



**Conservation Status and Protection  
Needs of Priority Plant Species in the  
Columbia Plateau and East Cascades  
Ecoregions**

Prepared for  
US Fish and Wildlife Service, Region 1

Prepared by  
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# Conservation Status and Protection Needs of Priority Plant Species in the Columbia Plateau and East Cascades Ecoregions

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**ON THE COVER:** Wanapum crazyweed (*Oxytropis campestris* var. *wanapum*), a G5T1/S1 taxon endemic to the Saddle Mountain, in the Columbia Plateau Ecoregion of central Washington. Photo by Walter Fertig.

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## Introduction

The flora of Washington contains 3,677 species and varieties of vascular plants (<http://biology.burke.washington.edu/herbarium/waflora/checklist.php>), of which 2,637 are native (Table 1). Washington has the fifteenth richest flora of any state in the United States, while being only twentieth in total area (Stein 2002). The relatively high floristic diversity of Washington can be attributed to the variety of habitats and ecological conditions in the state, which range from coastal salt marshes to temperate rain forests and searing deserts to icy alpine peaks. This diversity is captured in nine different “ecoregions” (Figure 1) or geographic areas defined by similarities in topography, climate, and general vegetation (WDNR 2007).

**Table 1. Comparison of the species richness and number of rare and unique vascular plant taxa in each of the nine ecoregions in Washington.**

Total number of taxa in each ecoregion derived from the Consortium of Pacific Northwest Herbaria website ([www.pnwherbaria.org](http://www.pnwherbaria.org)) and Washington Flora Checklist website (<http://biology.burke.washington.edu/herbarium/waflora/checklist.php>).

<b>Ecoregion</b>	<b>Total # Taxa</b>	<b># Native Taxa</b>	<b># of Introduced Taxa</b>	<b># of WA Plant Taxa of Special Concern</b>	<b># of Plant Taxa Unique to the Ecoregion</b>
Blue Mountains	1,019	848	171	44	39
Canadian Rockies	1,087	907	180	44	16
<b>Columbia Plateau</b>	<b>1,956</b>	<b>1,387</b>	<b>569</b>	<b>134</b>	<b>158</b>
<b>East Cascades</b>	<b>2,453</b>	<b>1,938</b>	<b>515</b>	<b>131</b>	<b>104</b>
North Cascades	1,214	1,012	202	47	15
Okanogan Plateau	1,807	1,506	301	82	53
Pacific NW Coast Range	1,530	1,170	360	76	75
Puget Trough	2,075	1,239	836	76	198
West Cascades	1,410	1,154	256	56	17
<b>Total Washington State Flora</b>	<b>3,677</b>	<b>2,637</b>	<b>1,040</b>	<b>365</b>	



**Figure 1. Ecoregions of Washington.**

The Columbia Plateau ecoregion is the largest in Washington, covering 13.9 million acres and has the second richest flora of any ecoregion in the state, with 1,387 native species (37.7% of the total state flora) (Table 1). Being in the rain shadow of the Cascade Range to the west, the Columbia Plateau is the hottest and driest portion of the state. Most of the area is underlain by basalt that has weathered into deep, productive soils. The region was heavily scoured by massive flooding events during the ice age, which created a complex topography of scablands, rolling hills, dry coulees, and two deeply entrenched rivers, the Columbia and the Snake. Shallow soil habitats are common in areas affected by these floods. The Columbia and Snake rivers have been tamed by a series of large dams and reservoirs and the resulting irrigation water has transformed much of the area into vast agricultural fields.

Bordering the Columbia Plateau to the west is the East Cascades ecoregion, which takes in the drier foothills of the Cascades at 610 meters (2,000 feet) to the moist conifer forests and alpine ridges along the crest of the range. Most of the East Cascades is volcanic, but areas of the Wenatchee Mountains have a more diverse assemblage of substrates, including granite, ultramafic, and sedimentary outcrops. Although the ecoregion is relatively small (4.9 million acres), it has a complex variety of ecosystems dominated by forest, shrubland, and meadow vegetation types. The East Cascades has the highest vascular plant species richness of any ecoregion in Washington with 1,938 native taxa, or 52.7% of the total state flora (Table 1).

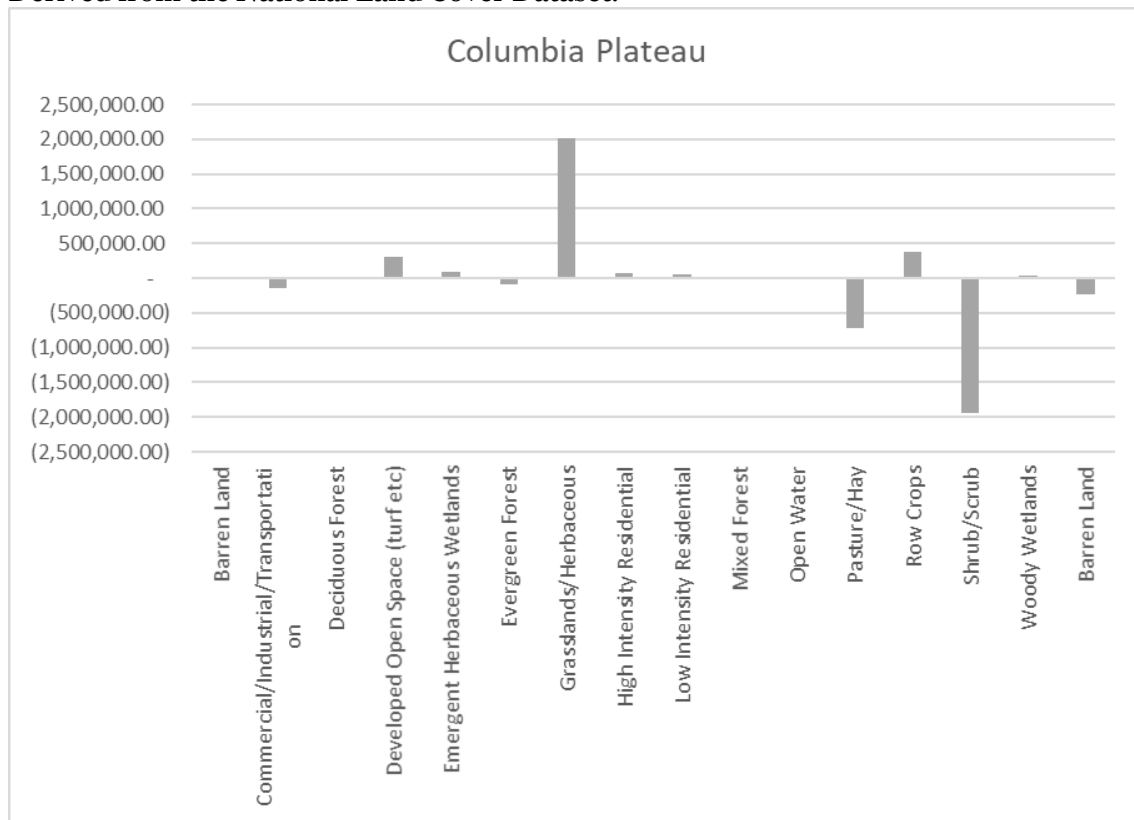
These two ecoregions are noteworthy for having the highest number of rare plant species in the state. The Washington Natural Heritage Program (WNHP) currently recognizes 365 vascular

plant taxa as state Endangered, Threatened, Sensitive, or Extirpated (WNHP 2019). The Columbia Plateau ecoregion has 134 of these species (36.7% of the state total) and the East Cascades 131 (35.9%) (Table 1). By comparison, the next richest ecoregion in terms of rare plant species is the Okanogan, with 82 species. The Columbia Plateau and East Cascades ecoregions support nearly 60% of Washington’s plant species listed under the US Endangered Species Act. Many other rare species from these two ecoregions might qualify as candidates for potential listing in the future (Fertig 2020). The large number of rare species in these ecoregions can be attributed to the high rate of endemism associated with unusual substrates (as in the Wenatchee Mountains), geographic isolation of Great Basin species in the Columbia Plateau, and the high degree of habitat fragmentation and loss, especially in eastern Washington.

The Columbia Plateau and East Cascades ecoregions are undergoing significant changes that will affect the long-term persistence of both rare and common native species. From 1992 to 2016, grassland and herbaceous cover, row crops and developed open space have increased in area within the Columbia Plateau, while the cover of shrubby species and barren ground have declined (Figure 2). Much of this change is the result of conversion of natural lands to crops or wildfires replacing shrub cover with weedy grasses and forbs (Yang et al. 2018). Over the same

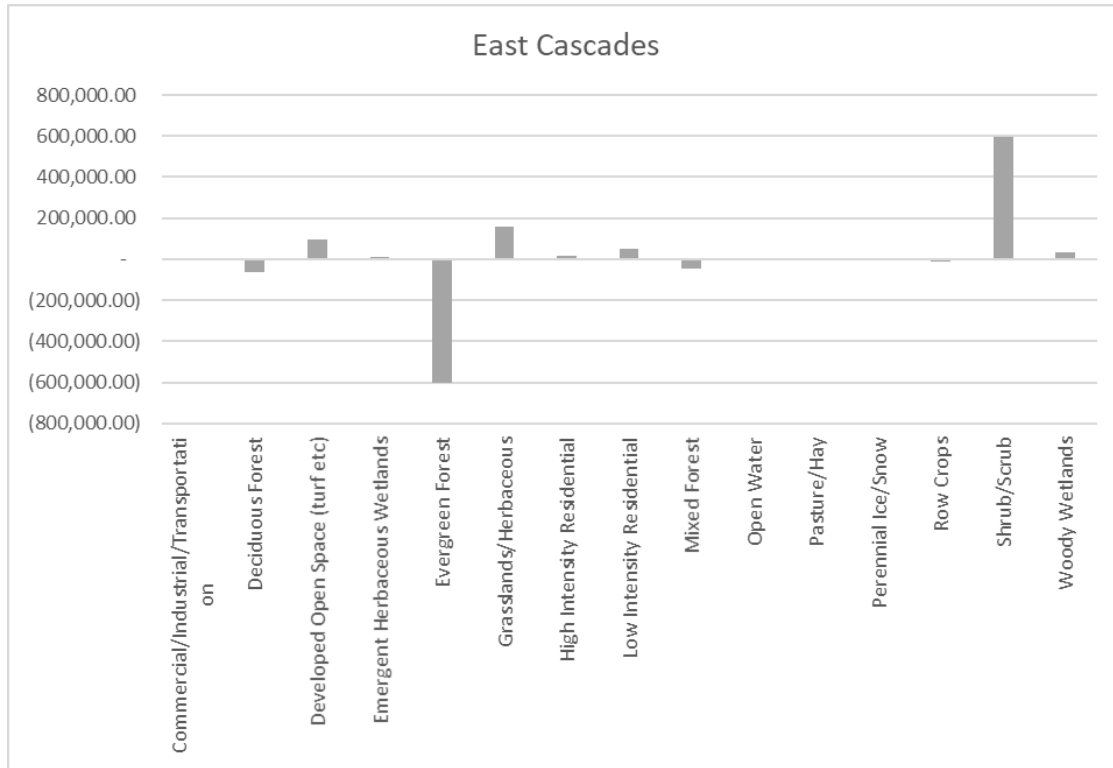
**Figure 2: Changes in land cover type from 1992 to 2016 throughout the Columbia Plateau Ecoregion.**

Derived from the National Land Cover Dataset.



**Figure 3: Changes in land cover type from 1992 to 2016 throughout the East Cascades Ecoregion.**

Derived from the National Land Cover Dataset.



time period, the East Cascades ecoregion has seen an increase in shrub and grassland cover at the expense of evergreen, deciduous, and mixed forests, due to wildfire and timber harvest (Figure 3). The East Cascades has also seen an increase in residential development and developed open space (Yang et al. 2018).

During the past 30 years the number of protected areas in the Columbia Plateau and East Cascades ecoregions has increased by more than 70, and now covers 1.8 million acres (Table 2) (USGS 2018). The National Gap Program recognizes four land management categories (Gap status 1-4) based on their degree of protection and emphasis on conserving native biological diversity versus multiple or anthropocentric uses (Jennings 2000). Gap Status 1 lands are permanently protected from conversion of natural land cover and have a mandated management plan to maintain these conditions. Examples of Status 1 lands include designated Wilderness Areas, National Parks and Monuments, National Wildlife Refuges, Research Natural Areas, Washington Department of Natural Resources (DNR) managed Natural Area Preserves, and private preserves managed by conservation land trusts (such as The Nature Conservancy or Columbia Land Trust). Gap Status 2 lands are protected from conversion of land cover (though the protection may not be permanent in the case of state registry sites or BLM Areas of Critical Environmental Concern [ACEC]), but competing activities (such as recreation) may be allowed



which could degrade the condition of the site. Examples of Gap Status 2 lands include National Recreation Areas, state Wildlife Areas, DNR-managed Natural Resource Conservation Areas, DNR registry sites, ACECs, or Washington State parks. Gap status 3 (public lands managed for multiple use) or 4 (private, state, or tribal lands without formal conservation designation) are not considered protected. Table 3 includes a list of state and federal protected areas in the two ecoregions.

The purpose of this project is to document the current status and degree of protection for all federally and state listed Endangered, Threatened, and Sensitive vascular plant species found in the Columbia Plateau and East Cascades ecoregions. The following report includes a brief summary of the current conservation status of each species across Washington (including its distribution, number of occurrences, abundance, habitat, threats, trends, and managed areas) and the number and percentage of populations that occur in Gap 1 and 2 protected areas in the two ecoregions (Appendices A & B). The report also includes a review of currently unprotected or under-protected sites within the two ecoregions that have high concentrations of rare plant species that are not well represented in the state’s existing protected area network. Lastly, the report summarizes species that should be a high priority for conservation attention based on the inadequacy of their current level of protection.

<b>Table 2. Percentage of Area with Gap Status 1 and 2 Protection in the Columbia Plateau and East Cascades Ecoregions</b>			
Area derived from USGS (2018). See text for definition of Gap Land Status categories.			
<b>Ecoregion</b>	<b>Total Area of Ecoregion (acres)</b>	<b>Total Area in GAP 1 or 2 Status (acres)</b>	<b>% Area in Gap 1 or 2 Status</b>
<b>Columbia Plateau</b>	13,980,038	641,047	4.6
<b>East Cascades</b>	4,912,023	1,169,257	23.8
<b>Total</b>	18,892,061	1,810,304	9.6

## Methods

Data on the distribution, number of occurrences, abundance, habitat, threats, trends, and land management status for all Washington vascular plant species of concern (WNHP 2019) occurring in the East Cascades and Columbia Plateau ecoregions were obtained from a review of published and unpublished literature and the WNHP Biotics database (Table 4).

**Table 3. Protected Areas of the Columbia Plateau and East Cascades Ecoregions in Washington**

Legend: **Management Agency/Owner:** BLM = Bureau of Land Management, NGO = Non-governmental Organization, NPS = National Park Service, USFS = US Forest Service, USFWS = US Fish and Wildlife Service, WA DFW = Washington Department of Fish and Wildlife, WA DNR = Washington Department of Natural Resources; **Ecoregion:** CP = Columbia Plateau, EC = East Cascades

<b>Protected Area</b>	<b>Management Agency/Owner</b>	<b>Gap Status</b>	<b>Ecoregion</b>
Alpine Lakes Wilderness Area	USFS	1	EC
Badger Gulch Natural Area Preserve	WA DNR	1	CP
Badger Mountain	NGO/Land Trust	2	CP
BeeBe Wildlife Area Complex	WA DFW	2	CP
Beezley Hills	NGO/Land Trust	2	CP
Camas Meadows Natural Area Preserve	WA DNR	1	EC
Castle Rock Natural Area Preserve	WA DNR	1	CP
Chewuch RNA	USFS	2	EC
Chopaka Mountain Natural Area Preserve	WA DNR	1	EC
Cleveland Shrub Steppe Natural Area Preserve	WA DNR	1	CP
Coal Creek Area of Critical Environmental Concern	BLM	2	CP
Colockum Wildlife Area	WA DFW	2	CP, EC
Columbia Basin Wildlife Area	WA DFW	2	CP
Columbia Hills Natural Area Preserve	WA DNR	1	CP
Columbia National Wildlife Refuge	USFWS	2	CP
Conboy Lake National Wildlife Refuge	USFWS	2	EC
Cowiche Canyon Area of Critical Environmental Concern	BLM	2	CP
Cowiche Canyon Conservancy	NGO/Land Trust	2	CP
Dishman Hills Natural Resources Conservation Area	WA DNR	2	CP
Drumheller Sagebrush Steppe Research Natural Area	USFWS	2	CP
Eldorado Creek RNA	USFS	2	EC
Entiat Slopes Natural Area Preserve	WA DNR	1	EC
Fish Lake Bog RNA	USFS	2	EC
Glacier Peak Wilderness	USFS	1	EC
Goat Rocks Wilderness	USFS	1	EC
Henry M. Jackson Wilderness	USFS	1	EC
Juniper Dunes Wilderness	BLM	1	CP
Kahlotus Ridgetop Natural Area Preserve	WA DNR	1	CP
Keystone Point Area of Critical Environmental Concern	BLM	2	EC
Klickitat Canyon Natural Resources Conservation Area	WA DNR	2	EC
Klickitat Wildlife Area	WA DFW	2	CP
L.T. Murray Wildlife Area	WA DFW	2	CP
Lake Chelan National Recreation Area	NPS	2	EC
Lake Chelan-Sawtooth Wilderness	USFS	1	EC
Lenore Game Range	WA DFW	2	CP
Lind Shrub-Steppe Preserve	NGO/Land Trust	2	CP
Loomis Natural Resources Conservation Area	WA DNR	2	EC
Magnuson Butte	NGO/Land Trust	2	CP

<b>Protected Area</b>	<b>Management Agency/Owner</b>	<b>Gap Status</b>	<b>Ecoregion</b>
Marcellus Shrub Steppe Natural Area Preserve	WA DNR	1	CP
McNary National Wildlife Refuge	USFWS	2	CP
Meeks Table RNA	USFS	2	EC
Methow Rapids Natural Area Preserve	WA DNR	1	EC
Methow Wildlife Area	WA DFW	2	EC
Monte Cristo Natural Area Preserve	WA DNR	1	EC
Moses Coulee	NGO/Land Trust	2	CP
Mount Adams Wilderness	USFS	1	EC
Moxee Bog	NGO/Land Trust	2	CP
Nez Perce National Historical Park	NPS	2	CP
Norse Peak Wilderness	USFS	1	EC
North Cascades National Park	NPS	1	EC
Oak Creek Wildlife Area	WA DFW	2	EC
Pasayten Wilderness	USFS	1	EC
Pine Creek Research Natural Area	USFS	2	CP
Pincroft Natural Area Preserve	WA DNR	1	CP
Roger Lake Research Natural Area	USFS	2	EC
Rose Creek Preserve	NGO/Land Trust	1	CP
Saddle Mountain National Wildlife Refuge	USFWS	2	CP
Scotch Creek Wildlife Area	WA DFW	2	EC
Seaton Canyon	NGO/Land Trust	2	CP
Selah Cliffs Natural Area Preserve	WA DNR	1	CP
Sinlahekin Wildlife Area	WA DFW	2	EC
Spring Creek Canyon Natural Area Preserve	WA DNR	1	CP
Stephen Mather Wilderness	USFS	1	EC
Sunnyside-Snake River Wildlife Area	WA DFW	2	CP
Swanson Lakes-Sherman Creek Wildlife Area	WA DFW	2	CP
The Two-Steppe Natural Area Preserve	WA DNR	1	CP
Thompson Clover Research Natural Area	USFS	2	EC
Thorp Mill Town Historical Society	NGO/Land Trust	2	CP
Toppenish National Wildlife Refuge	USFWS	2	CP
Trout Lake Natural Area Preserve	WA DNR	1	EC
Turnbull National Wildlife Refuge	USFWS	2	CP
Umatilla National Wildlife Refuge	USFWS	2	CP
Upper Dry Gulch Natural Area Preserve	WA DNR	1	CP
Wells-Chelan-Sagebrush Flats Wildlife Area	WA DFW	2	CP, EC
Wenas Wildlife Area	WA DFW	2	CP
White Salmon Oak Natural Resources Conservation Area	WA DNR	2	EC
Whitman Mission National Historic Site	NPS	2	CP
William O. Douglas Wilderness	USFS	1	EC
Wolf Creek Research Natural Area	USFS	2	EC
Yakima River Canyon	NGO/Land Trust	2	CP

Each occurrence of the target species was assigned a Gap protection score based on the 1-4 ranking system of the National Gap Program (Jennings 2000). For occurrences crossing multiple land ownerships, the Gap score of the most highly protected portion of the occurrence was assigned to the whole occurrence. Appendix A summarizes the number of occurrences and percent of occurrences in each Gap land status category for the target species within the Columbia Plateau and East Cascades ecoregions and across the entire state of Washington. Individual managed areas are listed for each species according to their Gap status. An averaged Gap score for the two ecoregions was derived using the formula: (% Gap Status 1 occurrences x 1) + (% Gap status 2 occurrences x 2) + (% Gap status 3 occurrences x 3) + (% Gap status 4 occurrences x 4) (Beauvais 1999). The same formula was used to derive an averaged statewide Gap score (Appendix A).

An "adequacy of protection" score was derived for each target species based on the number of protected occurrences, percentage of protected occurrences, and averaged Gap protection score (Table 5). Taxa in which 100% of their known occurrences within the two ecoregions are in Gap status 3 or 4 lands are ranked as "Unprotected". Conversely, species in which 100% of their known occurrences are in Gap status 1 or 2 lands are considered "Completely Protected". For the remaining species, thresholds of 5 or more protected occurrences (Neel and Cummings 2003), 20% or more protected occurrences (Svancara et al. 2005), or averaged Gap protection of 2.5 or less (Beauvais 1999) are used to assess if the species is adequately or inadequately protected. If a species meets two or three of these criteria, it is considered "Adequately Protected". All others are scored as "Inadequately Protected." Table 5 illustrates how the adequacy of protection score is derived and provides examples (see Appendix A).

Potential conservation areas were identified within the Columbia Plateau and East Cascades ecoregions based on element occurrence data and digital maps from the WNHP Biotics database. An emphasis was placed on identifying sites for species that currently lack protection elsewhere in the state and on areas with high concentrations of rare species on unprotected federal or state lands (Fertig et al. 2017).

## Results

### *Species Summaries*

A total of 214 vascular plant species of special concern tracked by WNHP occur in either the Columbia Plateau or East Cascades ecoregions (Table 4). Twelve species previously reported for the two ecoregions were excluded from this analysis, however, because pertinent specimens were found to be misidentified or incorrectly mapped in the study area. These species include

**Table 4. Vascular Plant Species of Special Concern in the Columbia Plateau and East Cascades Ecoregions.**

Legend (for complete descriptions, see WNHP 2019). **Heritage Rank:** G = Global Rank; T = Trinomial Rank (global rank of subspecies or variety); S = State Rank. 1 = Critically Imperiled; 2 = Imperiled; 3 = Vulnerable; 4 = Apparently Secure; 5 = Secure; H = Historical (last relocated in 1980 or earlier); X = Extirpated, Q = Questionable taxonomy; ? = rank is uncertain. **Dist. (Distribution) Pattern:** LocEnd = Local Endemic; RegEnd = Regional Endemic; Disj = Disjunct; Periph = Peripheral. **Federal Status:** E = Endangered; T = Threatened; BS = BLM Sensitive; FS = US Forest Service Sensitive. **State Status:** WE = Washington Endangered; WS = Washington Sensitive; WT = Washington Threatened; WX = Washington Extirpated. **CP** = Columbia Plateau Ecoregion; **EC** = East Cascades Ecoregion. p = present; h = historical; r = reported; f = falsely reported; ? = questionable occurrence – needs confirmation.

