to or exceeding 1% <b>PICO(ABGR)/VAME/CARU pct CLS512</b>	p. 76

16b.	Pinegrass absent or with coverage less than 1% .....	17
17a.	Bracken (PTAQ) present with coverage equal to or exceeding 1% <b>PICO(ABGR)/VAME/PTAQ pct CLS519</b>	p. 77
17b.	Bracken absent or with coverage less than 1% <b>PICO(ABGR)/VAME pct CLS513</b>	pg. 76
15b.	Lodgepole pine absent or subordinate; grand fir dominant.....	18
18a.	Alaska yellow-cedar (CHNO) present with coverage equal to or exceeding 15% <b>ABGR-CHNO/VAME pct CWS232</b>	pg. 78
18b.	Alaska yellow cedar absent or with coverage less than 10% <b>ABGR/VAME pa CWS212</b>	pg. 61
14b.	Big huckleberry absent or with coverage less than 5% .....	19
19a.	Grouse huckleberry (VASC) present with coverage equal to or exceeding 5%.....	20
20a.	Lodgepole pine co-dominant or dominant with grand fir <b>PICO(ABGR)/VASC/CARU pct CLS417</b>	p. 77
20b.	Lodgepole pine absent or subordinate; grand fir dominant <b>ABGR/VASC pa CWS811</b>	pg. 65
19b.	Grouse huckleberry absent or with coverage less than 5%.....	21
21a.	Columbia brome (BRVU) present with coverage equal to or exceeding 5% <b>ABGR/BRVU pa CWG211</b>	pg. 67
21b.	Columbia brome absent or with coverage less than 5%.....	22
22a.	Birchleaf spirea (SPBE) present with coverage equal to or exceeding 5% <b>ABGR/SPBE pa CWS322</b>	pg. 69
22b.	Birchleaf spirea absent or with coverage less than 5% .....	23
23a.	Pinegrass (CARU) present with coverage equal to or exceeding 5% .....	24
24a.	Lodgepole pine (PICO) dominant or co-dominant with grand fir <b>PICO(ABGR)/CARU pct CLG21</b>	pg. 77

- 24b. Lodgepole pine absent or subordinate; grand fir dominant  
**ABGR/CARU pa CWG113** pg. 71
- 23b. Pinegrass absent or with coverage less than 5% .....25
- 25a. Heartleaf arnica (ARCO) present with coverage equal to or  
 exceeding 10% **ABGR/ARCO pct CWF444** pg. 75
- 25b. Heartleaf arnica absent or with coverage less than 10%; elk  
 sedge (CAGE) coverage equal to or exceeding 5%  
**ABGR/CAGE pa CWG111** pg. 73

**KEY TO LODGEPOLE PINE (PICO) SERIES**

Lodgepole pine dominates with an absence of true fir in the stand. Grand fir and subalpine fir are not projected as climax dominants in communities assigned to plant associations within this series. Lodgepole pine is projected as the climax species based on cold air ponding and topographic factors.

NOTES: Page number references in this key refer to type descriptions in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Ecoclass codes were not included in the original keys but are added here to assist with field use of this document.

1. Pinegrass (CARU) present with coverage equal to or exceeding 5%;  
 grouse huckleberry often associated  
**PICO/CARU pa CLS416** pg. 79

## KEY TO DOUGLAS-FIR (PSME) SERIES

Douglas-fir must be present and successfully reproducing; total coverage must equal or exceed 10%.

**NOTES:** Page number references in this key refer to type descriptions in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Ecoclass codes were not included in the original keys but are added here to assist with field use of this document.

- 1a. Big huckleberry (VAME) present with coverage equal to or exceeding 5%  
**PSME/VAME pa CDS821** pg. 81
- 1b. Big huckleberry absent or with coverage less than 5% .....2
- 2a. Ninebark (PHMA) present with coverage equal to or exceeding 10%  
**PSME/PHMA pa CDS711** pg. 83
- 2b. Ninebark absent or with coverage less than 10% .....3
- 3a. Oceanspray (HODI) present with coverage equal to or exceeding 10%  
**PSME/HODI pa CDS611** pg. 85
- 3b. Oceanspray absent or with coverage less than 10%.....4
- 4a. Mountain mahogany (CELE) present with coverage equal to or  
exceeding 10% **PSME/CELE/CAGE pct CDSD** pg. 95
- 4b. Mountain mahogany absent or with coverage less than 10% .....5
- 5a. Common snowberry (SYAL) present with coverage equal to or  
exceeding 5% **PSME/SYAL pa CDS624** pg. 87
- 5b. Common snowberry absent or with coverage less than 5% .....6
- 6a. Mountain snowberry (SYOR) present with coverage equal to  
or exceeding 10% **PSME/SYOR pa CDS625** pg. 89
- 6b. Mountain snowberry absent or with coverage less than 10%.....6
- 7a. Pinegrass (CARU) present or with coverage equal to or exceeding 5%  
**PSME/CARU pa CDG112** pg. 91
- 7b. Pinegrass absent or with coverage less than 5%; elk sedge (CAGE)  
coverage equal to or exceeding 5%  
**PSME/CAGE pa CDG111** pg. 93