Species/ Synonym	Common Name	Heritage Rank	Dist. Pattern	Federal Status	State Status	CP	EC
<i>Actaea elata</i> var. <i>elata</i> ( <i>Cimicifuga e.</i> )	Tall bugbane	G4T4/S3	RegEnd		WS		p
<i>Agoseris aurantiaca</i> var. <i>carnea</i> ( <i>A. lackschewitzii</i> )	Pink mountain-dandelion	G5T4Q/S2	Sparse	FS	WS		p
<i>Agoseris elata</i>	Willamette mountain-dandelion	G4/S3?	RegEnd	FS	WS		p
<i>Aliciella leptomeria</i> ( <i>Gilia l.</i> )	Sand gilia	G5/S1	Periph		WT	p	
<i>Allium bisceptrum</i>	Palmer's onion	G4G5/S1	Periph		WT	p	
<i>Allium campanulatum</i>	Sierra onion	G4/S1	Periph	BS, FS	WT		p
<i>Allium constrictum</i> ( <i>A. douglasii</i> var. <i>c.</i> )	Constricted onion	G2G3/S2S3	LocEnd	BS	WS	p	
<i>Ammannia robusta</i>	Grand redstem	G5/S1	Sparse	BS, FS	WT	p	h
<i>Anemone patens</i> var. <i>multifida</i> ( <i>A. nuttalliana</i> )	Pasqueflower	G5T5/S1	Periph	BS, FS	WT		p
<i>Aphyllon californicum</i> ssp. <i>grayanum</i> ( <i>Orobancha californica</i> ssp. <i>grayana</i> )	Gray's broomrape	G4T3T4/S1	Periph		WE	p	p
<i>Artemisia campestris</i> var. <i>wormskioldii</i> ( <i>A. borealis</i> var. <i>w.</i> )	Wormskiold's sagewort	G5T1/S1	RegEnd	BS, FS	WE	p	p
<i>Astragalus arrectus</i>	Palouse milkvetch	G2G4/S2	RegEnd	BS, FS	WT	p	p
<i>Astragalus arthurii</i>	Arthur's milkvetch	G4/S2	RegEnd	BS, FS	WS	p	
<i>Astragalus columbianus</i>	Columbia milkvetch	G2G3/S2S3	LocEnd	BS	WS	p	
<i>Astragalus diaphanus</i>	John Day milkvetch	G4/SX	RegEnd		WX		h
<i>Astragalus geyeri</i> var. <i>geyeri</i>	Geyer's milkvetch	G4T4/S1S2	Disj	BS	WT	p	
<i>Astragalus kentrophyta</i> var. <i>douglasii</i>	Thistle milkvetch	G5TX/SX	LocEnd		WX	h	
<i>Astragalus microcystis</i>	Least bladdery milkvetch	G5/S2	Sparse	BS, FS	WS	p	
<i>Astragalus misellus</i> var. <i>pauper</i> ( <i>A. howellii</i> var. <i>p.</i> )	Pauper milkvetch	G3T3/S2	RegEnd	BS	WS	p	
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i>	Ames' milkvetch	G4T2/S1	Disj		WE		p
<i>Astragalus riparius</i>	Piper's milkvetch	G2/S2	RegEnd	BS	WT	p	
<i>Astragalus sinuatus</i> ( <i>A. whitedii</i> )	Whited's milkvetch	G1/S1	LocEnd	BS	WE	p	
<i>Astragalus tenellus</i> ( <i>A. multiflorus</i> )	Looseflower milkvetch	G5/S1	Disj		WT	p	

Species/ Synonym	Common Name	Heritage Rank	Dist. Pattern	Federal Status	State Status	CP	EC
<i>Bergia texana</i>	Texas bergia	G5/SX	Periph		WX	h	h
<i>Blitum spathulatum</i> ( <i>Monolepis spathulata</i> )	Prostrate povertyweed	G5/S1	Periph	BS, FS	WT		h
<i>Boechera cascadenis</i> ( <i>Arabis microphylla</i> var. <i>thompsonii</i> )	Cascades rockcress	G5T1Q/S1	RegEnd		WX		p
<i>Bolandra oregana</i>	Bolandra	G3/S2	RegEnd	BS, FS	WT		h
<i>Botrychium hesperium</i>	Western moonwort	G4/S2	Sparse	BS, FS	WS		p
<i>Botrychium paradoxum</i>	Paradoxical moonwort	G3G4/S2	Sparse	BS, FS	WT		p
<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i>	Long-bearded sego lily	G4T3/S3	RegEnd		WS	h	p
<i>Calochortus macrocarpus</i> var. <i>maculosus</i>	Sagebrush mariposa lily	G5T2/S2?	RegEnd	BS, FS	WS	p	
<i>Calochortus nitidus</i>	Broad-fruited mariposa lily	G3/S1	RegEnd		WE	p	
<i>Calyptridium roseum</i> ( <i>Cistanthe rosea</i> )	Rosy pussypaws	G5/S1	Periph	BS, FS	WT	p	
<i>Camassia cusickii</i>	Cusick's camas	G4/S1	RegEnd		WS		p
<i>Carex capillaris</i>	Hair sedge	G5/S1	Periph	BS, FS	WT		p
<i>Carex cordillerana</i> ( <i>C. backii</i> , in part)	Cordilleran sedge	G3G4/S1	Sparse	FS	WS	h	
<i>Carex davyi</i> ( <i>C. constanceana</i> )	Davy's sedge	G2/SX	Periph		WX		h
<i>Carex densa</i>	Dense sedge	G5/S2	Periph	BS, FS	WS		h
<i>Carex heteroneura</i> ( <i>C. atrata</i> var. <i>erecta</i> )	Smooth-fruit sedge	G5/S2S3	Sparse	FS	WS		h
<i>Carex macrochaeta</i>	Large-awn sedge	G5/S1	Sparse	BS, FS	WT		h?
<i>Carex pauciflora</i>	Few-flowered sedge	G5/S2	Sparse	BS, FS	WS		p
<i>Carex proposita</i>	Potato chip sedge	G4/S2	Disj	BS, FS	WS		p
<i>Carex scirpoidea</i> ssp. <i>scirpoidea</i>	Northern single-spike sedge	G5T5/S2	Periph	BS, FS	WS		p
<i>Carex sychnocephala</i>	Many-headed sedge	G5/S2	Sparse	BS, FS	WS	p	
<i>Carex vallicola</i>	Valley sedge	G5/S2	Periph	BS, FS	WS	p	
<i>Castilleja cryptantha</i>	Obscure paintbrush	G2G3/S2S3	LocEnd	BS, FS	WS		p
<i>Chaenactis thompsonii</i>	Thompson's false- yarrow	G3/S3	LocEnd	BS, FS	WS		p
<i>Chrysolepis chrysophylla</i> var. <i>chrysophylla</i> ( <i>Castanopsis</i> c.)	Golden chinquapin	G5T5/S2	Periph	BS, FS	WS		p
<i>Chylismia scapoidea</i> ssp. <i>brachycarpa</i> ( <i>C. s.</i> ssp. <i>scapoidea</i> )	Short-fruited suncups	G5T4T5/S1	Periph	BS	WT	p	
<i>Cicuta bulbifera</i>	Bulb-bearing water- hemlock	G5/S2S3	Sparse	BS, FS	WS		p
<i>Cirsium remotifolium</i>	Pacific fringed thistle	G5/S1	Periph	FS	WS		p
<i>Collinsia sparsiflora</i> var. <i>sparsiflora</i>	Few-flowered Blue- eyed Mary	G4T4/S1	Periph	BS, FS	WT	h	p
<i>Collomia macrocalyx</i>	Bristle-flowered collomia	G3G4/S2	RegEnd		WT	p	
<i>Corispermum pallidum</i> ( <i>C. nitidum</i> , misapplied)	Pale bugseed	GH/SH	RegEnd		WX	h	
<i>Corispermum villosum</i>	Hairy bugseed	G4?/S2	Sparse		WS	p	h
<i>Crepis bakeri</i> (includes ssp. <i>idahoensis</i> )	Baker's hawkbeard	G4/S1	RegEnd		WE	p	

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<i>Cryptantha gracilis</i>	Cottonball cryptantha	G5/S2	Sparse	BS	WS	p	
<i>Cryptantha leucophaea</i> ( <i>Oreocarya l.</i> )	Gray cryptantha	G2G3/S2	RegEnd	BS	WT	p	f
<i>Cryptantha rostellata</i>	Beaked cryptantha	G4/S2	RegEnd	BS, FS	WT	p	h
<i>Cryptantha scoparia</i>	Desert cryptantha	G4?/S2	Sparse		WS	p	
<i>Cryptantha spiculifera</i> ( <i>Oreocarya s.</i> )	Bristly cryptantha	G4?/S2S3	Sparse	BS	WS	p	p
<i>Cryptogramma stelleri</i>	Steller's rock-brake	G5/S2	Periph	BS, FS	WS		p
<i>Cuscuta denticulata</i>	Desert dodder	G4G5/S1	Periph		WT	p	
<i>Cusickiella douglasii</i> ( <i>Draba d.</i> )	Douglas' cusickiella	G4G5/S1	Periph	BS, FS	WT	p	h
<i>Cypripedium parviflorum</i> ( <i>C. calceolus</i> var. <i>p.</i> )	Yellow lady's-slipper	G5/S2	Sparse	BS, FS	WS	p	
<i>Damasonium californicum</i> ( <i>Machaerocarpus californicus</i> )	Fringed water-plantain	G4/S1	Periph	FS	WT	p	
<i>Delphinium viridescens</i>	Wenatchee larkspur	G2/S2	LocEnd	BS, FS	WT	r	p
<i>Diplacus cusickioides</i> ( <i>D. cusickii</i> or <i>Mimulus cusickii</i> misapplied)	Nesom's monkeyflower	G4G5/S1	Periph	BS, FS	WT	p	h
<i>Eatonella nivea</i>	White eatonella	G4G5/S2	Periph		WT	p	
<i>Eleocharis atropurpurea</i>	Purple spike-rush	G4G5/S1	Disj		WX	p	h
<i>Eleocharis coloradoensis</i>	Dwarf spike-rush	GNR/S1	Sparse		WS	p	
<i>Eleocharis rostellata</i>	Walking spike-rush	G5/S2	Sparse		WS	p	
<i>Eremogone franklinii</i> var. <i>thompsonii</i> ( <i>Arenaria f.</i> var. <i>t.</i> )	Thompson's sandwort	G4T2Q/S2	RegEnd		WS	p	
<i>Eremothera minor</i> ( <i>Camissonia m.</i> )	Smallflower mooncup	G4/S2	Sparse		WS	p	p
<i>Eremothera pygmaea</i> ( <i>Camissonia p.</i> )	Dwarf mooncup	G3/S3	RegEnd	BS, FS	WS	p	
<i>Erigeron basalticus</i>	Basalt daisy	G2/S2	LocEnd	BS	WT	p	
<i>Erigeron salishii</i>	Salish daisy	G3/S2	RegEnd	BS, FS	WS		p
<i>Eriogonum codium</i>	Umtanum buckwheat	G1/S1	LocEnd	T	WE	p	
<i>Eriogonum maculatum</i>	Spotted buckwheat	G5/SX	Periph		WX	h	
<i>Eritrichium argenteum</i> ( <i>E. nanum</i> var. <i>elongatum</i> )	Pale forget-me-not	G4/S1	Periph	BS, FS	WS		p
<i>Eryngium articulatum</i>	Beefthistle coyote-thistle	G5/SH	Periph		WX	h	
<i>Eryngium petiolatum</i>	Oregon coyote-thistle	G4/S2	RegEnd	BS, FS	WT		p
<i>Erythranthe jungermannioides</i> ( <i>Mimulus j.</i> )	Liverwort monkeyflower	G3/SH	RegEnd		WX		h
<i>Erythranthe patula</i> ( <i>Mimulus patulus</i> )	Stalk-leaved monkeyflower	G3?/S2?	Periph	BS, FS	WT	p	
<i>Erythranthe pulchiferae</i> ( <i>Mimulus p.</i> )	Candelabrum monkeyflower	G4?/S2	Sparse	BS, FS	WS	h	p
<i>Erythranthe suksdorfii</i> ( <i>Mimulus s.</i> )	Suksdorf's monkeyflower	G4/S2S3	Sparse	BS, FS	WS	p	p
<i>Erythranthe washingtonensis</i> ( <i>Mimulus w.</i> )	Washington monkeyflower	G4/SH	RegEnd		WX	h?	h
<i>Gentiana douglasiana</i>	Swamp gentian	G5/S2	Periph	BS, FS	WS		p
<i>Geum rossii</i> var. <i>depressum</i>	Ross' avens	G5T1/S1	LocEnd	FS	WE		p

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<i>Githopsis specularioides</i>	Common blue-cap	G5/S2S3	Sparse	BS, FS	WS	h	p
<i>Hackelia cinerea</i>	Gray stickseed	G4?/S1	Periph	BS, FS	WT	p	p?
<i>Hackelia diffusa</i> var. <i>diffusa</i>	Diffuse stickseed	G4T3/S2	RegEnd	BS, FS	WT	h?	p
<i>Hackelia hispida</i> var. <i>disjuncta</i>	Rough stickseed	G4T3/S3	LocEnd	BS, FS	WS	p	h
<i>Hackelia taylorii</i>	Taylor's stickseed	G2/S2	LocEnd	FS	WT		p
<i>Hackelia venusta</i>	Showy stickseed	G1/S1	LocEnd	E	WE		p
<i>Heterotheca oregona</i> var. <i>oregona</i> ( <i>Chrysopsis</i> o.)	Oregon goldenweed	G4/S2	Sparse	BS, FS	WS	p	p
<i>Howellia aquatilis</i>	Water howellia	G3/S2	Sparse	T	WT	p	
<i>Hypericum majus</i>	Large St. Johns'-wort	G5/S2	Sparse		WS	p	
<i>Isöetes minima</i> ( <i>I. howellii</i> var. <i>m.</i> )	Midget quillwort	G1G2/S1	RegEnd	BS, FS	WS	h	p
<i>Isöetes nuttallii</i>	Nuttall's quillwort	G4?/S2	Sparse	BS, FS	WS		p
<i>Juncus hemiendytus</i> var. <i>hemiendytus</i>	Dwarf rush	G5T5/S1	Periph		WT	p	p
<i>Juncus howellii</i>	Howell's rush	G4/S1	Sparse	BS, FS	WT		p
<i>Juncus kelloggii</i>	Kellogg's rush	G3?/S1	Periph	BS, FS	WE		p
<i>Juncus tiehmii</i>	Tiehm's dwarf rush	G4/S1	Disj	BS	WT	p	
<i>Juncus uncialis</i>	Inch high rush	G3G4/S2	Sparse	BS	WT	p	
<i>Kalmia procumbens</i> ( <i>Loiseleuria</i> p.)	Alpina azalea	G5/SH	Periph	BS, FS	WT		h
<i>Lasthenia glaberrima</i>	Smooth goldfields	G5/S1	Periph	BS, FS	WT	p	
<i>Lathrocasis tenerrima</i> ( <i>Gilia</i> t.)	Delicate gilia	G5/S1	Sparse	BS, FS	WT	p	p
<i>Leptosiphon bolanderi</i> ( <i>Linanthus bakeri</i> )	Bolander's linanthus	G4G5/S2	Periph	BS, FS	WS		p
<i>Leymus flavescens</i> ( <i>Elymus</i> f.)	Yellow wildrye	G4/S1	RegEnd	BS	WS	p	h
<i>Liparis loeselii</i>	Loesel's twayblade	G5/S1	Disj		WE		p
<i>Lipocarpha aristulata</i> ( <i>Hemicarpha</i> a.)	Awne d halfchaff sedge	G5?/S1S2	Disj	BS, FS	WT	p	p
<i>Lobelia kalmii</i>	Kalm's lobelia	G5/S1	Disj		WE	p	
<i>Loeflingia squarrosa</i>	Spreading pygmyleaf	G5/S1	Disj		WT	p	
<i>Lomatium knokei</i>	Knoke's biscuitroot	G1/S1	LocEnd	BS, FS	WT		p
<i>Lomatium laevigatum</i>	Basalt biscuitroot	G3/S2S3	LocEnd	BS, FS	WT	p	f
<i>Lomatium lithosolamans</i> ( <i>Tauschia hooveri</i> )	Hoover's biscuitroot	G2G3/S2S3	LocEnd	BS	WS	p	h
<i>Lomatium rollinsii</i>	Rollins' biscuitroot	G3/S2	RegEnd	BS, FS	WT	p	
<i>Lomatium roneorum</i>	Leavenworth desert- parsley	G1/S1	LocEnd		WE		p
<i>Lomatium serpentinum</i>	Snake River biscuitroot	G4/S2	RegEnd	BS	WS	p	f
<i>Lomatium suksdorfii</i>	Suksdorf's biscuitroot	G3/S3	LocEnd	BS, FS	WS		p
<i>Lomatium tamanitchii</i>	Ribseed biscuitroot	G3?/S2	LocEnd	FS	WT	p	
<i>Lomatium tenuissimum</i> ( <i>Tauschia tenuissima</i> )	Leiberg's umbrellawort	G3/SX	RegEnd		WX	h	f
<i>Lomatium tuberosum</i>	Tuberous biscuitroot	G2G3/S2S3	RegEnd	BS	WS	p	h
<i>Lupinus sabinianus</i>	Sabin's lupine	G3/S1	RegEnd		WE	h	
<i>Luzula arcuata</i> ssp. <i>unalaschcensis</i>	Curved woodrush	G5T3T5/S1	Sparse	FS	WT		p
<i>Lycopodium lagopus</i>	One-cone clubmoss	G5/S1	Disj		WS		p
<i>Meconella oregana</i>	White meconella	G2G3/S1	RegEnd	BS, FS	WE		p



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<i>Micromonolepis pusilla</i> ( <i>Monolepis p.</i> )	Tiny povertyweed	G5/S1	Disj	BS, FS	WT	p	
<i>Microseris borealis</i> ( <i>Apargidium boreale</i> )	Northern silverpuffs	G5/S2	Sparse	BS, FS	WS		p
<i>Mimetanthe pilosa</i> ( <i>Mimulus pilosus</i> )	Downy false-monkeyflower	G5/S1	Sparse		WS	p	h
<i>Montia diffusa</i>	Branched montia	G4/S1S2	RegEnd	BS, FS	WS		p
<i>Muhlenbergia glomerata</i>	Marsh muhly	G5/S2	Periph	BS, FS	WS	h	
<i>Myosurus alopecuroides</i> ( <i>M. clavicaulis</i> )	Foxtail mouse-tail	G3?/S2	Sparse	BS	WT	p	
<i>Myosurus sessilis</i>	Vernal pool mousetail	G2/S1	Periph		WE	p	
<i>Myriopteris gracilis</i> ( <i>Cheilanthes feei</i> )	Slender lipfern	G5/S1	Periph	BS	WT	h	
<i>Navarretia leucocephala</i> ssp. <i>diffusa</i>	Least pincushion-plant	G4T1/S1	LocEnd		WT	p	
<i>Navarretia tagetina</i>	Marigold pincushion-plant	G5/S1	Periph		WT		p
<i>Nicotiana attenuata</i>	Coyote tobacco	G4/S2	Sparse	BS, FS	WS	p	p
<i>Oenothera cespitosa</i> ssp. <i>cespitosa</i>	Tufted evening-primrose	G5T5/S2	Periph	BS	WS	p	
<i>Oenothera cespitosa</i> ssp. <i>marginata</i>	Tufted evening-primrose	G5T3T5/S1	Periph	BS, FS	WT	p	p
<i>Oenothera flava</i> ssp. <i>flava</i>	Long-tubed evening-primrose	G5T3T5/SH	Periph		WX	h	
<i>Ophioglossum pusillum</i>	Adder's-tongue	G5/S2	Sparse	BS, FS	WS	p	p
<i>Orthocarpus bracteosus</i>	Rosy owl-clover	G3?/S2	RegEnd	BS, FS	WT		p
<i>Oxalis suksdorfii</i>	Western yellow wood-sorrel	G4/SH	RegEnd		WT		h
<i>Oxytropis campestris</i> var. <i>spicata</i> ( <i>O. c.</i> var. <i>gracilis</i> )	Field locoweed	G5T5/S2	Sparse	BS, FS	WS		h
<i>Oxytropis campestris</i> var. <i>wanapum</i>	Field locoweed	G5T1/S1	LocEnd	BS	WE	p	
<i>Packera bolanderi</i> var. <i>harfordii</i>	Harford's groundsel	G4TUQ/S1	RegEnd	FS	WS		p
<i>Parnassia kotzebuei</i>	Kotzebue's grass-of-Parnassus	G5/S1	Periph	BS, FS	WT		p
<i>Pedicularis pulchella</i>	Pretty dwarf lousewort	G3/S1	Disj	FS	WS		p
<i>Pedicularis rainierensis</i>	Mt. Rainier lousewort	G2G3/S2S3	LocEnd	FS	WS		h
<i>Pediocactus nigrispinus</i> ( <i>P. simpsonii</i> var. <i>n.</i> )	Dark-spine ball cactus	G4/S2	RegEnd	BS	WS	p	p
<i>Pellaea brachyptera</i>	Sierra cliffbrake	G4G5/S2	Disj	BS, FS	WS		p
<i>Pellaea breweri</i>	Brewer's cliffbrake	G5/S2	Sparse	FS	WS		p
<i>Penstemon barrettiae</i>	Barrett's beardtongue	G2/S2	LocEnd	BS, FS	WT		p
<i>Penstemon deustus</i> var. <i>variabilis</i>	Hot-rock beardtongue	G5T1T2/S1	RegEnd	BS, FS	WT	p	
<i>Penstemon eriantherus</i> var. <i>whitedii</i>	Whited's fuzzy-tongue beardtongue	G4T2/S2	RegEnd	BS, FS	WT	p	p
<i>Penstemon wilcoxii</i>	Wilcox penstemon	G4/S1	RegEnd	BS, FS	WT	p	
<i>Petrophytum cinerascens</i>	Chelan rockmat	G1G2/S1S2	LocEnd	BS, FS	WE	p	p
<i>Phacelia lenta</i>	Sticky phacelia	G2?/S2?	LocEnd	BS	WT	p	
<i>Phacelia minutissima</i>	Least phacelia	G3/S1	Disj	BS, FS	WE		p
<i>Phacelia tetramera</i>	Dwarf phacelia	G4/S1	Sparse	BS, FS	WT	p	

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<i>Physaria douglasii</i> ssp. <i>tuplashensis</i> ( <i>Lesquerella tuplashensis</i> )	White Bluffs bladderpod	G4?T1/S1	LocEnd	T	WE	p	
<i>Pilularia americana</i>	Pillwort	G5/S2	Disj	BS, FS	WT	p	
<i>Plectritis brachystemon</i> ( <i>P. congesta</i> var. <i>b.</i> )	Short-spurred plectritis	G5?/S1	Sparse		WS		h
<i>Polemonium pectinatum</i>	Washington Jacob's- ladder	G2/S2	RegEnd	BS	WT	p	
<i>Polyctenium fremontii</i> ( <i>Smelowskia f.</i> )	Desert combleaf	G4/S1	Disj	BS	WT	p	
<i>Polygonum austiniiae</i> ( <i>P. douglasii</i> var. <i>a.</i> )	Austin's knotweed	G4/S1	Sparse		WT	p	
<i>Polygonum parryi</i>	Parry's knotweed	G4/S1	Periph		WT		p
<i>Potentilla breweri</i> ( <i>P. drummondii</i> var. <i>b.</i> )	Brewer's cinquefoil	GNR/S1	Sparse	BS, FS	WT		p
<i>Potentilla newberryi</i>	Newberry's cinquefoil	G3G4/SH	Periph		WX		h
<i>Pyrocoma hirta</i> var. <i>sonchifolia</i> ( <i>Haplopappus hirtus</i> var. <i>sonchifolius</i> )	Hairy goldenweed	G4G5T3/S2	RegEnd	BS, FS	WT		p
<i>Pyrocoma liatriformis</i> ( <i>Haplopappus l.</i> )	Smallhead goldenweed	G2/S2	RegEnd		WT	p	
<i>Pyrocoma scaberula</i> ( <i>Haplopappus scaberulus</i> )	Palouse goldenweed	G2/S1	RegEnd	BS, FS	WE	p	
<i>Ranunculus hebecarpus</i>	Downy buttercup	G5/S1	Periph		WT	h	p
<i>Ranunculus tritermatus</i> ( <i>R. reconditus</i> )	Obscure buttercup	G2/S1S2	LocEnd	BS, FS	WE	p	p
<i>Ribes cereum</i> var. <i>colubrinum</i>	Wax currant	G5T3/S1	RegEnd	BS, FS	WE	p	
<i>Ribes oxycanthoides</i> var. <i>irriguum</i> ( <i>R. irriguum</i> )	Idaho gooseberry	G5T4/S1	RegEnd	BS, FS	WT	p	
<i>Rorippa columbiae</i>	Columbia yellowcress	G3/S1S2	RegEnd	BS, FS	WT	p	h
<i>Rotala ramosior</i>	Lowland toothcup	G5/S2	Sparse	BS, FS	WS	p	p
<i>Rubus nigerrimus</i>	Northwest raspberry	G2/S2	LocEnd		WT	p	
<i>Sabulina nuttallii</i> var. <i>fragilis</i> ( <i>Arenaria n.</i> var. <i>f.</i> , <i>Minuartia n.</i> var. <i>f.</i> )	Nuttall's sandwort	G5T4/S1	Periph	BS	WT	p	
<i>Sabulina pusilla</i> ( <i>Arenaria p.</i> , <i>Minuartia p.</i> )	Dwarf sandwort	G5/S1	Sparse		WT	p	h
<i>Salix pseudomonticola</i>	False mountain willow	G5/S1	Periph	BS, FS	WS		p
<i>Salix sessilifolia</i> ( <i>S. exigua</i> var. <i>s.</i> )	Soft-leaved willow	G4/S2	RegEnd	BS, FS	WS		h
<i>Salix vestita</i>	Rock willow	G5/SH	Periph		WX		h
<i>Sandbergia perplexa</i> ( <i>Halimolobos perplexus</i> )	Puzzling halimolobos	G4/S1	Disj		WE	p	
<i>Saxifraga hyperborea</i> ( <i>S. debilis</i> , <i>S. rivularis</i> )	Pygmy saxifrage	G5/S3	Sparse		WS		p
<i>Saxifragopsis fragarioides</i> ( <i>Saxifraga f.</i> )	Strawberry saxifrage	G3?/S2	Disj	BS, FS	WT		p
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>	Little bluestem	G5T5/S1	Disj	BS	WT	p	p

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<i>Schoenoplectus saximontanus</i> ( <i>Scirpus saximontanus</i> )	Rocky Mountain bulrush	G5/S1	Sparse		WT	p	
<i>Sclerolinon digynum</i> ( <i>Linum digynum</i> )	Yellow hard flax	G5/S2	Periph		WS	p	
<i>Scribneria bolanderi</i>	Scribner-grass	G4/S1	Periph	BS, FS	WT		p
<i>Sericocarpus oregonensis</i> ssp. <i>oregonensis</i> ( <i>Aster oregonensis</i> )	Oregon white-topped aster	G5TNR/S1	RegEnd	BS, FS	WT		h
<i>Sidalcea oregana</i> var. <i>calva</i>	Wenatchee Mountains checkermallow	G5T1/S1?	RegEnd	E	WE		p
<i>Silene scouleri</i> ssp. <i>scouleri</i>	Scouler's catchfly	G5T3T5/S1	Sparse	BS, FS	WS	p	h
<i>Silene seelyi</i>	Seely's catchfly	G3/S3	LocEnd	BS, FS	WS		p
<i>Silene spaldingii</i>	Spalding's catchfly	G2/S2	RegEnd	T	WT	p	
<i>Sisyrinchium montanum</i> var. <i>montanum</i>	Strict blue-eyed grass	G5T5/S1	Periph	BS, FS	WT	p	
<i>Sisyrinchium sarmentosum</i> ( <i>S. angustifolium</i> , misapp.)	Pale blue-eyed grass	G2/S2	LocEnd	BS, FS	WT		p
<i>Spartina pectinata</i>	Prairie cordgrass	G5/S2	Sparse	BS, FS	WS	p	
<i>Spiranthes diluvialis</i> ( <i>S. romanoffiana</i> var. <i>d.</i> )	Ute ladies-tresses	G2G3/S1	Sparse	T	WE	p	p
<i>Spiranthes porrifolia</i> ( <i>S. romanoffiana</i> var. <i>p.</i> )	Western ladies-tresses	G4/S2	Sparse	BS, FS	WS	p	p
<i>Sporobolus compositus</i> var. <i>compositus</i>	Composite dropseed	G5T5/S1	Sparse	BS	WS	p	
<i>Swertia perennis</i>	Swertia	G5/S1	Periph	BS, FS	WT		p
<i>Symphotrichum jessicae</i> ( <i>Aster jessicae</i> )	Jessica's aster	G2/S1S2	RegEnd		WE	p	
<i>Thelypodium howellii</i> ssp. <i>howellii</i>	Howell's thelypody	G1T1/SH	RegEnd		WX	h	
<i>Thelypodium sagittatum</i> ssp. <i>sagittatum</i>	Slender thelypody	G4T4/S1	Disj	BS	WT	p	
<i>Trifolium douglasii</i>	Douglas' clover	G2/S1	RegEnd	BS, FS	WE	p	
<i>Trifolium thompsonii</i>	Thompson's clover	G3/S3	LocEnd	BS, FS	WT	p	p
<i>Utricularia intermedia</i>	Flat-leaved bladderwort	G5/S2S3	Sparse	BS, FS	WS		p
<i>Veratrum insolitum</i>	Siskiyou false hellebore	G3/S1	RegEnd		WE		p
<i>Wyethia angustifolia</i>	Narrow-leaf mule's-ears	G4/S1	Periph		WS	f	h
<i>Zeltnera muehlenbergii</i> ( <i>Centaureum m.</i> )	Monterey centaury	G5?/S1	Sparse		WT	p?	p

**Table 5. Deriving Adequacy of Protection Scores.**  
Adequacy of protection is based on the number and percentage of occurrences in Gap status 1 or 2 lands and the averaged Gap score using the following formula:

If...	And ...	And ...	Then	Example
Averaged Gap score =	% of Pops Protected =	# Pops Protected =	Adequacy of Protection Score =	
4	0	0	Unprotected	<i>Lobelia kalmii</i>
2.51-3.99	0	0	Unprotected	<i>Trifolium douglasii</i>
		1-4	Inadequately Protected	<i>Cryptantha rostellata</i>
	0.01-19.99	≥ 5	Inadequately Protected	<i>Nicotiana attenuata</i>
		1-4	Inadequately protected	<i>Spiranthes diluvialis</i>
	20-99.99	≥ 5	Adequately Protected	<i>Astragalus arrectus</i>
		0.01-19.99	1-4	Inadequately Protected
1.001-2.5	0.01-19.99		≥ 5	Adequately Protected
		1-4	Adequately Protected	<i>Saxifragopsis fragarioides</i>
	20-99.99	≥ 5	Adequately Protected	<i>Howellia aquatilis</i>
		1-4	Adequately Protected	<i>Astragalus sinuatus</i>
	100	≥ 5	Adequately Protected	none
		1	100	≥ 1

*Arabis crucisetosa*, *Astragalus cusickii* var. *cusickii*, *Erigeron disparipilus*, *Eriophorum viridicarinum*, *Juncus patens*, *Lomatium laevigatum*, *Lathyrus torreyi*, *Packera macounii*, *Penstemon pennellianus*, *Sericocarpus rigidus*, *Synthyris schizantha*, and *Wyethia angustifolia*. *Potentilla glaucophylla* var. *perdissecta* was also dropped due to the recent discovery that it does not occur in Washington at all (previous reports were based on misidentified specimens of *Potentilla drummondii* or the newly described *P. jepsonii* var. *kluanensis* [Ertter 2019]).

Appendix B includes brief summaries of the current range, number of occurrences, abundance, habitat, threats, trends, managed areas, protection status, and potential conservation areas for each of the 214 target species. Gap protection status within the Columbia Plateau and East Cascades ecoregions and statewide for these species is summarized in Appendix A.

*Protection Status of Rare Plants within the Columbia Plateau and East Cascades Ecoregions*

Number of Protected Occurrences

Of the 214 vascular plant species of special concern found in the Columbia Plateau and East Cascades ecoregions, 75 (35%) are not found in any Gap 1 or Gap 2 protected areas within the two ecoregions and are considered “unprotected” (Figure 4). The remaining 139 species (65%) are found in at least one protected area within the two ecoregions. Fifty-eight species (27.1%) are found in a single protected area (Figure 4), while progressively fewer species are protected in two or more Gap status 1 or 2 areas (Figure 4). Only 24 species (11.2%) are found in five or more Gap status 1 or 2 areas (Figure 4). *Howellia aquatilis* (water howellia) has the highest number of protected occurrences within the Columbia Plateau and East Cascades ecoregions with 37.

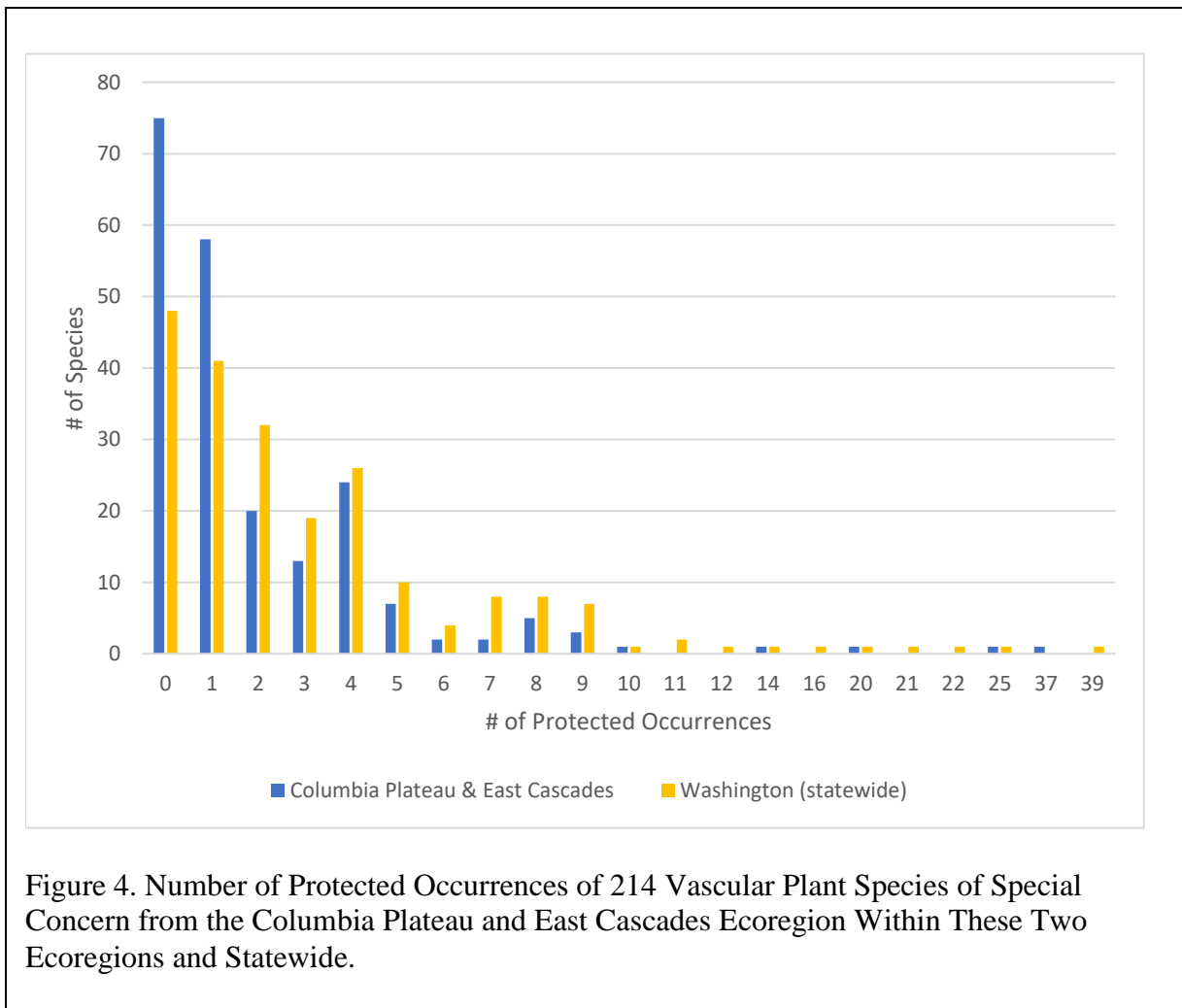


Figure 4. Number of Protected Occurrences of 214 Vascular Plant Species of Special Concern from the Columbia Plateau and East Cascades Ecoregion Within These Two Ecoregions and Statewide.

Nearly half of the plant species of concern (106 of 214 taxa) from the Columbia Plateau and East Cascades also occur in one or more additional ecoregions in Washington. In some cases these species may be protected in Gap 1 or 2 lands in those ecoregions. Figure 4 compares the degree of protection for the same species in the Columbia Plateau and East Cascades with their protection statewide. When all protected areas in Washington are considered, the number of rare species from the study area that are unprotected drops from 75 to 48 (22.4%) and the number of species protected in at least one site statewide increases from 139 to 166 (77.6%). Statewide, 48 species from the target list have at least five protected occurrences (22.4%) (Figure 4).

Percentage of Protected Occurrences

Another way to assess protection status is to calculate the percentage of all occurrences of each species in Gap status 1 or 2 lands (Figure 5). For example, *Cryptantha scoparia* is known from

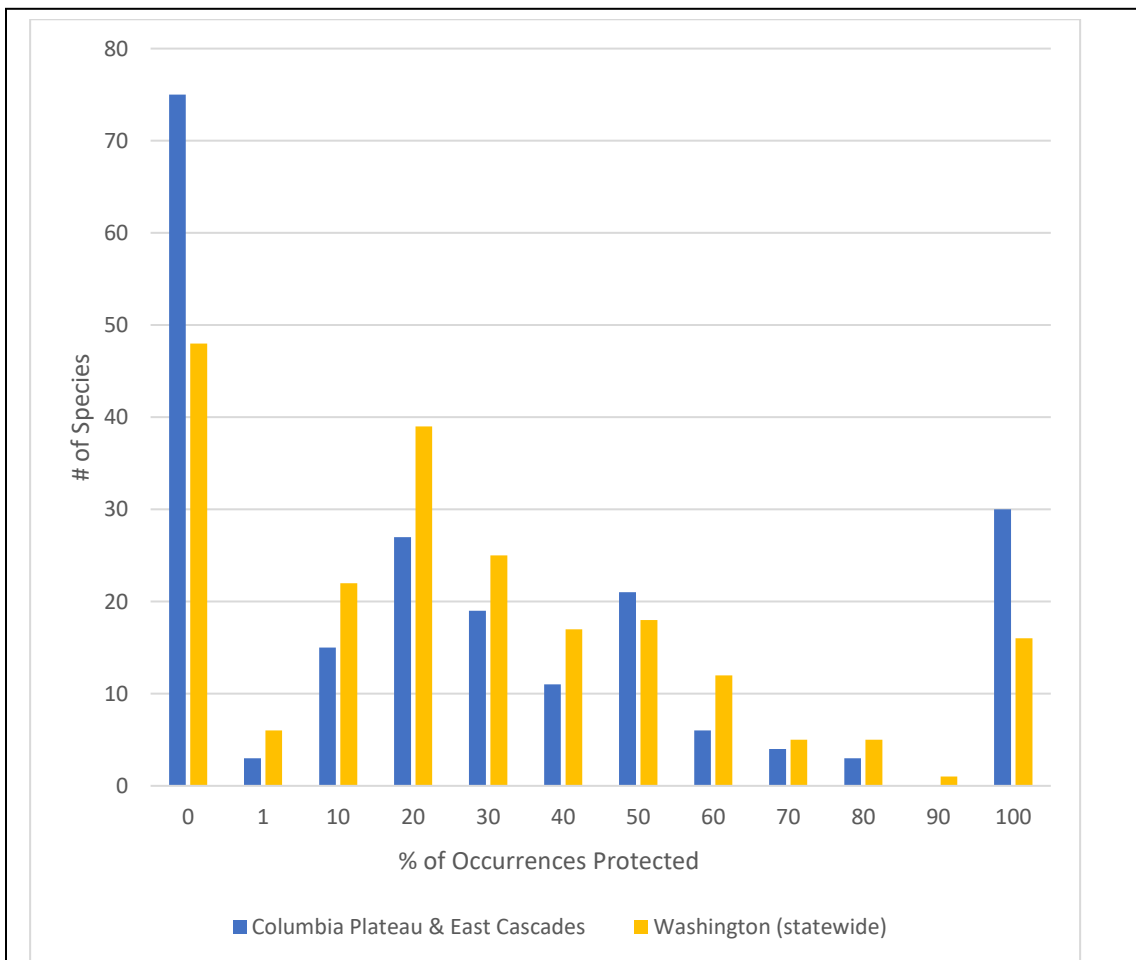


Figure 5. Percentage of Protected Occurrences of 214 Vascular Plant Species of Special Concern from the Columbia Plateau and East Cascades Ecoregion Within These Two Ecoregions and Statewide.

five occurrences in the Columbia Plateau and East Cascades ecoregions, of which one is protected; thus 20% of its occurrences in the study area are protected (Appendix A). Based on percentage of protected occurrences, 93 of the 214 target vascular plant species of concern (43.5%) have fewer than 20% of their occurrences protected within the two ecoregions (Figure 5). Sixty-four species (29.9%) have 50% or more of their occurrences protected in Gap status 1 or 2 lands. At least 30 of these species have 100% of their populations protected (Figure 5). Statewide, 76 of the 214 target species have fewer than 20% of their occurrences in protected lands and only 16 species have 100% of their populations protected (Figure 5).

Averaged Gap Protection Score

A third way to assess protection is to calculate the average Gap score for each species weighted by the percentage of occurrences in each of the four Gap categories multiplied by the Gap score (Beauvais 1999). The best possible average score for a species is 1, indicating that 100% of its occurrences are in Gap status 1 lands (Figure 6). Any averaged score between 1.01 and 2.5 indicates that the majority of occurrences are highly protected in Gap status 1 or 2 lands.

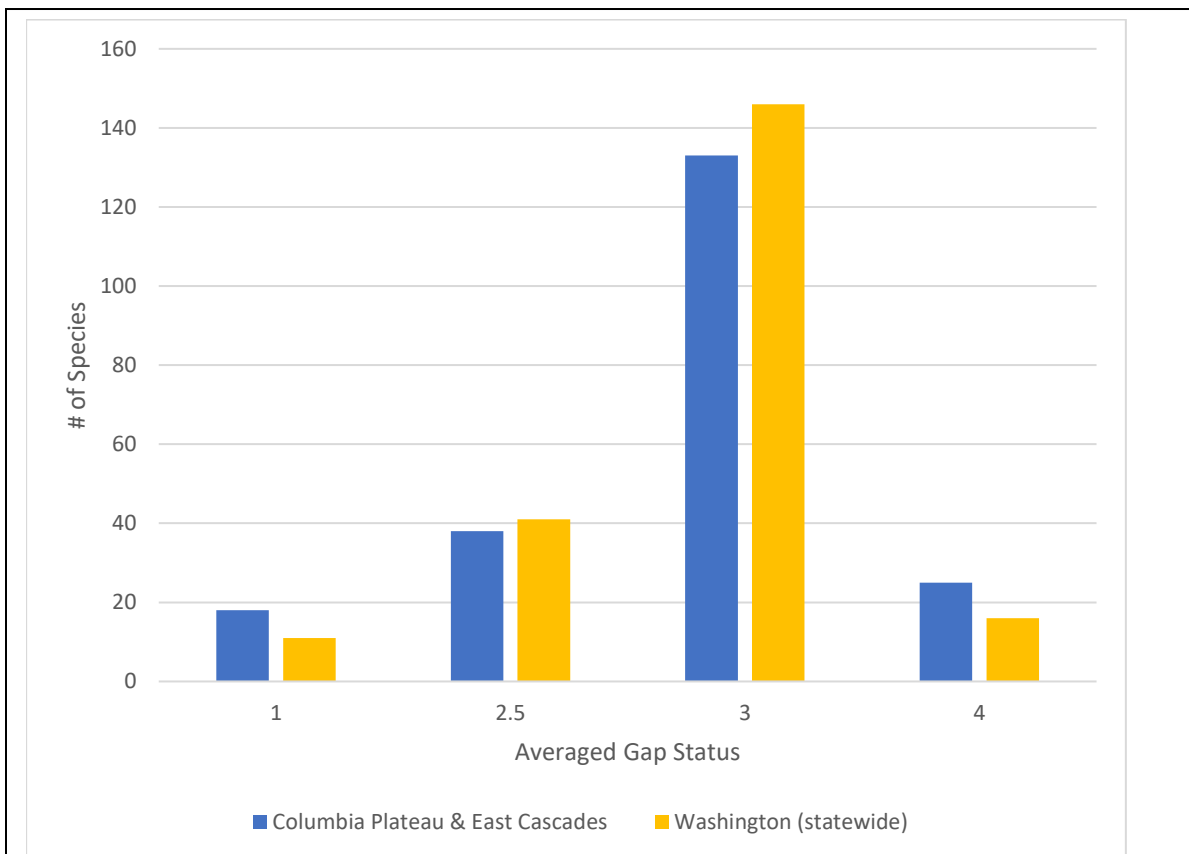


Figure 6. Averaged Gap Protection Score for 214 Vascular Plant Species of Special Concern from the Columbia Plateau and East Cascades Ecoregion Within These Two Ecoregions and Statewide.

Averaged scores between 2.5 and 3.99 indicate that a minority of occurrences are in Gap status 3 protected lands, while a score of 4 is only possible if all occurrences are completely unprotected in Gap status 4 lands. Of the 214 vascular plant taxa of concern from the two ecoregions, only 56 (26.2%) have an averaged Gap score of 2.5 or less and are highly protected (Figure 6). The averaged protection scores are slightly lower when statewide data are applied (only 52 of 214 species had an averaged Gap score less than or equal to 2.5), largely due to populations being on unprotected sites outside of the Columbia Plateau and East Cascades ecoregions (Figure 6).

#### Adequacy of Protection Score

As described in the Methods, a final “Adequacy of Protection” score was derived for each of the 214 target species based on the three preceding assessment metrics (number of protected occurrences, percentage of protected occurrences, and averaged Gap protection score). Within the Columbia Plateau and East Cascades ecoregions, 75 species (35%) are rated as Unprotected, with 0 occurrences found in Gap Status 1 or 2 lands (Figure 7). Sixty-eight species (31.8%) are considered Inadequately Protected for not meeting the threshold criteria (5 or more protected occurrences, 20% or more protected occurrences, or an average Gap score of 2 or less). At least 41 species (19.2%) are Adequately Protected based on meeting at least two out of three of the criteria cited above. Thirty species (14%) are Completely Protected in the two ecoregions, with 100% of their occurrences in Gap Status 1 or 2 lands (Figure 7). Statewide, 48 of the 214 target species (22.4%) are Unprotected, 86 (40.2%) are Inadequately Protected, 64 (29.9%) are Adequately Protected, and 16 (7.5%) are Completely Protected (Figure 8). When populations from the entire state are considered, the number of Unprotected and Completely Protected species drops, while the number of Inadequately and Adequately Protected species increases. This is entirely related to the larger sample sizes available at the statewide level and the increased number of protected and unprotected occurrences added to the sample pool.

#### Protection by Habitat Types

The vascular plant species of special concern in the Columbia Plateau and East Cascades ecoregions can be divided into seven broad species groups based on their primary habitat type (Table 6). These categories include alpine, shrub-steppe and grasslands, forests, montane grasslands and meadows, Palouse prairie, sparsely vegetated (rocks, cliffs, talus and sand dunes), and wetlands (Rocchio and Crawford 2015). Alpine species comprise only 5.1% of the rare species in the area and are restricted to the higher elevations of the Cascade and Wenatchee mountains in the East Cascades ecoregion. Shrub-steppe and grasslands species are found in the hottest and driest portions of the Columbia Plateau and East Cascades ecoregions and make up 22.4% of the rare plant flora. Forest and montane meadow species occur primarily in the East Cascades ecoregion and represent 4.2 and 10.7% of the rare flora, respectively. Palouse prairie species are restricted to native grasslands of the Columbia Plateau in eastern Washington and contribute 5.6% of the rare flora. Species restricted to sparsely vegetated rock outcrops, cliffs, talus, and sand dunes occur throughout both ecoregions, but are especially prevalent along the Columbia River and its tributaries and in the channeled scablands. These taxa add 13.1% to the



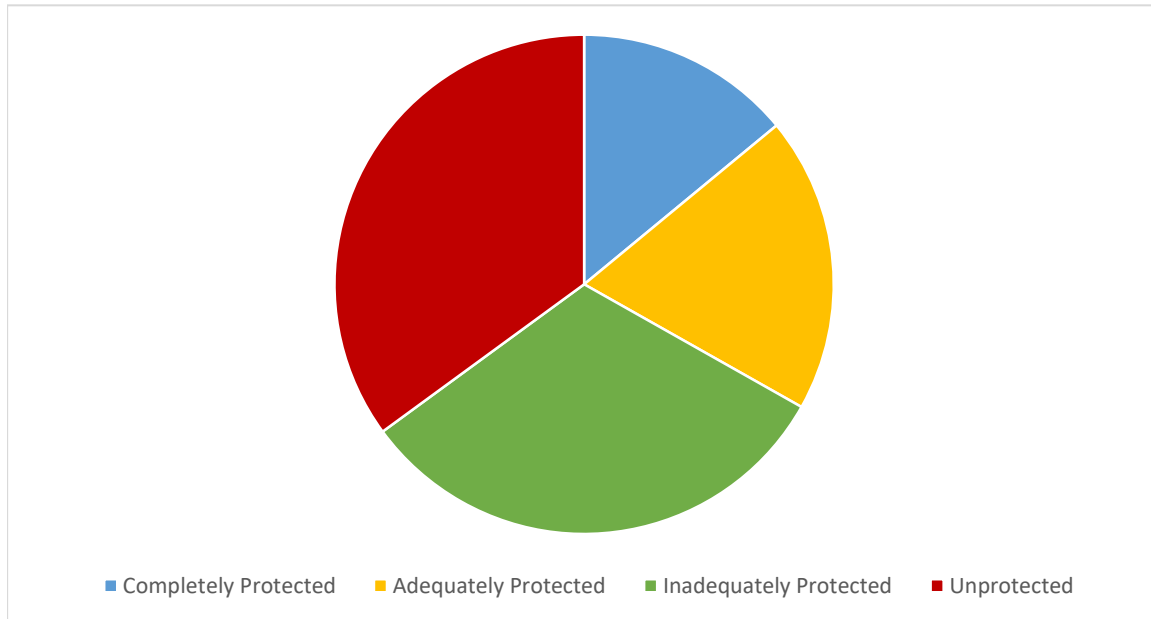


Figure 7. Adequacy of Protection for 214 Vascular Plant Species of Special Concern from the Columbia Plateau and East Cascades Ecoregion Within These Two Ecoregions.