## KEY TO PONDEROSA PINE (PIPO) SERIES

Ponderosa pine must be present and successfully reproducing; total coverage must equal or exceed 10%.

NOTES: Page number references in this key refer to type descriptions in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Ecoclass codes were not included in the original keys but are added here to assist with field use of this document.

- 1a. Squaw apple (PERA3) present with coverage equal to or exceeding 10% **PIPO/PERA3 pct CPS8** pg. 123
- 1b. Squaw apple absent or with coverage less than 10% .....2
- 2a. Mountain mahogany (CELE) present with coverage equal to or exceeding 10%.....3
- 3a. Elk sedge (CAGE) present with coverage equal to or exceeding 5% **PIPO/CELE/CAGE pa CPS232** pg. 97
- 3b. Elk sedge absent or with coverage less than 5% .....4
- 4a. Wheeler's bluegrass (PONE) present with coverage equal to or exceeding 5% **PIPO/CELE/PONE pa CPS233** pg. 99
- 4b. Wheeler's bluegrass absent or with coverage less than 5% **PIPO/CELE/FEID-AGSP pa CPS234** pg. 101
- 2b. Mountain mahogany absent or with coverage less than 10% .....5
- 5a. Common snowberry (SYAL) present with coverage equal to or exceeding 5% **PIPO/SYAL pa CPS524** pg. 103
- 5b. Common snowberry absent or with coverage less than 5%.....6
- 6a. Mountain snowberry (SYOR) present with coverage equal to or exceeding 10% **PIPO/SYOR pa CPS525** pg. 105
- 6b. Mountain snowberry absent or with coverage less than 10%.....7
- 7a. Pinegrass (CARU) present with coverage equal to or exceeding 5% **PIPO/CARU pa CPG221** pg. 107
- 7b. Pinegrass absent or with coverage less than 5%.....8
- 8a. Bitterbrush (PUTR) present with coverage equal to or exceeding 5%.....9

9a. Ross' sedge (CARO) present with coverage equal to or exceeding 5%	<b>PIPO/PUTR/CARO pa CPS221</b>	pg. 111
9b. Ross' sedge absent or with coverage less than 5%.....		10
10a. Elk sedge (CAGE) present with coverage equal to or exceeding 10%	<b>PIPO/PUTR/CAGE pa CPS222</b>	pg. 113
10b. Elk sedge absent or with coverage less than 10%	<b>PIPO/PUTR/FEID-AGSP pa CPS226</b>	pg. 115
8b. Bitterbrush absent or with coverage less than 5% .....		11
11a. Mountain big sagebrush (ARTRV) present with coverage equal to or exceeding 10% .....		12
12a. Elk sedge (CAGE) present with coverage equal to or exceeding 5%	<b>PIPO/ARTRV/CAGE pct CPS132</b>	pg. 123
12b. Elk sedge absent or with coverage less than 5%	<b>PIPO/ARTRV/FEID-AGSP pa CPS131</b>	pg. 117
11b. Mountain big sagebrush absent or with coverage less than 10% .....		13
13a. Elk sedge (CAGE) present with coverage equal to or exceeding 10%	<b>PIPO/CAGE pa CPG222</b>	pg. 109
13b. Elk sedge absent or with coverage less than 10%.....		14
14a. Smooth sumac (RHGL) present with coverage equal to or exceeding 10%	<b>PIPO/RHGL pct CPS9</b>	pg. 124
14b. Smooth sumac absent or with coverage less than 10% .....		15
15a. Low sagebrush (ARAR) present with coverage equal to or exceeding 5%	<b>PIPO/ARAR pct CPS61</b>	pg. 123
15b. Low sagebrush absent or with coverage less than 5% .....		16
16a. Idaho fescue (FEID) present with coverage equal to or exceeding 10%	<b>PIPO/FEID pa CPG112</b>	pg. 119
16b. Idaho fescue absent or with coverage less than 10%	<b>PIPO/AGSP pa CPG111</b>	pg. 121

## KEY TO WESTERN JUNIPER (JUOC) SERIES

Western juniper must be present with coverage equal to or exceeding 10%.