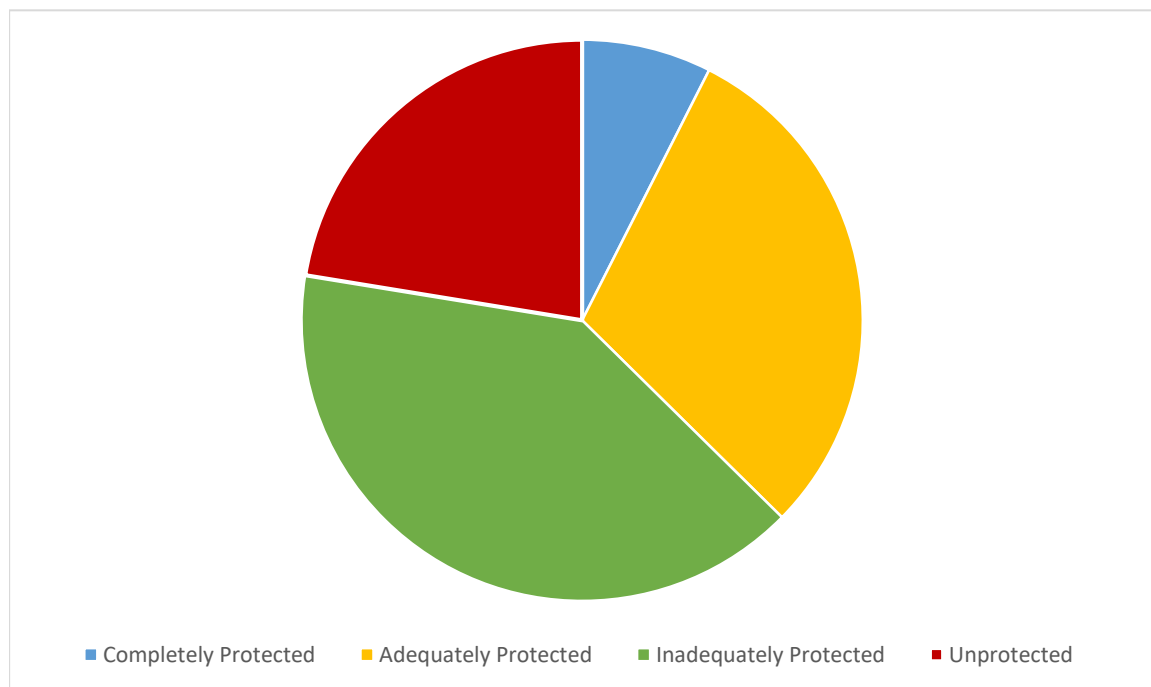


Figure 8. Adequacy of Protection for 214 Vascular Plant Species of Special Concern from the Columbia Plateau and East Cascades Ecoregion in the Entire State of Washington.

**Table 6. Protection Status of 214 Vascular Plant Species of Special Concern in the Columbia Plateau and East Cascades Ecoregions**

Species Group	Definition	# and % of Species			
		Completely Protected	Adequately Protected	Inadequately Protected	Unprotected
All Vascular Plant Species of Special Concern (n =214)		30 (14%)	29 (13.6%)	80 (37.4%)	75 (35%)
Alpine (n = 11)	Treeline or above on Cascades crest	6 (54.5%)	3 (27.3%)	1 (9.1%)	1 (9.1%)
Shrub-steppe (n = 48)	Xeric shrub and grasslands	4 (8.3%)	9 (18.8)	21 (43.8%)	14 (29.2%)
Forests (n = 9)	Montane to subalpine conifer or deciduous timberlands	1 (11.1%)	0 (0%)	2 (22.2%)	6 (66.7%)
Montane grasslands & meadows (n = 23)	Montane to subalpine openings in forests dominated by grasses & herbs	3 (13%)	1 (4.3%)	10 (43.5%)	9 (39.1%)
Palouse prairie (n = 12)	Low elevation Palouse Prairie grasslands	0 (0%)	4 (33.3%)	5 (41.7%)	3 (25%)
Sparsely-vegetated (rock cliffs & talus) (n = 28)	Bedrock outcrops, sand dunes, and talus fields in mountains or scablands	1 (3.6%)	2 (7.1%)	14 (50%)	11 (39.3%)
Wetlands (n = 83)	Lakes, rivers, ponds, vernal pools, and moist shorelines	15 (18.1%)	10 (12%)	27 (32.5%)	31 (37.3%)

**Table 7. Statewide Protection Status of 214 Vascular Plant Species of Special Concern from the Columbia Plateau and East Cascades Ecoregions**

Species Group	Definition	# and % of Species			
		Completely Protected	Adequately Protected	Inadequately Protected	Unprotected
All Vascular Plant Species of Special Concern (n = 214)		16 (7.5%)	53 (24.8%)	97 (45.3%)	48 (22.4%)
Alpine (n = 11)	Treeline or above on Cascades crest	4 (36.4%)	7 (63.6%)	0 (0%)	0 (0%)
Shrub-steppe (n = 48)	Xeric shrub and grasslands	4 (8.3%)	9 (18.8)	22 (45.8%)	13 (27.1%)
Forests (n = 9)	Montane to subalpine conifer or deciduous timberlands	1 (11.1%)	1 (11.1%)	6 (66.7%)	1 (11.1%)
Montane grasslands & meadow (n = 23)	Montane to subalpine openings in forests dominated by grasses & herbs	0 (0%)	7 (30.4%)	12 (52.2%)	4 (17.4%)
Palouse prairie (n = 12)	Low elevation Palouse Prairie grasslands	0 (0%)	4 (33.3%)	7 (58.4%)	1 (8.3%)
Sparsely vegetated (rock cliffs & talus) (n = 28)	Bedrock outcrops, sand dunes, and talus fields in mountains or scablands	1 (3.6%)	4 (14.3%)	15 (53.6%)	8 (28.6%)
Wetlands (n = 83)	Lakes, rivers, ponds, vernal pools, and moist shorelines	6 (7.2%)	21 (25.3%)	35 (42.2%)	21 (25.3%)

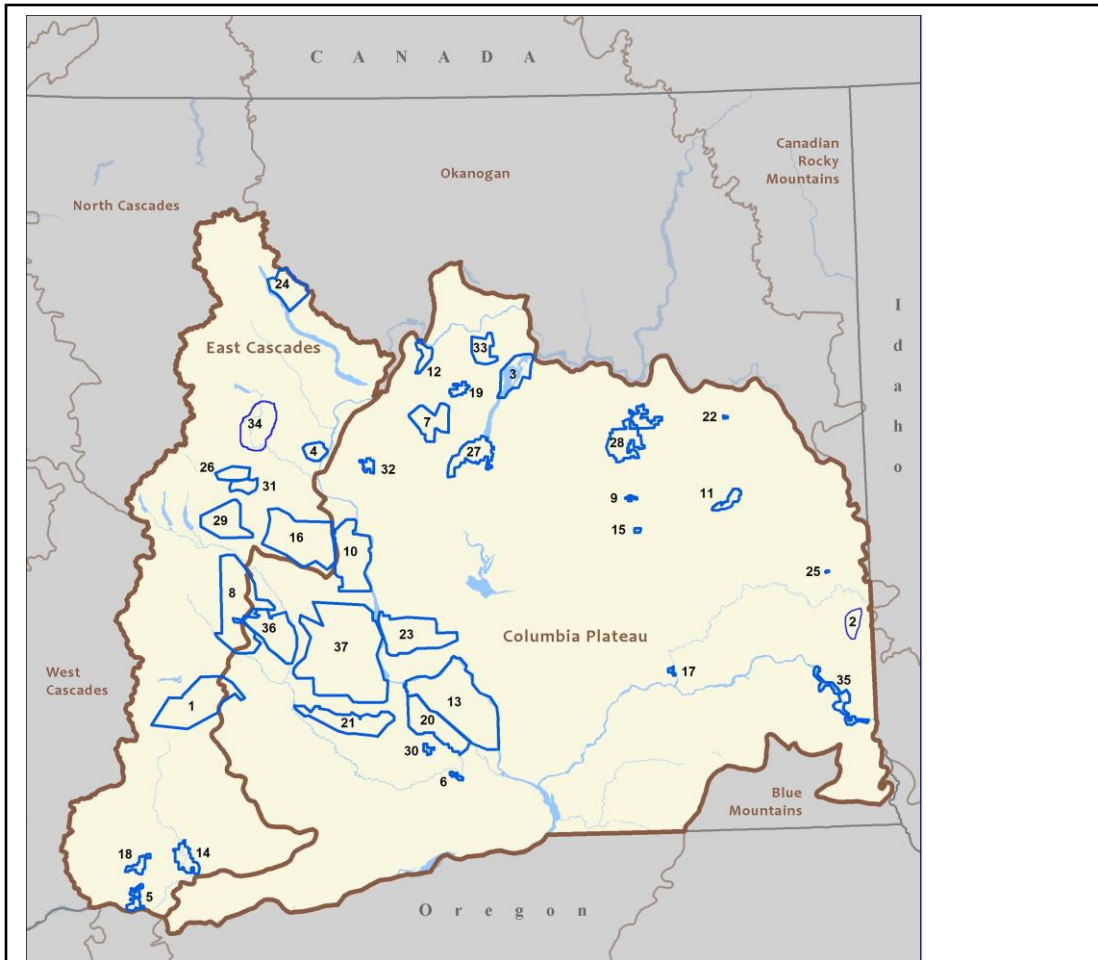
total rare plant flora. Lastly, wetland species occur throughout both ecoregions and are the most species-rich of the seven groups, representing 38.8% of the rare plant flora. Rare wetland plants are strongly associated with vernal pools, gravel bars along rivers, and springs or streams within the Columbia Plateau (Table 6).

Within these habitat groups, alpine species are the best protected, with nine of 11 species (81.8%) from the East Cascades ecoregion completely or adequately protected. Much of the alpine habitat in the East Cascades is within designated Wilderness Areas or North Cascades National Park (Table 6). No other habitat group has more than one-third of its species completely or adequately protected within the Columbia Plateau and East Cascades ecoregions. The least protected species are from sparsely vegetated (rock outcrops, talus, and sand dunes) (10.7%), coniferous and deciduous upland forests (11.1%), and montane grasslands and meadows (17.3%). The two most widespread habitat types in the two ecoregions (shrub-steppe and Palouse prairie) have 27.1% and 33.3% of their rare species completely or adequately protected (Table 6).

When the same plant species of concern from the Columbia Plateau and East Cascades ecoregions are assessed statewide (Table 7), alpine species are even better protected (100% of known occurrences of the 11 taxa are completely or adequately protected). Likewise, almost double the number of rare forest and montane grassland and meadow species are completely or adequately protected when occurrences from the North Cascades, West Cascades, and Okanogan ecoregions are considered. Protection for rare wetland and sparsely vegetated species also improves statewide, though only by 2.4-7.2% (Table 7). Shrub-steppe and Palouse prairie species, however, receive the same level of protection in the Columbia Plateau and East Cascades as they do statewide, as these types are essentially restricted to the two ecoregions.

### ***Potential Inventory and Conservation Sites***

The protection status of currently unprotected or inadequately protected plant species of concern could be improved by establishing new Gap status 1 or 2 management areas in the Columbia Plateau and East Cascades ecoregions. Thirty-seven unprotected or under-surveyed areas in the two ecoregions were identified by Fertig et al. (2017) and are depicted in Figure 9. These areas contain known or potential habitat for over 90% of the rare vascular plant species identified from the two ecoregions, including all 48 species that are unprotected statewide (Tables 8 and 9). Additional inventory data, in conjunction with detailed land ownership, management, and vegetation information are needed before specific locations within these areas are identified for conservation designation or changes in management. The areas shown in Figure 9 are described in greater detail in Fertig et al. (2017).



**Figure 9. Potential Conservation Sites in the Columbia Plateau and East Cascades Ecoregions.** Modified from Fertig et al. (2017).

- |  |   |
|--|---|
| 1. Ahtanum                                 | 20. Rattlesnake Hills                       |
| 2. Albion Road/Smoot Hill/<br>Kamiak Butte | 21. Rattlesnake Mountains                   |
| 3. Banks Lake                              | 22. Reardan Audubon Lake                    |
| 4. Burch Mountain & Swakane<br>Canyon      | 23. Saddle Mountain                         |
| 5. Catherine Creek                         | 24. Sawtooth Ridge to Lake Chelan           |
| 6. Chandler Butte                          | 25. Steptoe Butte                           |
| 7. Chester Butte                           | 26. Stuart Range                            |
| 8. Cleman Mountain                         | 27. Sun Lakes                               |
| 9. Coal Creek-Lamona                       | 28. Swan lakes                              |
| 10. Colockum & Quilomene                   | 29. Teanaway                                |
| 11. Fishtrap Lake-Miller Ranch             | 30. Thonrton Unit                           |
| 12. Foster Creek                           | 31. Three Brothers-Teanaway<br>Range        |
| 13. Hanford                                | 32. Titchenal Canyon                        |
| 14. Klickitat River                        | 33. Trefry Canyon to Leahy                  |
| 15. Marcellus                              | 34. Tumwater Mountain-Chumstick<br>Mountain |
| 16. Naneum & Mission Peak                  | 35. Wawawai Canyon to Silcott               |
| 17. Palouse Falls                          | 36. Wenas Wildlife Area                     |
| 18. Panakanick Prairie                     | 37. YTC                                     |
| 19. Pot Hills                              |   |

**Table 8. Potential Conservation Sites for Vascular Plant Species of Special Concern in the Columbia Plateau Ecoregion** (see Figure 9 for locations).

Conservation Site	Rare Species Known to be Present	Rare Species Potentially Present
Albion Road/Smoot Hill/Kamiak Butte	<i>Astragalus arrectus</i> , <i>Penstemon wilcoxii</i> , <i>Pyrrocoma liatrifomis</i> , <i>Silene spaldingii</i> , <i>Symphotrichum jessicae</i> , <i>Trifolium douglasii</i>	<i>Astragalus riparius</i> , <i>Calochortus macrocarpus</i> var. <i>maculosus</i> , <i>Calochortus nitidus</i> , <i>Eryngium articulatum</i> , <i>Erythranthe pulsiferae</i> , <i>Ribes oxyacanthoides</i> var. <i>irriguum</i> , <i>Sabulina pusilla</i> , <i>Sclerolinon digynum</i> , <i>Trifolium douglasii</i> .
Banks Lake	<i>Allium constrictum</i> , <i>Carex vallicola</i> , <i>Eremothera pygmaea</i> , <i>Juncus uncialis</i> , <i>Penstemon wilcoxii</i> , <i>Phacelia tetramera</i> , <i>Polycytenium fremontii</i> , <i>Thelypodium sagittatum</i> ssp. <i>sagittatum</i>	<i>Erythranthe suksdorfii</i> , <i>Micromonolepis pusilla</i>
Chandler Butte	none known	<i>Lipocarpha aristulata</i>
Chester Butte	<i>Cryptantha gracilis</i> , <i>Eremothera pygmaea</i> , <i>Erythranthe suksdorfii</i> , <i>Hackelia hispida</i> var. <i>disjuncta</i> , <i>Juncus tiehmii</i> , <i>Nicotiana attenuata</i>	<i>Allium constrictum</i> , <i>Astragalus tenellus</i> , <i>Juncus uncialis</i> , <i>Lathrocasis tenerrima</i> , <i>Micromonolepis pusilla</i> , <i>Phacelia tetramera</i> , <i>Sandbergia perplexa</i> , <i>Theypodium sagittatum</i>
Coal Creek-Lamona	<i>Polemonium pectinatum</i> , <i>Silene spaldingii</i>	None known
Colockum and Quilomene	<i>Astragalus misellus</i> var. <i>pauper</i> , <i>Astragalus sinuatus</i> , <i>Isöetes minima</i> , <i>Nicotiana attenuata</i> , <i>Pediocactus nigrispinus</i> , <i>Pyrrocoma hirta</i> var. <i>sonchifolia</i>	<i>Anemone patens</i> var. <i>multifida</i> , <i>Astragalus arrectus</i> , <i>Cryptantha leucophaea</i> , <i>Spiranthes diluvialis</i> , <i>Trifolium thompsonii</i>
Fishtrap Lake-Miller Ranch	<i>Eriophorum viridicarinatum</i> , <i>Howellia aquatilis</i> , <i>Juncus uncialis</i> , <i>Pilularia americana</i> , <i>Silene spaldingii</i>	<i>Carex cordillerana</i> , <i>Carex sychnocephala</i> , <i>Cypripedium parviflorum</i> , <i>Eleocharis coloradoensis</i> , <i>Lomatium tenuissimum</i> , <i>Muhlenbergia glomerata</i> , <i>Myosurus sessilis</i> , <i>Polygonum austinae</i> , <i>Schoenoplectus saximontanus</i> .
Foster Creek	none known	<i>Micromonolepis pusilla</i> , <i>Phacelia tetramera</i> , <i>Sisyrinchium montanum</i> var. <i>montanum</i>
Hanford	<i>Aliciella leptomeria</i> , <i>Ammannia robusta</i> , <i>Artemisia campestris</i> var. <i>wormskioldii</i> , <i>Astragalus columbianus</i> , <i>Astragalus geyeri</i> var. <i>geyeri</i> , <i>Calyptridium roseum</i> , <i>Cryptantha leucophaea</i> , <i>Cryptantha scoparia</i> , <i>Cryptantha spiculifera</i> , <i>Cuscuta denticulata</i> , <i>Eatonella nivea</i> , <i>Eremogone franklinii</i> var. <i>thomsonii</i> , <i>Eremothera minor</i> , <i>Eremothera pygmaea</i> , <i>Eriogonum codium</i> , <i>Erythranthe suksdorfii</i> , <i>Hypericum majus</i> , <i>Lipocarpha aristulata</i> , <i>Loeflingia squarrosa</i> , <i>Lomatium tuberosum</i> , <i>Myosurus alopecuroides</i> , <i>Nicotiana attenuata</i> , <i>Oenothera cespitosa</i> ssp. <i>cespitosa</i> , <i>Physaria douglasii</i> ssp. <i>tuplashensis</i> , <i>Rorippa columbiae</i> , <i>Rotala ramosior</i> , <i>Sporobolus compositus</i> var. <i>compositus</i> .	<i>Astragalus kentrophyta</i> var. <i>douglasii</i> , <i>Eriogonum maculatum</i> , <i>Leymus flavescens</i> , <i>Micromonolepis pusilla</i> , <i>Myosurus sessilis</i> , <i>Oenothera cespitosa</i> ssp. <i>marginata</i> , <i>Spiranthes diluvialis</i> .

<b>Conservation Site</b>	<b>Rare Species Known to be Present</b>	<b>Rare Species Potentially Present</b>
Marcellus (existing NAP could be expanded)	<i>Erythranthe suksdorfii</i> , <i>Juncus uncialis</i> , <i>Myosurus alopecuroides</i> , <i>Pilularia americana</i> .	<i>Cryptantha spiculifera</i> , <i>Myosurus sessilis</i> , <i>Polemonium pectinatum</i> , <i>Silene spaldingii</i>
Palouse Falls	<i>Allium bisceptrum</i> , <i>Spartina pectinata</i> .	<i>Lomatium serpentinum</i>
Pot Hills	none known	<i>Cryptantha scoparia</i> , <i>Micromonolepis pusilla</i> , <i>Nicotiana attenuata</i> , <i>Phacelia tetramera</i>
Rattlesnake Hills	<i>Astragalus columbianus</i> , <i>Cryptantha scoparia</i> , <i>Cryptantha spiculifera</i> , <i>Eremothera minor</i> , <i>Eremothera pygmaea</i> , <i>Oenothera cespitosa</i> ssp. <i>cespitosa</i> .	none known
Rattlesnake Mountain	<i>Cryptantha scoparia</i> .	<i>Astragalus columbianus</i> , <i>Cryptantha spiculifera</i> , <i>Nicotiana attenuata</i>
Reardan Audubon Lake		<i>Howellia aquatilis</i>
Saddle Mountain	<i>Ammannia robusta</i> , <i>Astragalus geyeri</i> var. <i>geyeri</i> , <i>Cryptantha leucophaea</i> , <i>Cryptantha spiculifera</i> , <i>Eremothera pygmaea</i> , <i>Lomatium tuberosum</i> , <i>Sabulina nuttallii</i> var. <i>fragilis</i> , <i>Oenothera cespitosa</i> ssp. <i>cespitosa</i> , <i>Oxytropis campestris</i> var. <i>wanapum</i> .	<i>Corispermum pallidum</i> , <i>Corispermum villosum</i>
Stephoe Butte	<i>Calochortus nitidus</i> , <i>Pyrrocoma liatrifomis</i> , <i>Silene scouleri</i> ssp. <i>scouleri</i> , <i>Silene spaldingii</i> .	<i>Polemonium pectinatum</i>
Sun Lakes	<i>Cryptantha gracilis</i> , <i>Cryptantha scoparia</i> , <i>Eleocharis rostellata</i> , <i>Eremothera pygmaea</i> , <i>Erythranthe suksdorfii</i> , <i>Hackelia hispida</i> var. <i>disjuncta</i> , <i>Phacelia tetramera</i> , <i>Polygonum austiniiae</i> .	<i>Carex vallicola</i>
Swanson Lakes	<i>Carex sychnocephala</i> , <i>Juncus uncialis</i> , <i>Myosurus alopecuroides</i> , <i>Navarretia leucocephala</i> ssp. <i>diffusa</i> , <i>Pilularia americana</i> , <i>Silene spaldingii</i>	<i>Myosurus sessilis</i> , <i>Polemonium pectinatum</i> .
Thornton Unit	None known	<i>Mimetanthe pilosa</i>
Titchenal Canyon	None known	<i>Astragalus misellus</i> var. <i>pauper</i> , <i>Cryptantha leucophaea</i> , <i>Eremothera pygmaea</i> , <i>Hackelia hispida</i> var. <i>disjuncta</i> , <i>Nicotiana attenuata</i> , <i>Pediocactus nigrispinus</i> , <i>Phacelia lenta</i>
Trefry Canyon to Leahy	<i>Astragalus tenellus</i> .	<i>Allium constrictum</i> , <i>Thelypodium sagittatum</i> ssp. <i>sagittatum</i> .
Wawawai Canyon to Silcott	<i>Astragalus riparius</i> , <i>Calochortus macrocarpus</i> var. <i>maculosus</i> , <i>Calochortus nitidus</i> , <i>Cryptantha rostellata</i> , <i>Lomatium rollinsii</i> , <i>Lomatium serpentinum</i> , <i>Pyrrocoma liatrifomis</i> , <i>Rubus nigerrimus</i> , <i>Silene spaldingii</i> , <i>Symphyotrichum jessicae</i> .	<i>Astragalus arthurii</i> , <i>Bergia texana</i> , <i>Erigeron disparipilus</i> , <i>Erythranthe patula</i> , <i>Lupinus sabinianus</i> , <i>Myriopteris gracilis</i> , <i>Pyrrocoma scaberula</i> , <i>Ribes cereum</i> var. <i>colubrinum</i> .

Conservation Site	Rare Species Known to be Present	Rare Species Potentially Present
Wenas Wildlife Area	<i>Astragalus misellus</i> var. <i>pauper</i> , <i>Erigeron basalticus</i> , <i>Lomatium lithosolamans</i> , <i>Lomatium tuberosum</i> , <i>Pediocactus nigrispinus</i> , <i>Pyrrocoma hirta</i> var. <i>sonchifolia</i> , <i>Spiranthes porrifolia</i>	<i>Lomatium knokei</i> , <i>Phacelia lenta</i> .
Yakima Training Center (YTC)	<i>Astragalus columbianus</i> , <i>Astragalus misellus</i> var. <i>pauper</i> , <i>Chylismia scapoidea</i> ssp. <i>brachycarpa</i> , <i>Collomia macrocalyx</i> , <i>Cryptantha gracilis</i> , <i>Cryptantha leucophaea</i> , <i>Cryptantha rostellata</i> , <i>Cryptantha scoparia</i> , <i>Eatonella nivea</i> , <i>Eleocharis rostellata</i> , <i>Eremothera pygmaea</i> , <i>Erigeron basalticus</i> , <i>Erythranthe suksdorfii</i> , <i>Gilia inconspicua</i> , <i>Lobelia kalmii</i> , <i>Lomatium lithosolamans</i> , <i>Lomatium tuberosum</i> , <i>Sabulina nuttallii</i> var. <i>fragilis</i> , <i>Nicotiana attenuata</i> , <i>Oenothera cespitosa</i> ssp. <i>cespitosa</i> , <i>Pediocactus nigrispinus</i> .	<i>Eriogonum codium</i> , <i>Eriogonum maculatum</i> , <i>Mimetanthe pilosa</i>

## Discussion

The Columbia Plateau and East Cascades ecoregions have the richest native floras and highest number of vascular plant species of conservation concern of any of the nine ecoregions of Washington. Currently, only 69 of the 214 vascular plant species of concern from these two ecoregions are completely or adequately protected within existing Gap status 1 or 2 protected areas in the state (Table 6). Thirty-seven new or existing (but under-surveyed) potential conservation sites (Figure 9) would enhance the protection status for the remaining 145 inadequately protected and unprotected species. Knowing the conservation status, distribution, and habitat patterns of inadequately protected and unprotected species through Gap analysis allows conservation practitioners and land managers to more systematically target and prioritize species and areas for conservation attention.

Of the two ecoregions, the East Cascades has the greater number of completely or adequately protected vascular plant species of concern (48) and the higher acreage of Gap status 1 or 2 protected areas (23.8%) (Tables 1 and 2). The percentage of protected area in the East Cascades is more than double the global average of 11.5% (Brooks et al. 2004) and exceeds the goal of 20% recommended by Myers (1979) based on island biogeographic theory. In contrast, the Columbia Plateau has only 32 completely or adequately protected vascular plant species of concern and just 4.6% of the ecoregion is designated as Gap status 1 or 2 lands. While more work is needed in the Columbia Plateau, sizeable protection gaps remain in both ecoregions that can be filled through targeted conservation action.



**Table 9. Potential Conservation Sites for Vascular Plant Species of Special Concern in the East Cascades Ecoregion** (see Figure 9 for locations).

Conservation Site	Rare Species Known to be Present	Rare Species Potentially Present
Ahtanum	<i>Allium campanulatum</i> , <i>Erythranthe pulsiferae</i> , <i>Lomatium lithosolamans</i> , <i>Silene scouleri</i> ssp. <i>scouleri</i> . .	<i>Heterotheca oregona</i> , <i>Mimetanthe pilosa</i> , <i>Nicotiana attenuata</i> , <i>Oenothera flava</i> ssp. <i>flava</i> , <i>Potentilla breweri</i> , <i>Thelypodium howellii</i> ssp. <i>howellii</i>
Burch Mountain and Swakane Canyon	<i>Astragalus arrectus</i> , <i>Chaenactis thompsonii</i> , <i>Hackelia cinerea</i> , <i>Petrophytum cinerascens</i> , <i>Trifolium thompsonii</i>	<i>Cryptantha spiculifera</i> , <i>Hackelia hispida</i> var. <i>disjuncta</i> , <i>Nicotiana attenuata</i> , <i>Penstemon eriantherus</i> var. <i>whitedii</i> , <i>Schizachyrium scoparium</i> var. <i>scoparium</i> , <i>Silene scouleri</i> ssp. <i>scouleri</i>
Catherine Creek	<i>Collinsia sparsiflora</i> var. <i>sparsiflora</i> , <i>Erythranthe pulsiferae</i> , <i>Githopsis specularioides</i> , <i>Isöetes nuttallii</i> , <i>Leptosiphon bolanderi</i> , <i>Lomatium suksdorfii</i> , <i>Meconella oregana</i> , <i>Navarettia tagetina</i> , <i>Penstemon barrettiae</i> , <i>Scribneria bolanderi</i> , <i>Spiranthes porrifolia</i>	<i>Astragalus diaphanus</i> , <i>Bergia texana</i> , <i>Blitum spathulatum</i> , <i>Bolandra oregana</i> , <i>Chrysopsis chrysophylla</i> var. <i>chrysophylla</i> , <i>Cusickiella douglasii</i> , <i>Damasonium californicum</i> , <i>Diplacus cusickioides</i> , <i>Erythranthe jungermannioides</i> , <i>Lasthenia glaberrima</i> , <i>Lomatium laevigatum</i> , <i>Montia diffusa</i> , <i>Oxalis suksdorfii</i> , <i>Packera bolanderi</i> var. <i>harfordii</i> , <i>Penstemon deustus</i> var. <i>variabilis</i> , <i>Plectritis brachystemon</i> , <i>Potentilla newberryi</i> , <i>Salix sessilifolia</i> , <i>Sericocarpus oregonensis</i> ssp. <i>oregonensis</i> , <i>Veratrum insolitum</i> , <i>Wyethia angustifolia</i>
Cleman Mountain	None known	<i>Erythranthe suksdorfii</i> , <i>Heterotheca oregana</i> , <i>Lomatium knokei</i> , <i>Lomatium lithosolamans</i> , <i>Nicotiana attenuata</i> , <i>Pediocactus nigrispinus</i> , <i>Pyrrocoma hirtifolia</i> var. <i>sonchifolia</i>
Klickitat River (existing NRCA could be expanded)	<i>Astragalus arrectus</i> , <i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> , <i>Githopsis specularioides</i> , <i>Hackelia diffusa</i> var. <i>diffusa</i> , <i>Leptosiphon bolanderi</i> , <i>Lomatium suksdorfii</i> , <i>Penstemon barrettiae</i> , <i>Ranunculus tritermatus</i> , <i>Spiranthes porrifolia</i> .	<i>Astragalus diaphanus</i> , <i>Camassia cusickii</i> , <i>Cirsium remotifolium</i> var. <i>remotifolium</i> , <i>Cusickiella douglasii</i> , <i>Juncus kelloggii</i> , <i>Lasthenia glaberrima</i> , <i>Plectritis brachystemon</i>
Naneum and Mission Peak	<i>Agoseris aurantiaca</i> var. <i>carnea</i> , <i>Agoseris elata</i> , <i>Anemone patens</i> var. <i>multifida</i> , <i>Chaenactis thompsonii</i> , <i>Delphinium viridiscens</i> , <i>Oxytropis campestris</i> var. <i>cusickii</i> , <i>Phacelia minutissima</i> , <i>Potentilla breweri</i> , <i>Pyrrocoma hirta</i> var. <i>sonchifolia</i>	<i>Boechera cascadenensis</i> , <i>Penstemon eriantherus</i> var. <i>whitedii</i> , <i>Sidalcea oregana</i> var. <i>calva</i>

<b>Conservation Site</b>	<b>Rare Species Known to be Present</b>	<b>Rare Species Potentially Present</b>
Panakanick Prairie	<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> , <i>Isöetes nuttallii</i> , <i>Orthocarpus bracteosus</i> .	<i>Agoseris elata</i> , <i>Aphyllon californicum</i> ssp. <i>grayanum</i> , <i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> , <i>Carex densa</i> , <i>Cirsium remotifolium</i> var. <i>remotifolium</i> , <i>Eryngium petiolatum</i> , <i>Erythranthe washingtonensis</i> , <i>Juncus hemiendytus</i> var. <i>hemiendytus</i> , <i>Juncus kelloggii</i> , <i>Liparis loeselii</i> , <i>Ophioglossum pusillum</i> , <i>Polygonum parryi</i> , <i>Rotala ramosior</i> , <i>Sisyrinchium sarmentosum</i> , <i>Utricularia intermedia</i> , <i>Wyethia angustifolia</i> , <i>Zeltnera muehlenbergii</i> .
Sawtooth Ridge to Lake Chelan	<i>Erigeron salishii</i> , <i>Eritrichium argenteum</i> , <i>Erythranthe suksdorfii</i> , <i>Githopsis specularioides</i> , <i>Packera bolanderi</i> var. <i>harfordii</i> , <i>Pellaea brachyptera</i> , <i>Saxifraga hyperborea</i> , <i>Silene scouleri</i> ssp. <i>scouleri</i> , <i>Spiranthes porrifolia</i> .	<i>Botrychium paradoxum</i> , <i>Cicuta bulbifera</i> , <i>Eleocharis atropurpurea</i> , <i>Luzula arcuata</i> ssp. <i>unalaschcensis</i> , <i>Lycopodium lagopus</i> , <i>Oxytropis campestris</i> var. <i>gracilis</i> , <i>Parnassia kotzebuei</i>
Stuart Range	<i>Carex proposita</i> , <i>Erigeron salishii</i> , <i>Geum rossii</i> var. <i>turbinatum</i> , <i>Hackelia taylori</i> , <i>Silene seeleyi</i>	<i>Chaenactis thompsonii</i> , <i>Cryptogramma stelleri</i> , <i>Delphinium viridescens</i> , <i>Kalmia procumbens</i> , <i>Pedicularis pulchella</i> , <i>Pellaea breweri</i> , <i>Salix vestita</i> , <i>Sidalcea oregana</i> var. <i>calva</i> , <i>Swertia perennis</i> .
Teanaway	<i>Juncus howellii</i>	<i>Erythranthe suksdorfii</i> , <i>Ophioglossum pusillum</i>
Three Brothers-Teanaway Range	<i>Chaenactis thompsonii</i> , <i>Cryptogramma stelleri</i> , <i>Erigeron salishii</i> , <i>Geum rossii</i> var. <i>depressum</i> , <i>Pellaea breweri</i> , <i>Silene seeleyi</i>	<i>Botrychium hesperium</i> , <i>Carex pauciflora</i> , <i>Carex scirpoidea</i> ssp. <i>scirpoidea</i> , <i>Gentiana douglasiana</i> , <i>Salix pseudomonticola</i> , <i>Saxifragopsis fragarioides</i>
Tumwater Mountain-Chumstick Mountain	<i>Chaenactis thompsonii</i> , <i>Hackelia venusta</i> , <i>Lomatium roneorum</i> , <i>Nicotiana attenuata</i> , <i>Saxifragopsis fragarioides</i> , <i>Silene scouleri</i> ssp. <i>scouleri</i> , <i>Silene seelyi</i>	<i>Delphinium viridescens</i> , <i>Sidalcea oregana</i> var. <i>calva</i>

It is important to recognize that Gap analysis has some limitations. Presence of a species of concern within a protected area does not assure that the species is receiving adequate management attention, or that the population size or demographic structure is sufficient for long term viability. Changes in habitat condition due to climate change may also confound efforts to create a protected area network capturing the full array of rare species in the area (Dawson et al. 2011). Many protected areas have been inadequately surveyed, and so their true contribution to the protection of our native flora may be under-represented. Filling such knowledge gaps may be more cost-effective than acquiring new protected areas.

The conservation status of priority plant species in the two ecoregions presented here is a snapshot in time and prone to change with each new discovery or site revisit. The status of protected areas is also subject to frequent change, as registry properties are sold, federal designations are modified, or new preserves are acquired by governmental agencies or private land trusts. To maximize their effectiveness, regional assessments or individual species status reports should be updated frequently.

Looking to the future, it would be valuable to determine the Gap protection status of the entire flora of the Columbia Plateau and East Cascades ecoregions in order to assess how under-represented rare plant species are compared to more abundant taxa. In similar studies in Wyoming and the Colorado Plateau, rare species on average are 1.5 to 2 times less likely to be adequately protected than common species (Fertig 2009, 2011). Assessing the entire flora would confirm whether patterns in the protection of rare species based on their major habitat types (i.e. alpine, shrub-steppe, wetlands) are applicable to more common taxa. Ranking the entire flora might also identify new areas of high species richness (alpha diversity) or complementarity (beta diversity) that are not represented in the existing protected areas network. Likewise, a Gap assessment of the protection status of the ecological communities of the two ecoregions would likely identify conservation targets that are poorly represented.

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## Appendix A.

### Gap Protection Status of Plant Species of Special Concern in the Columbia Plateau and East Cascades Ecoregion and Statewide

Legend: Managed Areas are sorted according to their Gap Status (1-4). Occurrences crossing multiple ownerships are given the highest score among the different ownerships at that site. An \* indicates a ownership rank superseded by a higher score.

Managed area acronyms include: ACEC = Area of Critical Environmental Concern, AFB = Air Force Base, BLM = Bureau of Land Management, BSA = Biological Study Area, CP = County Park, DNR = Department of Natural Resources, ERP = Environmental Research Park, NAP = Natural Area Preserve, NF = National Forest, NHP = National Historical Park, NM = National Monument, NP = National Park, NRCA = Natural Resources Conservation Area, NRA = National Recreation Area, NSA = National Scenic Area, NWR = National Wildlife Refuge, PUD = Public Utility District, RNA = Research Natural Area, RP = Regional Park, SBA = Special Botanical Area, SP = State Park, SWA = State Wildlife Area. TC = Training Center, WA = Wilderness Area.

Averaged Gap score is calculated as (%Gap status 1 occurrences x 1) + (% Gap status 2 occurrences x 2) + (% Gap status 3 occurrences x 3) + (% Gap status 4 occurrences x 4).

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<i>Actaea elata</i> var. <i>elata</i>					
Gap Status 1		0	0	0	3
Gap Status 2		0	0	0	6
Gap Status 3	Gifford Pinchot NF	1	100	3.00	7
Gap Status 4		0	0	0	24
Summary Score & Protection	Unprotected (CP/EC), Adequately Protected (statewide)	1		3.00	3.30
<i>Agoseris aurantiaca</i> var. <i>carnea</i>					
Gap Status 1		0	0	0	0
Gap Status 2		0	0	0	0
Gap Status 3	Okanogan-Wenatchee NF	1	100	3.00	4
Gap Status 4		0	0	0	0
Summary Score & Protection	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Agoseris elata</i>					
Gap Status 1	Camas Meadows NAP, Conboy Lake NWR	2	18.2	0.182	9
Gap Status 2		0	0	0	0
Gap Status 3	Okanogan-Wenatchee NF	9	81.8	2.45	24
Gap Status 4		0	0	0	4
Summary Score & Protection	Inadequately Protected (CP/EC), Adequately Protected (statewide)	11		2.632	2.622
<i>Aliciella leptomeria</i>					
Gap Status 1	Hanford Reach NM, Saddle Mountain NWR	2	20	0.20	2
Gap Status 2	South Columbia Basin SWA	2	20	0.40	2
Gap Status 3		0	0	0	0
Gap Status 4	Hanford ERP, private	6	60	2.40	6
Summary Score & Protection	Inadequately Protected (CP/EC & statewide)	10		3.00	3.00
<i>Allium bisceptrum</i>					
Gap Status 1		0	0	0	0
Gap Status 2	Palouse Falls State Park	1	100	2.00	1
Gap Status 3		0	0	0	0

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		2.00	2.00
<i>Allium campanulatum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	1	50	1.5	2
<b>Gap Status 4</b>	state	1	50	2.0	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	2		3.5	3.333
<i>Allium constrictum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Steamboat Rock SP	4	23.5	0.47	4
<b>Gap Status 3</b>	Spokane BLM	5	29.4	0.882	5
<b>Gap Status 4</b>	State, private	8	47.1	1.88	8
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	17		3.232	3.232
<i>Ammannia robusta</i>					
<b>Gap Status 1</b>	Turnbull NWR	2	22.2	0.222	2
<b>Gap Status 2</b>	South Columbia Basin SWA	0*	0	0	0*
<b>Gap Status 3</b>	Chief Timothy Park, Columbia Gorge NSA, Plymouth Park	3	33.3	0.999	3
<b>Gap Status 4</b>	Hanford ERP, private	4	44.5	1.78	4
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	9		3.001	3.001
<i>Anemone patens var. multifida</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Colockum SWA	1	25	0.5	1
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	3	75	2.25	3
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	4		2.75	2.75
<i>Aphyllon californicum ssp. grayanum</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	2	40	0.4	2
<b>Gap Status 2</b>	Columbia Land Trust, Klickitat Canyon NRCA	2	40	0.8	3
<b>Gap Status 3</b>	Columbia Gorge NSA	0*	0	0	0
<b>Gap Status 4</b>	private	1	20	0.8	1
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	5		2.00	2.001
<i>Artemisia campestris var. wormskioldii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River NSA, Gifford Pinchot NF	1	33.3	0.999	1
<b>Gap Status 4</b>	Bureau of Reclamation, private	2	66.7	2.668	2
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide) – native populations only	3		3.667	3.667
<i>Astragalus arrectus</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Campus Prairie BSA, Colockum SWA, George Hudson BSA, Roosevelt Lake NRA	5	21.7	0.434	5

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	4	17.4	0.522	4
<b>Gap Status 4</b>	private	14	60.9	2.436	14
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	23		3.392	3.392
<i>Astragalus arthurii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Chief Joseph SWA, Nez Perce NHP, DNR registry	9	56.3	1.126	12
<b>Gap Status 3</b>	Umatilla NF, Vale BLM	2	12.5	0.375	2
<b>Gap Status 4</b>	DNR, private	5	31.2	1.248	5
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	16		2.749	2.631
<i>Astragalus columbianus</i>					
<b>Gap Status 1</b>	Rattlesnake Hills RNA	1	5	0.05	1
<b>Gap Status 2</b>	Gingko Petrified Forest SP, McCoy Canyon ACEC	2	10	0.2	2
<b>Gap Status 3</b>	Spokane BLM	3	15	0.45	3
<b>Gap Status 4</b>	Hanford ERP, Yakima TC, private	14	70	2.8	14
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	20		3.5	3.5
<i>Astragalus diaphanus</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	100	3.00	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Astragalus geyeri</i> var. <i>geyeri</i>					
<b>Gap Status 1</b>	Columbia NWR, Hanford NM	3	60	0.6	3
<b>Gap Status 2</b>	Crab Creek SWA, Sentinel Slope ACEC	1	20	0.4	1
<b>Gap Status 3</b>	Spokane BLM	0*	0	0	0
<b>Gap Status 4</b>	Grant Co PUD	1	20	0.8	1
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	5		1.8	1.8
<i>Astragalus kentrophyta</i> var. <i>douglasii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Private?	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Astragalus microcystis</i>					
<b>Gap Status 1</b>		0	0	0	2
<b>Gap Status 2</b>	Roosevelt Lake NRA	1	50	1.0	6
<b>Gap Status 3</b>		0	0	0	10
<b>Gap Status 4</b>	private	1	50	2.0	9
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC), Adequately Protected (statewide)	2		3.0	2.96
<i>Astragalus misellus</i> var. <i>pauper</i>					
<b>Gap Status 1</b>		0	0	0	0

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Gap Status 2</b>	Colockum SWA, DNR Registry, LT Murray SWA, Quilome SWA, Rock Island ACEC, Yakima River Canyon ACEC	5	29.4	0.588	5
<b>Gap Status 3</b>	Spokane BLM	5	29.4	0.882	5
<b>Gap Status 4</b>	Yakima TC, private	7	41.2	1.648	7
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	17		3.118	3.118
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	100	1.00	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	WA DNR, private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)			1.00	1.00
<i>Astragalus riparius</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	WA DNR, private	14	100	4.00	14
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	14		4.00	4.00
<i>Astragalus sinuatus</i>					
<b>Gap Status 1</b>	Upper Dry Gulch NAP	1	50	0.5	1
<b>Gap Status 2</b>	Colockum Creek ACEC, Colockum Creek SWA, WA DNR Registry	1	50	1.0	1
<b>Gap Status 3</b>	Spokane BLM	0*	0	0	0
<b>Gap Status 4</b>	private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	2		1.5	1.5
<i>Astragalus tenellus</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Bergia texana</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	50	1.5	1
<b>Gap Status 4</b>	private	1	50	2.0	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	2		3.5	3.5
<i>Blitum spathulatum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	1		4.00	3.00
<i>Boechera cascadenensis</i>					
<b>Gap Status 1</b>		0	0	0	0

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	2	100	3.00	2
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	2		3.00	3.00
<i>Bolandra oregana</i>					
<b>Gap Status 1</b>		0	0	0	4
<b>Gap Status 2</b>		0	0	0	3
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	100	3.00	10
<b>Gap Status 4</b>		0	0	0	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Adequately Protected (statewide)	1		3.00	2.447
<i>Botrychium hesperium</i>					
<b>Gap Status 1</b>	North Cascades NP	1	100	1.00	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	22
<b>Gap Status 4</b>		0	0	0	2
<b>Summary Score &amp; Protection</b>	Completely protected (CP/EC), Inadequately Protected (statewide)	1		1.00	3.00
<i>Botrychium paradoxum</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	2	100	3.00	19
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	2		3.00	2.90
<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i>					
<b>Gap Status 1</b>	Columbia LT, Conboy Lake NWR	2	10	0.1	2
<b>Gap Status 2</b>	Brooks Memorial SP, Klickitat Canyon NRCA, Klickitat SWA	7	35	0.7	7
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Private, Yakama IR	11	55	2.2	11
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	20		3.00	3.00
<i>Calochortus macrocarpus</i> var. <i>maculosus</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>		0	0	0	7
<b>Gap Status 3</b>	Spokane BLM	1	20	0.6	10
<b>Gap Status 4</b>	US Army Corps	4	80	3.2	8
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Adequately protected (statewide)	5		3.8	2.963
<i>Calochortus nitidus</i>					
<b>Gap Status 1</b>	Steptoe Butte pNAP	1	25	.25	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	1
<b>Gap Status 4</b>	private	3	75	3.0	3
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	4		3.25	3.20
<i>Calyptridium roseum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Hanford ERP	2	100	4.00	2

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	2		4.00	4.00
<i>Camassia cusickii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Carex capillaris</i>					
<b>Gap Status 1</b>	North Cascades NP	1	100	1.00	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	4
<b>Gap Status 4</b>		0	0	0	1
<b>Summary Score &amp; Protection</b>	Adequately protected (CP/EC), Inadequately Protected (statewide)	1		1.00	2.836
<i>Carex cordillerana</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>		0	0	0	6
<b>Gap Status 4</b>	private	1	100	4.00	2
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	1		4.00	2.90
<i>Carex davyi</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Yakama IR	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Carex densa</i>					
<b>Gap Status 1</b>	Mt. Adams WA	1	100	1.00	2
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>	Gifford Pinchot NF	0*	0	0	0
<b>Gap Status 4</b>		0	0	0	7
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Inadequately protected (statewide)	1		1.00	3.20
<i>Carex heteroneura</i>					
<b>Gap Status 1</b>		0	0	0	5
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>		0	0	0	17
<b>Gap Status 4</b>	Yakama IR	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Adequately Protected (statewide)	1		4.00	2.584
<i>Carex macrochaeta</i>					
<b>Gap Status 1</b>		0	0	0	2
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Gifford Pinchot NF	1	100	3.00	1
<b>Gap Status 4</b>		0	0	0	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Adequately Protected (statewide)	1		3.00	2.25
<i>Carex pauciflora</i>					
<b>Gap Status 1</b>		0	0	0	2

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Gap Status 2</b>		0	0	0	5
<b>Gap Status 3</b>	Mt. Baker-Snoqualmie NF	1	100	3.00	6
<b>Gap Status 4</b>		0	0	0	7
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Adequately Protected (statewide)	1		3.00	2.90
<i>Carex proposita</i>					
<b>Gap Status 1</b>	Alpine Lakes WA, Glacier Peak WA, Henry M Jackson WA	3	30	0.3	6
<b>Gap Status 2</b>	Enchantment SBA	0*	0	0	1
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	7	70	2.1	8
<b>Gap Status 4</b>		0	0	0	1
<b>Summary Score &amp; Protection</b>	Adequately protected (CP/EC & statewide)	10		2.4	2.253
<i>Carex scirpoidea ssp. scirpoidea</i>					
<b>Gap Status 1</b>		0	0	0	11
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	2	100	3.00	4
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Adequately Protected (statewide)	2		3.00	1.534
<i>Carex sychnocephala</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	3
<b>Gap Status 3</b>	Spokane BLM	1	100	3.00	5
<b>Gap Status 4</b>		0	0	0	5
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	1		3.00	3.155
<i>Carex vallicola</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Steamboat Rock State Park	1	100	2.00	2
<b>Gap Status 3</b>		0	0	0	16
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Inadequately Protected (statewide)	1		2.00	2.888
<i>Castilleja cryptantha</i>					
<b>Gap Status 1</b>	William O. Douglas WA	2	100	1.00	21
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	0*	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	2		1.00	1.00
<i>Chaenactis thompsonii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	16	100	3.00	17
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	16		3.00	3.00
<i>Chrysolepis chrysophylla var. chrysophylla</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA, Gifford Pinchot NF	5	100	3.00	7