NOTES: Page number references in this key refer to type descriptions in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Ecoclass codes were not included in the original keys but are added here to assist with field use of this document.

- 1a. Mountain mahogany (CELE) present with coverage equal to or exceeding 10% .....2
- 2a. Elk sedge (CAGE) present with coverage equal to or exceeding 10% **JUOC/CELE/CAGE pct CJS42** pg. 129
- 2b. Elk sedge absent or with coverage less than 10% **JUOC/CELE/FEID-AGSP pct CJS41** pg. 129
- 1b. Mountain mahogany absent or with coverage less than 10%.....3
- 3a. Bitterbrush (PUTR) present with coverage equal to or exceeding 10% **JUOC/PUTR/FEID-AGSP pa CJS321** pg. 125
- 3b. Bitterbrush absent or with coverage less than 10% .....4
- 4a. Mountain big sagebrush present with coverage equal to or exceeding 10% **JUOC/ARTRV/FEID-AGSP pa CJS211** pg. 129
- 4b. Mountain big sagebrush absent or with coverage less than 10%.....5
- 5a. Low sagebrush (ARAR) present with coverage equal to or exceeding 5% **JUOC/ARAR pct CJS1** pg. 130
- 5b. Low sagebrush absent or with coverage less than 5%.....5
- 6a. Stiff sagebrush (ARRI) present with coverage equal to or exceeding 5% **JUOC/ARRI pa CJS8** pg. 130
- 6b. Stiff sagebrush absent or with coverage less than 5% **JUOC/FEID-AGSP pa CJG111** pg. 127

## KEY TO SHRUBLAND VEGETATION

Shrub coverage by diagnostic species must equal or exceed 5%.

NOTES: Page number references in this key refer to type descriptions in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Ecoclass codes were not included in the original keys but are added here to assist with field use of this document.

- 1a. Sitka alder (ALSI) present with coverage equal to or exceeding 10%  
**ALSI pct SM20** pg. 148
- 1b. Sitka alder absent or with coverage less than 10% .....2
- 2a. Ninebark (PHMA) present with coverage equal to or exceeding 10%  
**PHMA-SYAL pa SM1111** pg. 131
- 2b. Ninebark absent or with coverage less than 10% .....3
- 3a. Snowbrush ceanothus (CEVE) present with coverage equal to or  
 exceeding 10% **CEVE pct SM33** pg. 148
- 3b. Snowbrush ceanothus absent or with coverage less than 10%.....4
- 4a. Mountain mahogany (CELE) present with coverage equal to or  
 exceeding 10%.....5
- 5a. Elk sedge (CAGE) present with coverage equal to or  
 exceeding 10% **CELE/CAGE pct SD40** pg. 149
- 5b. Elk sedge absent or with coverage less than 10%  
**CELE/FEID-AGSP pa SD4111** pg. 133
- 4b. Mountain mahogany absent or with coverage less than 10% .....6
- 6a. Common snowberry (SYAL) present with coverage equal to or  
 exceeding 10% **SYAL pct SM3111** pg. 148
- 6b. Common snowberry absent or with coverage less than 10%.....7
- 7a. Mountain snowberry (SYOR) present with coverage equal to  
 or exceeding 10% **SYOR pct SM32** pg. 149
- 7b. Mountain snowberry absent or with coverage less than 10%.....8
- 8a. Bitterbrush (PUTR) present with coverage equal to or exceeding 10%  
**PUTR/FEID-AGSP pa SD3111** pg. 135