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Gap Status 4</b>		0	0	0	8
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)			3.00	3.377
<i>Chylismia scapoidea</i> ssp. <i>brachycarpa</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Iron Horse Pioneer Trail SP	1	33.3	0.666	1
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Yakima TC	2	66.7	2.668	2
<b>Summary Score &amp; Protection</b>	Inadequately protected (CP/EC & statewide)	3		3.334	3.334
<i>Cicuta bulbifera</i>					
<b>Gap Status 1</b>	Fish Lake Bog RNA	1	100	1.00	3
<b>Gap Status 2</b>		0	0	0	2
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	0*	0	0	10
<b>Gap Status 4</b>		0	0	0	8
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Adequately Protected (statewide)			1.00	2.994
<i>Cirsium remotifolium</i> var. <i>remotifolium</i>					
<b>Gap Status 1</b>	Conboy NWR, Trout Lake NAP?	2	28.6	0.286	2
<b>Gap Status 2</b>	Soda Springs SWA	1	14.3	0.286	2
<b>Gap Status 3</b>	Columbia River Gorge NSA?, Gifford Pinchot NF, Spokane BLM	3	42.8	1.284	4
<b>Gap Status 4</b>	private	1	14.3	0.572	8
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC), Inadequately Protected (statewide)	7		2.428	3.125
<i>Collinsia sparsiflora</i> var. <i>sparsiflora</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>	Dougs Beach SP	2	50	1.0	3
<b>Gap Status 3</b>	Columbia River Gorge NSA, Spokane BLM	2	50	1.5	3
<b>Gap Status 4</b>	private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC), Adequately Protected (statewide)	4		2.5	2.283
<i>Collomia macrocalyx</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Spokane BLM	1	11.1	0.333	1
<b>Gap Status 4</b>	Yakima TC	8	88.9	3.556	8
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	9		3.889	3.889
<i>Corispermum pallidum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	South Columbia Basin SWA	1	25	0.5	1
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	DNR, private	3	75	2.25	3
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	4		2.75	2.75
<i>Corispermum villosum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	25	0.75	1
<b>Gap Status 4</b>	State, private	3	75	3.00	3



Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	4		3.75	3.75
<i>Crepis bakeri</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Brooks Memorial SP	1	50	1.0	3
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Private	1	50	2.0	4
<b>Summary Score &amp; Protection</b>	Inadequately protected (CP/EC & statewide)	2		3.00	3.142
<i>Cryptantha gracilis</i>					
<b>Gap Status 1</b>	Beezley Hills Preserve (TNC)	1	7.1	0.071	1
<b>Gap Status 2</b>	Sun Lakes SP	1	7.1	0.142	1
<b>Gap Status 3</b>	Spokane BLM	1	7.1	0.213	1
<b>Gap Status 4</b>	Yakama TC, private	11	78.6	3.144	11
<b>Summary Score &amp; Protection</b>	Inadequately protected (CP/EC & statewide)	14		3.57	3.57
<i>Cryptantha leucophaea</i>					
<b>Gap Status 1</b>	Columbia NWR, Juniper Dunes WA	4	8.7	0.087	4
<b>Gap Status 2</b>	Colockum SWA, Crab Creek SWA, Ginkgo Petrified Forest SP, Hanford Reach NM, Juniper Forest ACEC, North Columbia Basin SWA, Sentinel Slope ACEC, South Columbia Basin SWA	21	45.6	0.912	21
<b>Gap Status 3</b>	Spokane BLM	1	2.2	0.066	1
<b>Gap Status 4</b>	Grant County PUD, Hanford ERP, Yakima TC, private, state	20	43.5	1.74	20
<b>Summary Score &amp; Protection</b>	Adequately protected (CP/EC & statewide)	46		2.805	2.805
<i>Cryptantha rostellata</i>					
<b>Gap Status 1</b>	Badger Gap NAP	1	6.7	.067	1
<b>Gap Status 2</b>		0	0	0	2
<b>Gap Status 3</b>	Columbia Gorge NSA, Spokane BLM	2	13.3	0.399	2
<b>Gap Status 4</b>	Yakama IR, Yakima TC, state, private	12	80	3.2	12
<b>Summary Score &amp; Protection</b>	Inadequately protected (CP/EC & statewide)	15		3.666	3.469
<i>Cryptantha scoparia</i>					
<b>Gap Status 1</b>	Rattlesnake Hills RNA	1	10	0.1	1
<b>Gap Status 2</b>	Sun Lakes SP	1	10	0.2	1
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Hanford ERP, Yakima TC	8	80	3.2	8
<b>Summary Score &amp; Protection</b>	Inadequately protected (CP/EC & statewide)	10		3.5	3.5
<i>Cryptantha spiculifera</i>					
<b>Gap Status 1</b>	Entiat Slopes NAP, Rattlesnake Hills RNA	2	9.5	0.095	3
<b>Gap Status 2</b>	Keystone ACEC, Sentinel Slope ACEC, South Columbia Basin SWA	2*	9.5	0.19	2
<b>Gap Status 3</b>	Spokane BLM	10	47.7	1.431	11
<b>Gap Status 4</b>	Hanford ERP, private	7	33.3	1.332	13
<b>Summary Score &amp; Protection</b>	Inadequately protected (CP/EC & statewide)	21		3.048	3.172

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<i>Cryptogramma stelleri</i>					
Gap Status 1	Glacier Peak WA	1	50	0.5	4
Gap Status 2		0	0	0	0
Gap Status 3	Okanogan-Wenatchee NF	1	50	1.5	4
Gap Status 4		0	0	0	0
Summary Score & Protection	Adequately protected (CP/EC & statewide)	2		2.0	2.0
<i>Cuscuta denticulata</i>					
Gap Status 1		0	0	0	0
Gap Status 2	South Columbia Basin SWA	1	50	1.00	1
Gap Status 3		0	0	0	0
Gap Status 4	Hanford ERP, private	1	50	2.00	1
Summary Score & Protection	Inadequately protected (CP/EC & statewide)	2		3.00	3.00
<i>Cusickiella douglasii</i>					
Gap Status 1	Columbia Hills NAP	1	50	0.5	1
Gap Status 2		0	0	0	0
Gap Status 3	Columbia River Gorge NSA	0*	0	0	0
Gap Status 4	private	1	50	2.0	1
Summary Score & Protection	Adequately protected (CP/EC & statewide)	2		2.5	2.5
<i>Cypripedium parviflorum</i>					
Gap Status 1	Pine Creek RNA, Turnbull NWR	5	50	0.5	5
Gap Status 2		0	0	0	4
Gap Status 3		0	0	0	4
Gap Status 4	private	5	50	2.0	10
Summary Score & Protection	Adequately protected (CP/EC & statewide)	10		2.5	2.827
<i>Damasonium californicum</i>					
Gap Status 1		0	0	0	0
Gap Status 2	Columbia Hills Historical SP, DNR Registry	3	100	2.00	3
Gap Status 3	Columbia River Gorge NSA	0*	0	0	0
Gap Status 4		0	0	0	0
Summary Score & Protection	Completely protected (CP/EC & statewide)	3		2.00	2.00
<i>Delphinium viridescens</i>					
Gap Status 1	Camas Meadows NAP	1	7.1	0.071	1
Gap Status 2	DNR Registry	3	21.4	0.428	3
Gap Status 3	Okanogan-Wenatchee NF	7	50	1.5	7
Gap Status 4	private	3	21.4	0.856	3
Summary Score & Protection	Inadequately protected (CP/EC & statewide)	14		2.855	2.855
<i>Diplacus cusickioides</i>					
Gap Status 1		0	0	0	0
Gap Status 2		0	0	0	1
Gap Status 3	Columbia River Gorge NSA, Okanogan-Wenatchee NF	2	66.7	2.001	2
Gap Status 4	private	1	33.3	1.332	1
Summary Score & Protection	Unprotected (CP/EC), Inadequately Protected (statewide)	3		3.333	3.00

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<i>Eatonella nivea</i>					
Gap Status 1	Hanford Reach NM	2	22.2	0.222	2
Gap Status 2	DNR Registry, North Columbia Basin SWA	2	22.2	0.444	2
Gap Status 3		0	0	0	0
Gap Status 4	Grant Co PUD, Hanford ERP, Yakima TC	5	55.6	2.224	5
Summary Score & Protection	Inadequately protected (CP/EC & statewide)	9		2.89	2.89
<i>Eleocharis atropurpurea</i>					
Gap Status 1		0	0	0	0
Gap Status 2		0	0	0	0
Gap Status 3	Okanogan-Wenatchee NF?	1	100	3.00	1
Gap Status 4		0	0	0	0
Summary Score & Protection	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Eleocharis coloradoensis</i>					
Gap Status 1		0	0	0	0
Gap Status 2	South Columbia Basin SWA	2	50	1.0	2
Gap Status 3	Columbia Park (DOD)	1	25	0.75	1
Gap Status 4	Private	1	25	1.0	2
Summary Score & Protection	Inadequately protected (CP/EC & statewide)	4		2.75	3.00
<i>Eleocharis rostellata</i>					
Gap Status 1		0	0	0	0
Gap Status 2	Sun Lakes SP	3	33.3	0.666	5
Gap Status 3		0	0	0	1
Gap Status 4	Bureau of Reclamation, Grant County PUD, Yakima TC, private	6	66.7	2.668	9
Summary Score & Protection	Inadequately protected (CP/EC), Adequately Protected (statewide)	9		3.334	3.266
<i>Eremogone franklinii</i> var. <i>thompsonii</i>					
Gap Status 1		0	0	0	0
Gap Status 2	South Columbia Basin SWA	1	33.3	0.666	1
Gap Status 3		0	0	0	0
Gap Status 4	Hanford ERP	2	66.7	2.668	2
Summary Score & Protection	Inadequately protected (CP/EC & statewide)	3		3.334	3.334
<i>Eremothera minor</i>					
Gap Status 1	Rattlesnake Hills RNA	3	30	0.3	3
Gap Status 2		0	0	0	0
Gap Status 3	Okanogan-Wenatchee NF	1	10	0.3	1
Gap Status 4	Hanford ERP, private	6	60	2.4	6
Summary Score & Protection	Inadequately protected (CP/EC & statewide)	10		3.00	3.00
<i>Eremothera pygmaea</i>					
Gap Status 1	Hanford Reach NM, Rattlesnake RNA	8	23.5	0.235	8
Gap Status 2	North Columbia Basin SWA, Rock Island Canyon ACEC, South Columbia Basin SWA, Steamboat Rock SP, Sun Lakes SP	6	17.7	0.354	6
Gap Status 3	Spokane BLM	3	8.8	0.264	3

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Gap Status 4</b>	Hanford ERP, private	17	50	2.0	17
<b>Summary Score &amp; Protection</b>	Adequately protected (CP/EC & statewide)	34		2.853	2.853
<i>Erigeron basalticus</i>					
<b>Gap Status 1</b>	Selah Cliffs NAP	1	16.7	0.167	1
<b>Gap Status 2</b>	LT Murray SWA	3	50	1.0	3
<b>Gap Status 3</b>	Spokane BLM	1	16.7	0.501	1
<b>Gap Status 4</b>	DOD, private	1	16.7	0.668	1
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	6		2.336	2.336
<i>Erigeron salishii</i>					
<b>Gap Status 1</b>	Alpine Lakes WA, Chelan-Sawtooth WA, Glacier Peak WA	7	63.6	0.636	8
<b>Gap Status 2</b>	Enchantment SBA , Lake Chelan NRA	0*	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	4	36.4	1.092	4
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	11		1.728	1.666
<i>Eriogonum codium</i>					
<b>Gap Status 1</b>	Hanford Reach NM	1	100	1.0	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		1.00	1.00
<i>Eriogonum maculatum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Eritrichium argenteum</i>					
<b>Gap Status 1</b>	Chelan-Sawtooth WA	1	100	1.00	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	0*	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		1.00	1.00
<i>Eryngium articulatum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	3	100	4.00	3
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	3		4.00	4.00
<i>Eryngium petiolatum</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	2	66.7	0.667	3
<b>Gap Status 2</b>	DNR Registry, Klickitat SWA	1	33.3	0.666	1
<b>Gap Status 3</b>	Columbia River Gorge NSA	0*	0	0	0
<b>Gap Status 4</b>		0	0	0	5

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), (statewide)	3		1.333	2.777
<i>Erythranthe jungermannioides</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	100	3.00	1
<b>Gap Status 4</b>	private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Erythranthe patula</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Asotin Creek SWA	1	100	2.00	2
<b>Gap Status 3</b>		0	0	0	4
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Inadequately Protected (statewide)	1		2.00	2.667
<i>Erythranthe pulsiferae</i>					
<b>Gap Status 1</b>	Conboy Lake NWR, Trout Lake NAP	2	16.7	0.167	2
<b>Gap Status 2</b>	Klickitat Canyon NRCA	1	8.3	0.166	1
<b>Gap Status 3</b>	Columbia River Gorge NSA	2	16.7	0.501	4
<b>Gap Status 4</b>	DNR, private	7	58.3	2.332	7
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	12		3.166	3.143
<i>Erythranthe suksdorfii</i>					
<b>Gap Status 1</b>	Beezley Hills Preserve (TNC), Marcellus Shrub Steppe NAP, Moses Coulee Preserve (TNC), Mt. Adams WA	4	11.8	0.118	5
<b>Gap Status 2</b>	Crab Creek SWA, North Columbia Basin SWA	4	11.8	0.236	4
<b>Gap Status 3</b>	Columbia River Gorge NSA, Okanogan-Wenatchee NF, Steamboat Rock SP, Sun Lakes SP	2	5.9	0.177	4
<b>Gap Status 4</b>	Hanford ERP, Yakima TC, private	24	70.5	2.82	24
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	34		3.351	3.267
<i>Erythranthe washingtonensis</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	25	0.25	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	2	50	1.5	3
<b>Gap Status 4</b>	private	1	25	1.0	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	4		2.75	2.8
<i>Gentiana douglasiana</i>					
<b>Gap Status 1</b>		0	0	0	8
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF (admin. by Mt Baker Snoqualmie NF)	1	100	3.00	1
<b>Gap Status 4</b>		0	0	0	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Adequately Protected (statewide)	1		3.00	1.5
<i>Geum rossii</i> var. <i>depressum</i>					
<b>Gap Status 1</b>	Alpine Lakes WA,	2	40	0.4	2

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Gap Status 2</b>	Enchantment SBA	2	40	0.8	2
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	1	20	0.6	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	5		1.8	1.8
<i>Githopsis speculariooides</i>					
<b>Gap Status 1</b>	Chelan-Sawtooth WA, Columbia LT	4	22.2	0.222	5
<b>Gap Status 2</b>	Klickitat SWA, Lake Chelan NRA	4	22.2	0.444	4
<b>Gap Status 3</b>	Columbia River Gorge NSA, Gifford Pinchot NF, Okanogan-Wenatchee NF, Spokane BLM	7	38.9	1.167	10
<b>Gap Status 4</b>	private	3	16.7	0.668	9
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	18		2.501	2.82
<i>Hackelia cinerea</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Ginkgo Petrified Forest SP, Riverside SP	2	50.0	1.00	2
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	2	50.0	2.00	4
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	4		3.00	3.00
<i>Hackelia diffusa</i> var. <i>diffusa</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Ginkgo Petrified Forest SP, Klickitat River NRCA, Klickitat SWA	4	57.1	1.142	4
<b>Gap Status 3</b>	Columbia River Gorge NSA	2	28.6	0.858	3
<b>Gap Status 4</b>	private	1	14.3	0.572	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	7		2.572	2.625
<i>Hackelia hispida</i> var. <i>disjuncta</i>					
<b>Gap Status 1</b>	Columbia NWR, McCartney Creek Preserve (TNC), Moses Coulee Preserve (TNC)	5	23.8	0.238	5
<b>Gap Status 2</b>	Quincy Lakes SWA, Rock Island ACEC, Sun Lakes SP	2	9.5	0.19	2
<b>Gap Status 3</b>	Okanogan-Wenatchee NF, Spokane BLM	9	42.9	1.287	9
<b>Gap Status 4</b>	Private, state	5	23.8	0.952	5
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	21		2.667	2.667
<i>Hackelia taylorii</i>					
<b>Gap Status 1</b>	Alpine Lakes WA	3	75	0.75	3
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	1	25	0.75	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	4		1.5	1.5
<i>Hackelia venusta</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Tumwater SBA	1	50	1.00	1
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	1	50	1.50	1
<b>Gap Status 4</b>		0	0	0	0

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	2		2.50	2.50
<i>Heterotheca oregona</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>	Mather Memorial Parkway SBA, Oak Creek SWA	2	22.2	0.444	3
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	4	44.5	1.335	6
<b>Gap Status 4</b>	Private	3	33.3	1.332	6
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	9		3.111	3.625
<i>Howellia aquatilis</i>					
<b>Gap Status 1</b>	Turnbull NWR	34	68	0.68	35
<b>Gap Status 2</b>	Dishman Hills NRCA, DNR Registry	3	6	0.12	4
<b>Gap Status 3</b>	Spokane BLM	1	2	0.06	1
<b>Gap Status 4</b>	private	12	24	0.96	33
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	50		1.82	2.439
<i>Hypericum majus</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	South Columbia Basin SWA	1	33.3	0.666	2
<b>Gap Status 3</b>		0	0	0	1
<b>Gap Status 4</b>	Hanford ERP	2	66.7	2.668	17
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	3		3.334	3.75
<i>Isöetes minima</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	1
<b>Gap Status 4</b>	state, private	3	100	4.00	3
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	3		4.00	3.75
<i>Isöetes nuttallii</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	11.1	0.111	2
<b>Gap Status 2</b>	Columbia Hills Historical SP, Columbia LT, Klickitat SWA	3	33.3	0.666	4
<b>Gap Status 3</b>	Columbia River Gorge NSA	3	33.3	0.999	3
<b>Gap Status 4</b>	private	2	22.2	0.888	6
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC), Adequately Protected (statewide)	9		2.664	2.866
<i>Juncus hemiendytus</i> var. <i>hemiendytus</i>					
<b>Gap Status 1</b>	Conboy Lake NWR, Turnbull NWR	2	33.3	0.333	2
<b>Gap Status 2</b>	Klickitat Canyon NRCA	1	16.7	0.334	1
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	3	50	2.00	3
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	6		2.667	2.667
<i>Juncus howellii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Gifford Pinchot NF, Okanogan-Wenatchee NF	2	66.7	2.001	2
<b>Gap Status 4</b>	private	1	33.3	1.332	1

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	3		3.333	3.333
<i>Juncus kelloggii</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	33.3	0.333	1
<b>Gap Status 2</b>	Klickitat Canyon NRCA	1	33.3	0.666	1
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	33.3	0.999	1
<b>Gap Status 4</b>	private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	3		1.998	1.998
<i>Juncus tiehmii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Spokane BLM	1	100	3.00	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Juncus uncialis</i>					
<b>Gap Status 1</b>	Marcellus Shrub Steppe NAP	1	8.3	0.083	1
<b>Gap Status 2</b>	Columbia Hills Historical SP, North Columbia Basin SWA, Swanson Lakes SWA	4	33.3	0.666	4
<b>Gap Status 3</b>	Columbia River Gorge NSA	0	0	0	0
<b>Gap Status 4</b>	Fairchild AFB, private	7	58.4	2.336	7
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	12		3.085	3.085
<i>Kalmia procumbens</i>					
<b>Gap Status 1</b>	Glacier Peak WA	1	100	1.00	2
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	0*	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		1.00	1.00
<i>Lasthenia glaberrima</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Columbia Hills Historical SP	1	100	2.00	1
<b>Gap Status 3</b>	Columbia River Gorge NSA	0*	0	0	0
<b>Gap Status 4</b>		0	0	0	1
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Inadequately Protected (statewide)	1		2.00	3.00
<i>Lathrocasis tenerrima</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF, Spokane BLM	3	60	1.8	3
<b>Gap Status 4</b>	private	2	40	1.6	3
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	5		3.40	3.50
<i>Leptosiphon bolanderi</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Klickitat SWA	4	44.4	0.888	4
<b>Gap Status 3</b>	Columbia River Gorge NSA	4	44.4	1.332	4
<b>Gap Status 4</b>	State, private	1*	11.1	0.444	1



Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	9		2.664	2.664
<i>Leymus flavescens</i>					
<b>Gap Status 1</b>	Hanford Reach NM, Juniper Dunes WA	2	11.8	0.118	2
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA, Crow Butte Park, Gifford Pinchot NF, Spokane BLM	7	41.2	1.236	8
<b>Gap Status 4</b>	Bureau or Reclamation, private	8	47.0	1.88	8
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	17		3.234	3.219
<i>Liparis loeselii</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	50	0.5	2
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Private	0	0	0	0
<b>Gap Status 4</b>		1	50	2.00	1
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	2		2.50	1.999
<i>Lipocarpha aristulata</i>					
<b>Gap Status 1</b>	Hanford Reach NM	2	20	0.2	2
<b>Gap Status 2</b>	Crab Creek SWA	1	10	0.2	1
<b>Gap Status 3</b>	Columbia River Gorge NSA, Fish Lake Regional Park?	2	20	0.6	2
<b>Gap Status 4</b>	private	5	50	2.00	5
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	10		3.00	3.00
<i>Lobelia kalmii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Yakima TC	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Loeflingia squarrosa</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Hanford ERP	4	100	4.00	4
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	4		4.00	4.00
<i>Lomatium knokei</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	1	100	3.00	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Lomatium laevigatum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Columbia Hills Historical SP	2	22.2	0.444	2
<b>Gap Status 3</b>	Columbia River Gorge NSA, Gifford Pinchot NF	4	44.4	1.332	4

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Gap Status 4</b>	private	3	33.3	1.332	3
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	9		3.108	3.108
<i>Lomatium lithosolamans</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Cowiche Canyon ACEC, DNR Registry, LT Murray SWA	4	12.9	0.258	4
<b>Gap Status 3</b>	Fort Simcoe SP, Spokane BLM	3	9.7	0.291	3
<b>Gap Status 4</b>	Yakama IR, Yakima TC, private, state	24	77.4	3.096	24
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	31		3.645	3.645
<i>Lomatium rollinsii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Asotin SWA, Chief Joseph SWA	2	25	0.5	4
<b>Gap Status 3</b>	Umatilla NF, Vale BLM	2	25	0.75	2
<b>Gap Status 4</b>	private	4	50	2.00	4
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	8		3.25	3.00
<i>Lomatium roneorum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	4	80	2.4	4
<b>Gap Status 4</b>	Private	1	20	0.8	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	5		3.20	3.20
<i>Lomatium serpentinum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	McNary SWA	1	16.7	0.334	3
<b>Gap Status 3</b>		0	0	0	1
<b>Gap Status 4</b>	private	5	83.3	3.332	9
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	6		3.666	3.461
<i>Lomatium suksdorfii</i>					
<b>Gap Status 1</b>	Columbia LT, Trust for Public Lands	3	13.6	0.136	3
<b>Gap Status 2</b>	Klickitat SWA, White Salmon Oak NRCA	6	27.3	0.546	6
<b>Gap Status 3</b>	Columbia River Gorge NSA, Spokane BLM	5	22.7	0.681	5
<b>Gap Status 4</b>	State, private	8	36.4	1.456	8
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	22		2.819	2.819
<i>Lomatium tamanitchii</i>					
<b>Gap Status 1</b>	Cleveland Shrub Steppe NAP?	1	11.1	0.111	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	2	22.2	0.666	2
<b>Gap Status 4</b>	Private, state	6	66.7	2.668	6
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	9		3.445	3.445
<i>Lomatium tenuissimum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Gap Status 4</b>	private	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Lomatium tuberosum</i>					
<b>Gap Status 1</b>	Columbia NWR	1	6.7	0.067	1
<b>Gap Status 2</b>	Crab Creek SWA, McCoy Canyon ACEC, Sentinel Slope ACEC	3	20	0.4	3
<b>Gap Status 3</b>	Spokane BLM	0*	0	0	0
<b>Gap Status 4</b>	Hanford ERP, Yakama IR, Yakima TC, private	11	73.3	2.932	11
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	15		3.399	3.399
<i>Lupinus sabinianus</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	2	100	4.00	3
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	2		4.00	3.5
<i>Luzula arcuata ssp. unalaschensis</i>					
<b>Gap Status 1</b>	Mt. Adams WA	1	100	1.00	4
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Gifford Pinchot NF	0*	0	0	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Adequately Protected (statewide)	1		1.00	1.40
<i>Lycopodium lagopus</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	2	100	3.00	4
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	2		3.00	3.00
<i>Meconella oregana</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>	Columbia River Gorge NSA, Gifford Pinchot NF	3	100	3.00	3
<b>Gap Status 4</b>	Private, state, Yakama IR	0*	0	0	4
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequate Protection (statewide)	3		3.00	3.375
<i>Micromonolepis pusilla</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Hanford ERP, private	5	100	4.00	5
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	5		4.00	4.00
<i>Microseris borealis</i>					
<b>Gap Status 1</b>		0	0	0	6
<b>Gap Status 2</b>	Mt. St Helens NVM	1	100	2.00	1
<b>Gap Status 3</b>	Gifford Pinchot NF	0*	0	0	3
<b>Gap Status 4</b>		0	0	0	0

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Adequately Protected (statewide)	1		2.00	1.7
<i>Mimetanthe pilosa</i>					
<b>Gap Status 1</b>	McCartney Creek Preserve (TNC)	1	12.5	0.125	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Gifford Pinchot NF	1	12.5	0.375	1
<b>Gap Status 4</b>	Private, state	6	75	3.00	6
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	8		3.50	3.50
<i>Montia diffusa</i>					
<b>Gap Status 1</b>		0	0	0	2
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>	Columbia River Gorge NSA, Gifford Pinchot NF	7	100	3.00	8
<b>Gap Status 4</b>	private	0*	0	0	8
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	7		3.00	3.158
<i>Muhlenbergia glomerata</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	3
<b>Gap Status 4</b>	private	1	100	4.00	4
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	1		4.00	3.25
<i>Myosurus alopecuroides</i>					
<b>Gap Status 1</b>	Marcellus Shrub Steppe NAP, Turnbull NWR	2	15.4	0.154	2
<b>Gap Status 2</b>	Columbia Hills Historical SP, Klickitat SWA	2	15.4	0.308	2
<b>Gap Status 3</b>	Columbia River Gorge NSA, Spokane BLM	1	7.7	0.231	1
<b>Gap Status 4</b>	Fairchild AFB, Hanford ERP, state, private	8	61.5	2.46	8
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	13		3.153	3.153
<i>Myosurus sessilis</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	State?	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Myriopteris gracilis</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	1		4.00	3.00
<i>Navarretia leucocephala ssp. diffusa</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Swanson Lakes SWA	4	66.7	1.334	4
<b>Gap Status 3</b>	Spokane BLM	1	16.7	0.501	1

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Gap Status 4</b>	private	1	16.7	0.668	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	6		2.503	2.503
<i>Navarretia tagetina</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA, Gifford Pinchot NF	3	100	3.00	3
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	3		3.00	3.00
<i>Nicotiana attenuata</i>					
<b>Gap Status 1</b>	Moses Coulee Preserve (TNC), Two Steppe NAP	2	5.1	0.051	2
<b>Gap Status 2</b>	Colockum SWA, Gingko Petrified Forest SP, Oak Creek SWA, Rock Island Canyon ACEC	4	10.3	0.206	4
<b>Gap Status 3</b>	Columbia River Gorge NSA, Okanogan-Wenatchee NF, Spokane BLM	8	20.5	0.615	8
<b>Gap Status 4</b>	Hanford ERP, Yakama IR, Yakima TC, private	25	64.1	2.564	25
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	39		3.436	3.436
<i>Oenothera cespitosa ssp. cespitosa</i>					
<b>Gap Status 1</b>	Columbia NWR, Hanford Reach NM, Rattlesnake Hills RNA	4	33.3	0.333	4
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Spokane BLM	1	8.4	0.252	1
<b>Gap Status 4</b>	Hanford ERP, Yakima TC, private	7	58.3	2.332	7
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	12		2.917	2.917
<i>Oenothera cespitosa ssp. marginata</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Asotin Creek SWA	2	33.3	0.666	3
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	4	66.7	2.668	4
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	6		3.334	3.142
<i>Oenothera flava ssp. flava</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Ophioglossum pusillum</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	16.7	0.167	3
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Spokane BLM	2	33.3	0.999	9
<b>Gap Status 4</b>	Grant PUD, private	3	50	2.0	8
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	6		3.166	3.10

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<i>Orthocarpus bracteosus</i>					
Gap Status 1	Conboy Lake NWR, Trout Lake NAP	7	70	0.7	7
Gap Status 2		0	0	0	0
Gap Status 3	Gifford Pinchot NF	1	10	0.3	1
Gap Status 4	private	2	20	0.8	5
Summary Score & Protection	Adequately Protected (CP/EC & statewide)	10		1.8	2.309
<i>Oxalis suksdorfii</i>					
Gap Status 1		0	0	0	0
Gap Status 2		0	0	0	0
Gap Status 3	Columbia River Gorge NSA	1	100	3.00	1
Gap Status 4	private	0*	0	0	3
Summary Score & Protection	Unprotected (CP/EC & statewide)	1		3.00	3.75
<i>Oxytropis campestris var. gracilis</i>					
Gap Status 1		0	0	0	11
Gap Status 2		0	0	0	0
Gap Status 3	Okanogan-Wenatchee NF	1	100	3.00	5
Gap Status 4		0	0	0	2
Summary Score & Protection	Unprotected (CP/EC), Adequately Protected (statewide)	1		3.00	1.889
<i>Oxytropis campestris var. wanapum</i>					
Gap Status 1		0	0	0	0
Gap Status 2		0	0	0	0
Gap Status 3	Spokane BLM	1	100	3.00	1
Gap Status 4	private	0*	0	0	0
Summary Score & Protection	Unprotected (CP/EC & statewide)			3.00	3.00
<i>Packera bolanderi var. harfordii</i>					
Gap Status 1		0	0	0	0
Gap Status 2		0	0	0	2
Gap Status 3	Gifford Pinchot NF	2	100	3.00	2
Gap Status 4		0	0	0	1
Summary Score & Protection	Unprotected (CP/EC), Inadequately Protected (statewide)	2		3.00	2.80
<i>Parnassia kotzebuei</i>					
Gap Status 1		0	0	0	1
Gap Status 2	Lake Chelan NRA	1	100	2.00	1
Gap Status 3		0	0	0	2
Gap Status 4		0	0	0	0
Summary Score & Protection	Completely Protected (CP/EC), Adequately Protected (statewide)	1		2.00	2.25
<i>Pedicularis pulchella</i>					
Gap Status 1	Alpine Lakes WA	1	100	1.00	1
Gap Status 2		0	0	0	0
Gap Status 3	Okanogan-Wenatchee NF	0*	0	0	0
Gap Status 4		0	0	0	0
Summary Score & Protection	Completely Protected (CP/EC & statewide)	1		1.00	1.00
<i>Pedicularis rainierensis</i>					
Gap Status 1		0	0	0	15
Gap Status 2	Mather Memorial Parkway SBA	1	100	2.00	1

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	0*	0	0	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Adequately Protected (statewide)	1		2.00	1.177
<i>Pediocactus nigrispinus</i>					
<b>Gap Status 1</b>	Beezley Hills Preserve (TNC)	1	2.8	0.028	1
<b>Gap Status 2</b>	Colockum SWA, Gingko Petrified Forest SP, LT Murray SWA, North Columbia Basin SWA, Quilomene SWA	9	25	0.5	9
<b>Gap Status 3</b>	Spokane BLM	6	16.6	0.498	6
<b>Gap Status 4</b>	Yakama TC, private	20	55.6	2.224	20
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	36		3.25	3.25
<i>Pellaea brachyptera</i>					
<b>Gap Status 1</b>	Chelan-Sawtooth WA	5	100	1.00	5
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	0*	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	5		1.00	1.00
<i>Pellaea breweri</i>					
<b>Gap Status 1</b>	Glacier Peak WA	2	25	0.25	4
<b>Gap Status 2</b>	Enchantment SBA	2	25	0.5	2
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	4	50	2.0	7
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC), Adequately Protected (statewide)	8		2.75	2.23
<i>Penstemon barrettiae</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	DNR Registry, Klickitat SWA	4	30.8	.616	4
<b>Gap Status 3</b>	Columbia River Gorge NSA, Gifford Pinchot NF, Spokane BLM	8	61.5	1.845	8
<b>Gap Status 4</b>	State, Yakima IR	1	7.7	0.308	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	13		2.769	2.769
<i>Penstemon deustus</i> var. <i>variabilis</i>					
<b>Gap Status 1</b>	Columbia Hills NAP	1	25	0.25	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	2	50	1.5	2
<b>Gap Status 4</b>	private	1	25	1.0	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	4		2.75	2.75
<i>Penstemon eriantherus</i> var. <i>whitedii</i>					
<b>Gap Status 1</b>	Entiat Slopes NAP, Hanford Reach NM	2	8.7	0.087	2
<b>Gap Status 2</b>	Colockum SWA, Peshastin Pinnacles SP, Riverside SP, South Columbia Basin SWA	6	26.1	0.522	6
<b>Gap Status 3</b>	Okanogan-Wenatchee NF, Spokane BLM	8	34.8	1.044	8
<b>Gap Status 4</b>	Hanford ERP, private, state	7	30.4	1.216	7

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	23		2.869	2.869
<i>Penstemon wilcoxii</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>	North Columbia Basin SWA	1	25	0.5	1
<b>Gap Status 3</b>	Kamiak Butte CP, Liberty Lake RP	2	50	1.5	4
<b>Gap Status 4</b>	private	1	25	1.0	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	4		3.00	2.714
<i>Petrophytum cinerascens</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Chelan SWA, Colockum SWA, DNR Registry, Earthquake Point ACEC	3	60	1.2	3
<b>Gap Status 3</b>	Okanogan-Wenatchee NF, Spokane BLM	0*	0	0	0
<b>Gap Status 4</b>	State, private	2	40	1.6	2
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	5		2.8	2.8
<i>Phacelia lenta</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	DNR Registry, Rock Island Canyon ACEC	1	11.1	0.222	1
<b>Gap Status 3</b>	Spokane BLM	6	66.7	2.001	6
<b>Gap Status 4</b>	private	2	22.2	0.888	2
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	9		3.111	3.111
<i>Phacelia minutissima</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	1	100	3.00	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Phacelia tetramera</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Sun Lakes SP	1	20	0.4	1
<b>Gap Status 3</b>	Spokane BLM	2	40	1.2	2
<b>Gap Status 4</b>	private	2	40	1.6	2
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	5		3.20	3.20
<i>Physaria douglasii ssp. tuplashensis</i>					
<b>Gap Status 1</b>	Hanford Reach NM	1	100	1.00	1
<b>Gap Status 2</b>	South Columbia Basin SWA	0*	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		1.00	1.00
<i>Pilularia americana</i>					
<b>Gap Status 1</b>	Marcellus Shrub Steppe NAP, Turnbull NWR	2	28.6	0.286	2
<b>Gap Status 2</b>	Swanson Lakes SWA	3	42.8	0.856	3
<b>Gap Status 3</b>	Spokane BLM	0*	0	0	0
<b>Gap Status 4</b>	Fairchild AFB, private	2	28.6	1.144	2



Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	7		2.286	2.286
<i>Plectritis brachystemon</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	16.7	0.167	2
<b>Gap Status 2</b>		0	0	0	5
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	16.7	0.501	4
<b>Gap Status 4</b>	Private, state	4	66.7	2.668	9
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC), Adequately Protected (statewide)	6		3.336	3.00
<i>Polemonium pectinatum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Coal Creek ACEC, DNR Registry	4	9.1	0.182	4
<b>Gap Status 3</b>	Spokane BLM	13	29.5	0.885	13
<b>Gap Status 4</b>	private	27	61.4	2.456	27
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	44		3.523	3.523
<i>Polyctenium fremontii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Spokane BLM	1	100	3.00	1
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Polygonum austiniiae</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Sun Lakes SP	1	50	1.0	1
<b>Gap Status 3</b>		0	0	0	3
<b>Gap Status 4</b>	state	1	50	2.0	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	2		3.0	2.80
<i>Polygonum parryi</i>					
<b>Gap Status 1</b>	Conboy Lake NWR, Trout Lake NAP	2	100	1.00	2
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	2		1.00	1.00
<i>Potentilla breweri</i>					
<b>Gap Status 1</b>		0	0	0	2
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	1	25	0.75	1
<b>Gap Status 4</b>	Yakama IR, private	3	75	3.00	3
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	4		3.75	2.834
<i>Potentilla newberryi</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	100	3.00	1
<b>Gap Status 4</b>	Private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		3.00	3.00

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<i>Pyrrocoma hirta</i> var. <i>sonchifolia</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	LT Murray SWA	1	14.3	0.286	1
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	5	71.4	2.142	5
<b>Gap Status 4</b>	state	1	14.3	0.572	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	7		3.00	3.00
<i>Pyrrocoma liatriformis</i>					
<b>Gap Status 1</b>	Step toe Butte pNAP	1	3.2	0.032	1
<b>Gap Status 2</b>	Campus Prairie BSA, DNR Registry, Kramer Prairie BSA, Smoot Hill BSA, Step toe Butte SP	7	22.6	0.452	7
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Private	23	74.2	2.968	23
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	31		3.452	3.452
<i>Pyrrocoma scaberula</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	3
<b>Gap Status 3</b>	Umatilla NF	1	33.3	0.999	1
<b>Gap Status 4</b>	private	2	66.7	2.668	3
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	3		3.667	3.00
<i>Ranunculus hebecarpus</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Canyon Ranch BSA	1	25	0.5	1
<b>Gap Status 3</b>	Columbia Gorge NSA, Spokane BLM	2	50	1.5	2
<b>Gap Status 4</b>	Private	1	25	1.0	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	4		3.00	3.00
<i>Ranunculus triternatus</i>					
<b>Gap Status 1</b>	Columbia Hills NAP, Columbia LT	2	33.3	0.333	2
<b>Gap Status 2</b>	Columbia Hills Historical SP, Klickitat SWA	2	33.3	0.666	2
<b>Gap Status 3</b>	Columbia River Gorge NSA	0	0	0	0
<b>Gap Status 4</b>	private	2	33.3	1.332	2
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	6		2.331	2.331
<i>Ribes cereum</i> var. <i>colubrinum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	Asotin Creek SWA	1	25	0.5	2
<b>Gap Status 3</b>	Vale BLM	2	50	1.5	2
<b>Gap Status 4</b>	private	1	25	1.00	3
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC), Inadequately Protected (statewide)	4		3.00	3.142
<i>Ribes oxycanthoides</i> var. <i>irriguum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	2
<b>Gap Status 3</b>		0	0	0	2
<b>Gap Status 4</b>	private	8	100	4.00	8
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	8		4.00	3.503

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<i>Rorippa columbiae</i>					
<b>Gap Status 1</b>	Columbia LT (Pierce Island Preserve), Hanford Reach NM, McNary NWR, Pierce NWR, Saddle Mountain NWR	1	50	0.5	2
<b>Gap Status 2</b>	Yakima River-Columbia River Island ACEC, South Columbia Basin SWA	0*	0	0	0
<b>Gap Status 3</b>	Columbia Gorge NSA, Spokane BLM	1	50	1.5	1
<b>Gap Status 4</b>	private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	2		2.00	1.666
<i>Rotala ramosior</i>					
<b>Gap Status 1</b>	Columbia LT, Conboy NWR, Hanford Reach NWR, Turnbull NWR	4	50	0.5	4
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA, Okanogan-Wenatchee NF	2	25	0.75	2
<b>Gap Status 4</b>	Hanford ERP, private	2	25	1.0	2
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	8		2.25	2.25
<i>Rubus nigerrimus</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>	DNR Registry	1	6.3	0.126	2
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Army Corps, private, state	15	93.7	3.748	16
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	16		3.874	3.778
<i>Sabulina nuttallii</i> var. <i>fragilis</i>					
<b>Gap Status 1</b>	Columbia NWR	1	33.3	0.333	1
<b>Gap Status 2</b>	Sentinel Slope ACEC	0*	0	0	0
<b>Gap Status 3</b>	Spokane BLM	1	33.3	0.999	1
<b>Gap Status 4</b>	Yakima TC	1	33.3	1.332	1
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	3		2.664	2.664
<i>Sabulina pusilla</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia Gorge NSA	3	42.9	1.287	3
<b>Gap Status 4</b>	private	4	57.1	2.284	4
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	7		3.571	3.571
<i>Salix pseudomonticola</i>					
<b>Gap Status 1</b>	Alpine Lakes WA	1	100	1.00	1
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	0*	0	0	0*
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		1.00	1.50
<i>Salix sessilifolia</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	100	3.00	1

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<b>Gap Status 4</b>	private	0*	0	0	5
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected (statewide)	1		3.00	3.25
<i>Salix vestita</i>					
<b>Gap Status 1</b>		0	0	0	2
<b>Gap Status 2</b>	Enchantment SBA	1	100	2.00	1
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	0	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		2.00	1.333
<i>Sandbergia perplexa</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	State	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)			4.00	4.00
<i>Saxifraga hyperborea</i>					
<b>Gap Status 1</b>	Glacial Peak WA, North Cascades NP	2	50	0.5	20
<b>Gap Status 2</b>	Lake Chelan NRA	2	50	1.00	2
<b>Gap Status 3</b>	Mt. Baker-Snoqualmie NF, Okanogan-Wenatchee NF	0*	0	0	7
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Adequately Protected (statewide)	4		1.50	1.551
<i>Saxifragopsis fragarioides</i>					
<b>Gap Status 1</b>	Alpine Lakes WA	1	25	0.25	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	3	75	2.25	3
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	4		2.5	2.5
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Spokane BLM	1	33.3	0.999	1
<b>Gap Status 4</b>	Chelan Co., private	2	66.7	2.668	3
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	3		3.667	3.75
<i>Schoenoplectus saximontanus</i>					
<b>Gap Status 1</b>	Turnbull NWR	1	100	1.00	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		1.00	1.00
<i>Sclerolinon digynum</i>					
<b>Gap Status 1</b>	Turnbull NWR	2	22.2	0.222	2
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Fairchild AFB, state, private	7	77.8	3.112	7

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	9		3.334	3.334
<i>Scribneria bolanderi</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA, Gifford Pinchot NF	3	100	3.00	3
<b>Gap Status 4</b>	State, private	0	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Adequately Protected (statewide)			3.00	2.50
<i>Sericocarpus oregonensis</i> ssp. <i>oregonensis</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	100	3.00	2
<b>Gap Status 4</b>	private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)			3.00	3.00
<i>Sidalcea oregana</i> var. <i>calva</i>					
<b>Gap Status 1</b>	Camas Meadows NAP	2	16.7	0.167	2
<b>Gap Status 2</b>	Colockum SWA?, DNR Registry	2	16.7	0.334	2
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	6	50	1.5	6
<b>Gap Status 4</b>	private	2	16.7	0.668	2
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	12		2.669	2.669
<i>Silene scouleri</i> ssp. <i>scouleri</i>					
<b>Gap Status 1</b>	Steptoe Butte pNAP, William O. Douglas WA	2	25	0.25	3
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	4	50	1.5	6
<b>Gap Status 4</b>	private	2*	25	1.00	12
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	8		2.75	3.225
<i>Silene seelyi</i>					
<b>Gap Status 1</b>	Alpine Lakes WA, North Cascades NP	3	18.8	0.188	3
<b>Gap Status 2</b>	Enchantment SBA, Tumwater SBA	2	12.5	0.25	2
<b>Gap Status 3</b>	Okanogan-Wenatchee NF	11	68.7	2.061	11
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	16		2.499	2.499
<i>Silene spaldingii</i>					
<b>Gap Status 1</b>	Steptoe Butte pNAP, Turnbull NWR	3	5.8	0.058	3
<b>Gap Status 2</b>	Asotin Creek SWA, Campus Prairie BSA, Coal Creek ACEC, DNR Registry, Kramer Palouse BSA, Nez Perce NHP, Smoot Hill BSA, Steptoe Butte SP, Swanson Lakes SWA	17	32.7	0.654	17
<b>Gap Status 3</b>	Spokane BLM, Umatilla NF	15	28.8	0.864	15
<b>Gap Status 4</b>	Fairchild AFB, private, state	17	32.7	1.308	17
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	52		2.884	2.884

Gap Category	Managed Areas/Ownership	#Oocs in CP & EC	% of Oocs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Oocs
<i>Sisyrinchium montanum</i> var. <i>montanum</i>					
Gap Status 1		0	0	0	0
Gap Status 2		0	0	0	0
Gap Status 3	Spokane BLM	1	100	3.00	3
Gap Status 4		0	0	0	0
Summary Score & Protection	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Sisyrinchium sarmentosum</i>					
Gap Status 1	Conboy Lake NWR?, Trout Lake NAP	2	50	0.5	2
Gap Status 2	DNR Registry	0*	0	0	0*
Gap Status 3	Gifford Pinchot NF	1	25	0.75	13
Gap Status 4	private	1	25	1.0	1
Summary Score & Protection	Adequately Protected (CP/EC), Inadequately Protected (statewide)	4		2.25	2.813
<i>Spartina pectinata</i>					
Gap Status 1		0	0	0	0
Gap Status 2	Bridgeport SWA, Palouse Falls SP, West Foster Creek SWA	2	40	0.8	7
Gap Status 3		0	0	0	1
Gap Status 4	State, private	3	60	2.4	4
Summary Score & Protection	Inadequately Protected (CP/EC), Adequately Protected (statewide)	5		3.20	2.75
<i>Spiranthes diluvialis</i>					
Gap Status 1		0	0	0	0
Gap Status 2	Colockum SWA	1	50	1.0	1
Gap Status 3	Spokane BLM	0*	0	0	0
Gap Status 4	Chelan Co PUD, Grant Co PUD, private	1	50	2.0	2
Summary Score & Protection	Inadequately Protected (CP/EC & statewide)	2		3.00	3.334
<i>Spiranthes porrifolia</i>					
Gap Status 1	Chelan-Sawtooth WA	3	16.7	0.167	4
Gap Status 2	Klickitat SWA	3	16.7	0.334	3
Gap Status 3	Columbia Hills Historical SP, Columbia River Gorge NSA, Okanogan-Wenatchee NF	11	61.1	1.833	14
Gap Status 4	private	1	5.5	0.22	2
Summary Score & Protection	Adequately Protected (CP/EC & statewide)	18		2.554	2.609
<i>Sporobolus compositus</i> var. <i>compositus</i>					
Gap Status 1		0	0	0	0
Gap Status 2		0	0	0	0
Gap Status 3	Spokane BLM	1	33.3	0.999	1
Gap Status 4	Hanford ERP, private	2	66.7	2.668	2
Summary Score & Protection	Unprotected (CP/EC & statewide)	3		3.667	3.667
<i>Swertia perennis</i>					
Gap Status 1	Glacier Peak WA	1	100	1.00	2
Gap Status 2		0	0	0	0
Gap Status 3	Okanogan-Wenatchee NF	0*	0	0	1
Gap Status 4		0	0	0	0

Gap Category	Managed Areas/Ownership	#Occs in CP & EC	% of Occs in CP & EC	Averaged Gap Score for CP & EC	Statewide # Gap Occs
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC), Adequately Protected (statewide)	1		1.00	1.666
<i>Symphyotrichum jessicae</i>					
<b>Gap Status 1</b>	Rose Creek Preserve	2	25	0.25	2
<b>Gap Status 2</b>	DNR Registry	1	12.5	0.25	1
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	Private, county	5	62.5	2.5	5
<b>Summary Score &amp; Protection</b>	Inadequately Protected (CP/EC & statewide)	8		3.00	3.00
<i>Thelypodium howellii</i> ssp. <i>howellii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>	private	1	100	4.00	1
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		4.00	4.00
<i>Thelypodium sagittatum</i> ssp. <i>sagittatum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Spokane BLM	1	20	0.6	1
<b>Gap Status 4</b>	private	4	80	3.2	4
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	5		3.8	3.8
<i>Trifolium douglasii</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	1
<b>Gap Status 4</b>	private	3	100	4.00	4
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	3		4.00	3.80
<i>Trifolium thompsonii</i>					
<b>Gap Status 1</b>	Entiat Slopes NAP	1	16.7	0.167	1
<b>Gap Status 2</b>	Colockum SWA, DNR Registry, Keystone Point ACEC, Thompson Clover RNA	2	33.3	0.666	2
<b>Gap Status 3</b>	Okanogan-Wenatchee NF, Spokane BLM	3	50	1.5	3
<b>Gap Status 4</b>	private	0*	0	0	0
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	6		2.333	2.333
<i>Utricularia intermedia</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	33.3	0.333	8
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Gifford Pinchot NF	2	66.7	2.001	3
<b>Gap Status 4</b>		0	0	0	2
<b>Summary Score &amp; Protection</b>	Adequately Protected (CP/EC & statewide)	3		2.334	1.924
<i>Veratrum insolitum</i>					
<b>Gap Status 1</b>		0	0	0	0
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	100	3.00	1
<b>Gap Status 4</b>	state	0*	0	0	0

<b>Gap Category</b>	<b>Managed Areas/Ownership</b>	<b>#Oocs in CP &amp; EC</b>	<b>% of Oocs in CP &amp; EC</b>	<b>Averaged Gap Score for CP &amp; EC</b>	<b>Statewide # Gap Oocs</b>
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC & statewide)	1		3.00	3.00
<i>Wyethia angustifolia</i>					
<b>Gap Status 1</b>		0	0	0	1
<b>Gap Status 2</b>		0	0	0	1
<b>Gap Status 3</b>	Columbia River Gorge NSA	1	100	3.00	2
<b>Gap Status 4</b>		0	0	0	5
<b>Summary Score &amp; Protection</b>	Unprotected (CP/EC), Inadequately Protected statewide)	1		3.00	3.223
<i>Zeltnera muehlenbergii</i>					
<b>Gap Status 1</b>	Conboy Lake NWR	1	100	1.00	1
<b>Gap Status 2</b>		0	0	0	0
<b>Gap Status 3</b>		0	0	0	0
<b>Gap Status 4</b>		0	0	0	0
<b>Summary Score &amp; Protection</b>	Completely Protected (CP/EC & statewide)	1		1.00	1.00



## Appendix B. Species Status Summaries

### ***Actaea elata* var. *elata*** (Tall bugbane)

Synonyms: *Cimicifuga elata* var. *elata*

Legal Status: none.