8b. Bitterbrush absent or with coverage less than 10%.....	9
9a. Mountain big sagebrush (ARTRV) present with coverage equal to or exceeding 5%.....	10
10a. Elk sedge (CAGE) present with coverage equal to or exceeding 10% <b>ARTRV/CAGE pa SS4911</b>	pg. 137
10b. Elk sedge absent or with coverage less than 10% .....	11
11a. Idaho fescue and/or bluebunch wheatgrass present with coverage equal to or exceeding 10% <b>ARTRV/FEID-AGSP pa SD2911</b>	pg. 139
11b. Idaho fescue and/or bluebunch wheatgrass absent or with coverage less than 10% .....	12
12a. Mountain brome (BRCA) present with coverage equal to or exceeding 5% <b>ARTRV/BRCA pct SS4914</b>	pg. 147
12b. Mountain brome absent or with coverage less than 5%; western needlegrass (STOC) present with coverage equal to or exceeding 5% <b>ARTRV/STOC pct SS4915</b>	pg. 147
9b. Mountain big sagebrush absent or with coverage less than 5%.....	13
13a. Low sagebrush (ARAR) present with cover equal or exceeding 10%.....	14
14a. Idaho fescue (FEID) or bluebunch wheatgrass (AGSP) present with coverage equal to or exceeding 5% <b>ARAR/FEID-AGSP pa SD1911</b>	pg. 141
14b. Idaho fescue or bluebunch wheatgrass absent or with coverage less than 5% <b>ARAR/POSA3 pa SD9221</b>	pg. 143
13b. Low sagebrush absent or with coverage less than 10%; stiff sagebrush (ARRI) present <b>ARRI/POSA3 pa SD9111</b>	pg. 145

## KEY TO GRASSLAND VEGETATION

Trees and shrubs are absent, or their coverage is less than 5%.

NOTES: Page number references in this key refer to type descriptions in the Blue-Ochoco Mountains plant association field guide (Johnson and Clausnitzer 1992). Ecoclass codes were not included in the original keys but are added here to assist with field use of this document.

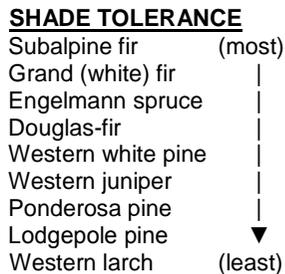
- 1a. Green fescue (FEVI) present with coverage equal to or exceeding 10% **FEVI pct GS11** pg. 158
- 1b. Green fescue absent or with coverage less than 10% ..... 2
- 2a. Elk sedge present with coverage greater than 10% **CAGE pct GS39** pg. 147
- 2b. Elk sedge absent or with coverage less than 10% ..... 3
- 3a. Hood's sedge (CAHO) present with coverage equal to or exceeding 10% **CAHO pct GS3912** pg. 158
- 3b. Hood's sedge absent or with coverage less than 10% ..... 4
- 4a. Idaho fescue (FEID) present with coverage equal to or exceeding 10% .... 5
  - 5a. Elevations above 6,000 feet **FEID pct GS12** pg. 158
  - 5b. Elevations below 6,000 feet **FEID-AGSP pa GB59** pg. 151
- 4b. Idaho fescue absent or with coverage less than 10% ..... 6
- 6a. Bluebunch wheatgrass (AGSP) present with coverage equal to or exceeding 10% ..... 7
  - 7a. Onespoke oatgrass (DAUN) present and well distributed throughout the stand with coverage equal to or exceeding 1% and soil depth 10 inches or less **AGSP-POSA3-DAUN pct GB4911** pg. 157
  - 7b. Onespoke oatgrass absent or with coverage less than 1% and soil depth greater than 10 inches **AGSP-POSA3 pa GB4121** pg. 153
- 6b. Bluebunch wheatgrass absent or with coverage less than 10% ..... 8

- 8a. Sandberg's bluegrass (POSA3) present with coverage equal to or exceeding 5%     **POSA3-DAUN pa GB9111**     pg. 155
- 8b. Sandberg's bluegrass absent or with coverage less than 5%     **STOC pct GS10**     pg. 159

**TIPS FOR IDENTIFYING POTENTIAL VEGETATION TYPES**

These tips for identifying potential vegetation types in the field are based on my experience, along with habitat-type training materials such as Lee and Pfister (1978).

1. Pick a relatively homogeneous area in the stand before attempting to use a key. When keying plant associations, avoid microsites (unusual topographic or soil conditions) or ecotones (transitional areas where two or more plant associations adjoin each other).
2. The keys in this document are arranged in an order of precedence, which means you need to work them from front to back (within this report) and from top to bottom (within an individual key). Begin first with the series key on page 5 by determining if the site is forested (dominated by trees) or nonforested (dominated by shrubs or herbs).
3. For forest sites, determine which tree species are present and interpret their shade tolerance. Why is this important? Because the forest series are organized from most tolerant to least tolerant. So, if Douglas-fir and grand fir both have 10% cover in your stand, key it out using grand fir because it is more shade tolerant. Here is the shade tolerance ranking:



4. After identifying the tree species present in your stand, visually estimate how much canopy coverage they have (by species). With the exception of lodgepole pine, each of the tree series requires at least 10% coverage to use its key. So, if your stand has 5% coverage of grand fir, 10% coverage of Douglas-fir, and 15% coverage of ponderosa pine, you would end up using the Douglas-fir series key. Why is this so?  
 Of these species, grand fir is the most shade-tolerant, and because the series key is organized by tolerance you will encounter grand fir first as you work down through it, but since you have only 5% grand fir cover and the key requires at least 10%, you must select another species instead. Of the remaining species, Douglas-fir is more tolerant than ponderosa pine (so it appears in the series key before ponderosa pine), and since

you have 10% cover of Douglas-fir, you have enough cover to use the Douglas-fir series key to identify a plant association for your stand.

5. After using the series key (pages 5-6) to get you into the proper series, examine the stand's undergrowth carefully to determine plant species composition and relative canopy cover amounts.
6. Determine which of the primary Blue-Ochoco Mountains indicator species are present in the stand's undergrowth. Indicator species are used to name the potential vegetation types: common snowberry is the undergrowth indicator species for the Douglas-fir/common snowberry plant association, for example. **WARNING:** Just as with trees (see #4 above), there is an order of precedence for the indicator plants – if your grand fir stand has both queencup beadlily and twinflower, the queencup will come out first in the key because it is more shade-tolerant than twinflower.
7. Although you don't need to be a professional botanist to identify plant associations, you should become somewhat familiar with three broad groups of plants to effectively use the plant association field guides:  
**Indicator plants** – these species are used to name the plant associations (e.g., common snowberry for the Douglas-fir/common snowberry type).  
**Look-alikes** – these plants resemble an indicator species closely enough that it can be difficult to tell them apart. Be careful to not misidentify a plant association by mistaking a look-alike plant for an indicator species!  
**Abundant plants** – some species are common but aren't used as an indicator plant. A good example is common yarrow, a species with wide ecological amplitude occurring from the plains to the alpine zone. You could easily see enough yarrow during a typical field day to begin wondering if a species this common must be important in some way. And the answer is: not necessarily, at least in the context of potential vegetation! Learn to recognize these ubiquitous, non-indicator species so you can safely decide to ignore them in terms of identifying plant associations.
8. Accurate plant identification is important when using a floristic classification system. You might want to carry one or more references to help you identify plant species. Here are some options to consider for the Blue Mountains:  
**Hitchcock and Cronquist (1973):** this book is tough sledding for all but the professional botanist! But, it is the authoritative and long-established botanical reference for the Pacific Northwest.  
**Johnson (1998):** a comprehensive and illustrated reference for identifying Blue-Ochoco Mountains indicator plants. **WARNING:** this guide is not very useful for identifying the look-alike or abundant plant species groups.  
**Kershaw et al. (1998):** a good wildflower reference for the Blue Mountains; helpful for the look-alike and abundant plant species groups.  
**Parish et al. (1996):** another good wildflower guide that is particularly helpful for the look-alike and abundant plant species groups.  
**Turner and Gustafson (2006):** a good recent wildflower reference for the Pacific Northwest.

9. After using keys to identify a tentative plant association for your stand, take a few minutes to consult the constancy tables (appendix C of Johnson and Clausnitzer 1992) and its type description in the field guide. To help with this recommendation, I included the page number of the type description (in Johnson and Clausnitzer 1992) in each of the series keys. Use the constancy tables to examine a wide range of the flora associated with each type, and use the type description to see if your stand matches the topographic and landform variables for the association.
10. Sometimes, you will need to determine a plant association for clearcuts, stand-replacing wildfire areas, or other heavily disturbed sites. Since the plant association guides were developed by sampling mature, undisturbed stands (late and climax in fig. 1), it can be difficult to identify an association for disturbed sites because a post-disturbance flora often requires one or more decades to recover to a point where late-seral species are relatively well represented (fig. 1 describes how early-seral species can be quite different than late-seral species for the same association). Your best bet for disturbed areas is to extrapolate from the nearest mature stand on a similar ecological setting (same aspect, slope position, elevation, etc.). If a mature stand is not available close by, then look for undergrowth indicator species occupying shaded "safe sites" within the disturbance environment, such as along large down logs or behind stumps.

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- ACKNOWLEDGMENTS:** Linda Dillavou (Umatilla National Forest, Supervisor's Office) transcribed text from keys in the Blue-Ochoco field guide to this document.