Natural Heritage Rank: G4T4/S3; WA Sensitive

Range: Southwestern British Columbia to southern Oregon, west of the Cascade Range. In Washington, known from Clallam, Clark, Cowlitz, Grays Harbor, King, Lewis, Pierce, Skamania, Thurston, and Whatcom counties.

WA Ecoregions: East Cascades, North Cascades, Pacific Northwest Coast, Puget Trough, West Cascades

Number of Occurrences: Known from 40 occurrences in Washington, of which 29 are extant and 11 historical. Most recently surveyed in 2018.

Abundance: Populations in Washington are usually very small, often with 2-50 individuals. The total state population may be less than 2,500 plants.

Habitat: Shady old growth Douglas-fir/red-cedar forests mixed with deciduous trees (bigleaf maple, red alder) or edges and small openings in forests formed by clearcuts or blowdowns. Typically found on moist, north-facing slopes (Kaye and Kirkland 1999).

Threats: Disturbance from removal of timber, road construction, residential development, and recreation.

Trends: Downward. Several historical populations are probably extirpated. Monitored populations often show a long-term downward trend.

Managed Areas: Battle Ground SP, Beacon Rock SP, Columbia Falls NAP, Columbia River Gorge NSA, Flaming Geyser SP, Gifford Pinchot NF, Lewis and Clark SP, Olympic NP, Paradise Point SP, Penrose Point SP, Washougal Oaks NAP/NRCA

Protection Status in Columbia Plateau & East Cascades: Unprotected. One population is known from the East Cascades ecoregion in Gifford Pinchot NF (Appendix A), but is not protected and has not been relocated since 1990. Statewide, nine occurrences are in Gap Status 1 or 2 areas and the species is considered adequately protected.

Potential Inventory or Conservation Areas: none.

References: Camp and Gamon 2011, Kaye 2000, Kaye and Kirkland 1999, Wentworth 1996a.

### ***Agoseris aurantiaca* var. *carnea*** (Pink agoseris)

Synonym: *Agoseris lackschewitzii*

Legal Status: USFS Sensitive

Natural Heritage Rank: G5T4Q/S2; WA Sensitive

Range: Southern British Columbia to Alberta, south to Washington, Idaho, Montana, and Wyoming. In Washington, known from Kittitas and Okanogan counties.

WA Ecoregions: East Cascades, Okanogan

Number of Occurrences: Known from four extant populations, all discovered or revisited since 2007 (most recently in 2018).

Abundance: In Washington, populations range in size from 30 to 500 plants or more.

Habitat: Moist montane and subalpine meadows at 1,200-2,000 meters (4,000-7,000 ft.).

Threats: Habitat degradation from recreation, trampling.

Trends: Not known. Washington populations appear stable at present.

Managed Areas: Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single population in the East Cascades ecoregion is on Forest Service lands managed for multiple use and not formally protected (Appendix A). Statewide, there are four known occurrences that are all unprotected.

Potential Inventory or Conservation Areas: Naneum and Mission Peak

**Comments:** Pink agoseris is lumped with the normally orange-flowered *A. aurantiaca* var. *aurantiaca* in the *Flora of North America* (Baird 2006). Other than flower color, the two taxa differ in habitat, with var. *carnea* restricted to wet sites and var. *aurantiaca* to dry areas, and in beak length of the mature achenes (longer in var. *aurantiaca*). In the herbarium, specimens of typical *aurantiaca* can dry pinkish, but in the field, the two varieties are unmistakable.

**References:** Baird 2006, Camp and Gamon 2011, Fertig et al. 1994.

***Agoseris elata*** (Tall agoseris)

**Synonym:** *Agoseris* × *elata*

**Legal Status:** none

**Natural Heritage Rank:** G4/S3?; WA Sensitive

**Range:** According to Baird (2006), *Agoseris elata* is restricted to prairie regions of the Puget Sound and Willamette Valley in western Washington (Island and Thurston counties) and northwestern Oregon and the mountains of northeastern and central California. Populations have also been reported from the Cascade and Olympic mountains of central and western Washington in Chelan, Clallam, Cowlitz, Kittitas, Klickitat, Okanogan, Pierce, Snohomish, Whatcom, and Yakima counties.

**WA Ecoregions:** Puget Trough, also reported from East Cascades, North Cascades, Okanogan, Pacific Northwest Coast, West Cascades.

**Number of Occurrences:** According to Baird (2006) the only authenticated occurrences of *Agoseris elata* in Washington are from historical sites in the Puget Trough, last observed in 1898. An additional 35 sites (of which 30 are extant and 5 historical) are known from elsewhere in the state. All of the reported populations should be reconfirmed to determine if the plants are other *Agoseris* taxa, such as *A. glauca*, *A. grandiflora*, or *A. aurantiaca*, or hybrids between these taxa.

**Abundance:** Not known. Reported populations may contain a single plant or as many as 600 individuals.

**Habitat:** Confirmed populations occur in lowland prairies. Other reports from Washington are from montane meadows or exposed rocky ridges.

**Threats:** Loss or conversion of prairie habitat to agriculture, fire suppression, or urban development.

**Trends:** Probably downward. According to Baird (2006) true *A. elata* may be extirpated in Washington.

**Managed Areas:** Reported from Camas Meadows NAP, Conboy Lake NWR, Mt. Baker-Snoqualmie NF, Mount Rainier NP, Okanogan-Wenatchee NF, Pasayten WA.

**Protection Status in Columbia Plateau & East Cascades:** Inadequate. Two of the 11 reported populations of *A. elata* in the East Cascades ecoregion are protected in Camas Meadows NAP and Conboy Lake NWR (Appendix A). Other occurrences on Okanogan-Wenatchee NF lands managed for multiple use and not formally protected. Statewide, nine occurrences are known from Gap 1 or 2 lands and the species is adequately protected.

**Potential Inventory or Conservation Areas:** Naneum and Mission Peak, Panakanick Prairie.

**References:** Baird 2006, Camp and Gamon 2011, Hitchcock and Cronquist 2018.

***Aliciella leptomeria*** (Great Basin gilia)

**Synonyms:** *Gilia leptomeria*

**Legal Status:** none

**Natural Heritage Rank:** G5/S1; WA Threatened

**Range:** Occurs from eastern Washington to Idaho and Wyoming, south to California, Arizona, and New Mexico. In Washington, known only from Benton, Franklin, and Grant counties.

**WA Ecoregions:** Columbia Plateau

**Number of Occurrences:** Known from eight extant and two historical occurrences. All extant populations have been discovered or surveyed since 1994 (most recently in 2019).

**Abundance:** All surveyed populations are small, containing only 10 to a few hundred individuals.

**Habitat:** In Washington, found on dry bluffs or swales in semi-arid areas on gravelly to sandy reddish or black basalt or other gravels. Communities are dominated by big sagebrush and hopsage.

**Threats:** Habitat loss, competition from invasive weeds, and wildfire.

Trends: Not known.

Managed Areas: Hanford ERP, Hanford Reach NM, Saddle Mountain NWR, South Columbia Basin SWA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of the 10 known occurrences in the Columbia Plateau ecoregion (and statewide) are protected in the Hanford Reach NM (including Saddle Mountain NWR) and South Columbia Basin SWA (Appendix A).

Potential Inventory or Conservation Areas: Hanford.

References: Camp and Gamon 2011, Hitchcock and Cronquist 2018

***Allium bisceptrum*** (Twincrest onion)

Legal Status: none.

Natural Heritage Rank: G4G5/S1; WA Threatened

Range: Southern Washington (Franklin County) to Idaho south to SE California, Utah, and New Mexico.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single occurrence in Washington, first discovered in 1998 (but not relocated in a recent search).

Abundance: Not known; cited as "uncommon" in 1998.

Habitat: Washington population found on a bench above the Palouse River in a highly disturbed shrub steppe community.

Threats: Competition from invasive plants, trampling, grazing.

Trends: Not known.

Managed Areas: Palouse Falls SP.

Protection Status in Columbia Plateau & East Cascades: Completely Protected. The single occurrence in the state is found in Palouse Falls SP (Appendix A).

Potential Inventory or Conservation Areas: Palouse Falls.

References: Camp and Gamon 2011.

***Allium campanulatum*** (Sierra onion)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Southern Washington (Columbia and Yakima counties) to California and Nevada.

WA Ecoregions: Blue Mountains, East Cascades

Number of Occurrences: Known from three extant occurrences in Washington, all discovered or relocated since 2005 (most recently in 2010).

Abundance: Populations are small, ranging from a dozen to several hundred plants. The entire state population is probably less than 2,500 individuals.

Habitat: Dry meadows and drainage channels on thin, rocky or sandy soil.

Threats: Grazing, trampling, forest encroachment.

Trends: Not known.

Managed Areas: Okanogan-Wenatchee NF, Umatilla NF, state.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The two occurrences found in the East Cascades ecoregion are on public lands managed for multiple use (Okanogan-Wenatchee NF and state lands) and not formally protected (Appendix A). No populations are protected elsewhere in the state.

Potential Inventory or Conservation Areas: Ahtanum.

References: Camp and Gamon 2011, Hitchcock and Cronquist 2018.

***Allium constrictum*** (Constricted Douglas' onion)

Synonym: *Allium douglasii* var. *constrictum*

Legal Status: BLM Sensitive

Natural Heritage Rank: G2G3/S2S3; WA Sensitive

Range: Local endemic of Douglas and Grant counties, Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 17 extant occurrences, all of which have been discovered or revisited since 1984 (most recently in 2012).

Abundance: The total population was estimated at about 91,000 in 1950 acres by Barrett and Sprague (1985). Individual occurrences range from 100 to about 20,000 plants.

Habitat: Vernal moist basalt lithosol flats and margins of rocky vernal pools.

Threats: Conversion of habitat to agriculture, herbicide drift from adjacent croplands.

Trends: Not known.

Managed Areas: Bureau of Reclamation, Spokane BLM, Steamboat Rock SP, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of the 17 occurrences in the state (23.5%) are protected in Steamboat Rock SP (Appendix A). All other populations are on unprotected federal, state, or private lands.

Potential Inventory or Conservation Areas: Banks Lake, Chester Butte, Trefry Canyon to Leahy.

References: Barrett and Sprague 1985, Peterson et al. 1988.

### ***Ammannia robusta*** (Grand redstem)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Occurs from British Columbia to Ontario, south to California, Texas, and Tennessee. Also in Mexico and South America. In Washington, known from Asotin, Benton, Franklin, Grant, Klickitat, Spokane, and Whitman counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from nine occurrences in Washington, of which seven are extant and have been discovered or relocated since 1995 (most recently in 2018).

Abundance: Populations usually contain 500-1,100 plants.

Habitat: Seasonally flooded shorelines, lakeshores, and mudflats.

Threats: Changes in hydrology or dam construction has eliminated much of the seasonally flooded wetland habitat along the Columbia River and in the channeled scablands.

Trends: Not known.

Managed Areas: Columbia River Gorge NSA, Hanford ERP, Hanford NM, Saddle Mountain NWR, South Columbia Basin SWA, Turnbull NWR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two occurrences are protected in Hanford NM (including Saddle Mountain NWR) and Turnbull NWR (Appendix A). The seven other occurrences in the state are from state, federal, or private lands managed for multiple use.

Potential Inventory or Conservation Areas: Hanford, Saddle Mountain.

References: Camp and Gamon 2011.

### ***Anemone patens* var. *multifida*** (Pasqueflower)

Synonym: *Anemone nuttalliana*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5T5/S1; WA Threatened

Range: Alaska and Yukon east to Manitoba and south to SE British Columbia, Idaho, New Mexico, Nebraska, and Illinois. Disjunct in north-central Washington in Chelan County. Previous reports from Okanogan and Whatcom counties were based on misidentifications.

WA Ecoregions: East Cascades.

Number of Occurrences: Known from four extant occurrences in Washington, all relocated since 2004.

Abundance: Populations range in size from three individuals to about 1,600.

Habitat: Alpine and montane meadows and openings in Ponderosa pine or Douglas-fir woods.

Threats: Habitat disturbance from grazing or logging.

Trends: Not known.

Managed Areas: Colockum SWA, Okanogan-Wenatchee NF. Previous reports from Chopaka Mountain NAP and Pasayten WA were based on misidentifications.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One occurrence in the East Cascades ecoregion (and statewide) is protected in the Colockum SWA (Appendix A). Other known occurrences are on unprotected Forest Service lands managed for multiple use.

Potential Inventory or Conservation Areas: Colockum and Quilomene, Naneum and Mission Peak.

References: Camp and Gamon 2011, Hitchcock and Cronquist 2018.

***Aphyllon californicum ssp. grayanum*** (California broomrape)

Synonym: *Orobanche californica ssp. grayana*

Legal Status: none

Natural Heritage Rank: G4T3T4/S1; WA Endangered

Range: Southern Washington (Clark, Klickitat, and Yakima counties) to Idaho, south to California and Nevada.

WA Ecoregions: Columbia Plateau, East Cascades, Puget Trough

Number of Occurrences: Known from three extant populations (last observed in 2016) and three historical occurrences.

Abundance: Over 5,000 plants were found at several sites in Conboy Lake National Wildlife Refuge in 2013-14. One other population on a private land trust contained about 370 plants in 2011. Data are lacking for other sites.

Habitat: In Washington, found in vernal moist meadows, streambeds, and shallow swales that may be covered by up to a foot of water in winter or spring.

Threats: Development of wetland habitats for agriculture, recreation.

Trends: Probably downward

Managed Areas: Columbia River Gorge NSA, Conboy Lake NWR?, Fort Vancouver NHS, Klickitat Canyon NRCA.

Protection Status in Columbia Plateau & East Cascades: Adequate. Four of the five occurrences from the study area are protected in Conboy Lake NWR, Klickitat Canyon NRCA, and lands managed by the Columbia Land Trust (Appendix A).

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011, Hitchcock and Cronquist 2018.

***Artemisia campestris var. wormskioldii*** (Wormskiold's northern wormwood)

Synonym: *Artemisia borealis* var. *wormskioldii*

Legal Status: USFWS former Candidate; BLM Sensitive, USFS Sensitive.

Natural Heritage Rank: G5T1/S1; WA Endangered

Range: Regional endemic of south-central Washington and northern Oregon (where presumed extirpated) near the Columbia River. In Washington, known from Grant and Klickitat counties and recently reintroduced to Benton and Franklin counties.

WA Ecoregions: Columbia Plateau, East Cascades.

Number of Occurrences: Known from two extant and one historical occurrences in Grant and Klickitat counties, Washington. Two additional populations have been reintroduced at Johnson Island (Benton Co.) and Island 18 (Franklin Co.) along the Columbia River in Washington, as well as three sites in Oregon (Sherman and Wasco counties).

Abundance: In 2019, the entire population of var. *wormskioldii* in Washington was 97 flowering plants (67 from the two extant native populations and 30 from the two out-plantings) (Fertig 2020).

Habitat: Flats within the floodplain of the Columbia River on compacted cobbles, shifting sand, and basalt in shrub steppe vegetation with *Artemisia campestris* var. *scouleriana*, *A. ludoviciana*, *Eriogonum compositum*, and *Phacelia hastata*.

**Threats:** Habitat loss from dam construction and inundation or development of shoreline areas, competition from invasive weed species, trampling by people or recreational vehicles, natural erosion or deposition, and low recruitment.

**Trends:** Downward. Since 2005 the native Beverly population has declined from 1,865 flowering individuals to 12 in 2018 and 48 in 2019. Likewise, the Miller Island occurrence has decreased from 142 individuals in 1999 to 19 in 2019 (Fertig 2020). Kaye (2004) conducted a preliminary population viability analysis for the Beverly, WA, population and predicted the population was stable but had an approximately 60% chance of declining by half in ten years. Monitoring data in the past 10-15 years have documented a downward trend at both extant Washington sites.

**Managed Areas:** Army Corps of Engineers, Columbia River Gorge NSA, Gifford Pinchot NF, private. Two introduced populations are within McNary NWR.

**Protection Status in Columbia Plateau & East Cascades:** Unprotected. The extant occurrences in Washington are on public lands managed for multiple use (Appendix A). Two out-planted populations are protected within McNary NWR. If these were included with the natural occurrences the protection level would improve to Inadequate based on 2 protected occurrences, 40% of populations protected, and an averaged Gap score of 2.6.

**Potential Inventory or Conservation Areas:** Hanford.

**Comments:** Wormskiold's northern wormwood was a Candidate for potential listing under the Endangered Species Act from 1999 to 2016 when a final rule was published in which USFWS (2016) determined that the taxon did not warrant listing.

**References:** Arnett 2012b, Arnett and Goldner 2017, Camp and Gamon 2011, Dresser 2016, Fertig 2020, Kaye 2004, Rush 1999a, USFWS 2016.

### ***Astragalus arrectus*** (Palouse milkvetch)

**Legal Status:** BLM Sensitive; USFS Sensitive

**Natural Heritage Rank:** G2G4/S2; WA Threatened

**Range:** Regional endemic of eastern Washington and Idaho. In Washington, found in Chelan, Kittitas, Klickitat, Lincoln, and Whitman counties.

**WA Ecoregions:** Columbia Plateau, East Cascades

**Number of Occurrences:** Known from 23 occurrences, of which 11 are historical. Only eight populations have been documented or relocated since 2003.

**Abundance:** Where survey data are available, populations range from 50 to 1,600 individuals.

**Habitat:** Sagebrush flats, river bluffs, or grassy hillsides and openings in Ponderosa pine or Douglas-fir woods.

**Threats:** Habitat conversion to agriculture, grazing.

**Trends:** Not known, but probably decreasing in long term.

**Managed Areas:** Bureau of Reclamation, Campus Prairie BSA, Colockum SWA, George Hudson BSA, Okanogan-Wenatchee NF, Roosevelt Lake NRA, private

**Protection Status in Columbia Plateau & East Cascades:** Adequate. Five of 23 known occurrences in the study area (and statewide) are protected in the Campus Prairie and George Hudson BSAs managed by Washington State University, the Colockum SWA, and Roosevelt Lake NRA (Appendix A). Another 18 occurrences are on federal or private lands lacking formal protection.

**Potential Inventory or Conservation Areas:** Albion Road/Smoot Hill/Kamiak Butte, Burch Mountain and Swakane Canyon, Colockum and Quilomene, Klickitat River.

**References:** Barneby 1964, Camp and Gamon 2011.

### ***Astragalus arthurii*** (Arthur's milkvetch)

**Legal Status:** BLM Sensitive; USFS Sensitive

**Natural Heritage Rank:** G4/S2; WA Sensitive

**Range:** Regional endemic of southeastern Washington (Asotin County) and adjacent northeastern Oregon and western Idaho.

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from 15 extant occurrences (most recently observed in 2013) and four historical populations.

Abundance: Total population in Washington is probably 2,000-3,000. Individual occurrences contain 10-750 plants.

Habitat: Dry grassy hills and rocky meadows on basalt.

Threats: Loss of habitat to agriculture, wildfire, competition from invasive weeds, herbicide drift.

Trends: Poorly known. Few occurrences have been revisited; of those that have, two show a population decrease and one shows an increase.

Managed Areas: Chief Joseph SWA, Grande Ronde ACEC, Nez Perce NHP, Umatilla NF, Vale BLM, WA DNR

Protection Status in Columbia Plateau & East Cascades: Adequate. Nine occurrences in the Columbia Plateau are protected in Chief Joseph SWA, Nez Perce NHP, and a WA DNR registry site on private land (Appendix A).

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott.

References: Camp and Gamon 2011.

### ***Astragalus columbianus*** (Columbia milkvetch)

Legal Status: BLM Sensitive

Natural Heritage Rank: G2G3/S2S3; WA Sensitive

Range: Endemic to the vicinity of the Columbia River in Benton, Kittitas, and Yakima counties, Washington. Reports from Walla Walla County are based on a misinterpretation of the type locality.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 20 extant occurrences, of which 13 have been discovered or relocated since 2001 (most recently in 2019).

Abundance: Thought to be extinct by Barneby (1964), *Astragalus columbianus* was rediscovered in 1978 and has since been documented from 19 additional sites. Populations may range from 50-25,000 plants. Mastrogiuseppe (1988) noted that plant numbers can vary depending on yearly precipitation and some populations are short-lived following recovery from disturbance.

Habitat: Lightly disturbed big sagebrush and stiff sagebrush-bunchgrass steppe on sandy, silty, or rocky soils.

Threats: Grazing by sheep and cattle (unlike many milkvetches, this species is palatable), competition from invasive weeds, large-scale disturbances, impacts from military exercises, conversion of habitat to agriculture.

Trends: Populations appear to naturally fluctuate according to environmental conditions, but overall trends are poorly known for most sites.

Managed Areas: Ginkgo Petrified Forest SP, Hanford ERP, McCoy Canyon ACEC, Rattlesnake Hills RNA, Spokane BLM, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Three of the 20 occurrences in the Columbia Plateau ecoregion are protected in Rattlesnake Hills RNA, Ginkgo Petrified Forest SP, and McCoy Canyon ACEC (Appendix A).

Potential Inventory or Conservation Areas: Hanford, Rattlesnake Hills, Rattlesnake Mountain, YTC.

References: Barneby 1964, Camp 1990, Gamon 1990a, Mastrogiuseppe 1988, Sauer et al. 1979.

### ***Astragalus diaphanus*** (Transparent milkvetch)

Legal Status: none

Natural Heritage Rank: G4/SX; WA Extirpated

Range: Endemic to the Columbia River and John Day River Valley in northern Oregon and southern Washington (Klickitat County).

WA Ecoregions: East Cascades

Number of Occurrences: Known from a single historic occurrence, last observed in 1920.

Abundance: Presumed to be extirpated in Washington.  
Habitat: Gravel bars and alluvial slopes over basalt bedrock.  
Threats: Habitat loss from flooding or inundation by dams and reservoirs.  
Trends: Downward, considered extirpated in Washington.  
Managed Areas: Columbia River Gorge NSA, private.  
Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).  
Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River.  
References: Camp and Gamon 2011.

***Astragalus geyeri var. geyeri*** (Geyer's milkvetch)

Legal Status: BLM Sensitive  
Natural Heritage Rank: G4T4/S1S2; WA Threatened  
Range: Eastern Oregon to Montana and Wyoming, south to central California, western Arizona, Utah, and Colorado. Disjunct in Grant County, Washington.  
WA Ecoregions: Columbia Plateau  
Number of Occurrences: Known from five extant occurrences in Washington, all observed since 2011.  
Abundance: Populations vary in size from about 50 plants to nearly 5,000.  
Habitat: Washington populations are found in sandy flats, stabilized dunes, or valley bottoms in sagebrush or bitterbrush communities.  
Threats: Habitat conversion to agriculture, trampling, grazing.  
Trends: Not known, but probably stable in the short term.  
Managed Areas: Columbia NWR, Crab Creek SWA, Grant County PUD, Hanford ERP, Hanford Reach NM, Saddle Mountain NWR, Sentinel Slope ACEC, Spokane BLM.  
Protection Status in Columbia Plateau & East Cascades: Adequate. Four of the five known occurrences are protected within Columbia NWR, Hanford NM (including Saddle Mountain NWR), Crab Creek SWA, and Sentinel Slope ACEC (Appendix A).  
Potential Inventory or Conservation Areas: Hanford, Saddle Mountain.  
References: Camp and Gamon 2011.

***Astragalus kentrophyta var. douglasii*** (Douglas' thistle milkvetch)

Legal Status: none  
Natural Heritage Rank: G5TX/SX; WA Extirpated  
Range: Local endemic of the Columbia River, possibly near Walla Walla, Washington (Walla Walla County). Barneby (1964) notes that David Douglas first collected this variety along the Columbia River enroute to the Blue Mountains in 1830 or 1833 and believes it came from the “Great Bend of the Columbia River”.  
WA Ecoregions: Columbia Plateau  
Number of Occurrences: one historic occurrence, last observed in 1883.  
Abundance: Presumed extirpated.  
Habitat: Sandy dunes and riverbanks.  
Threats: Loss of habitat from creation of dams and reservoirs along the Columbia River.  
Trends: Downward, presumed extirpated.  
Managed Areas: not known.  
Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).  
Potential Inventory or Conservation Areas: Hanford?  
References: Barneby 1964, Camp and Gamon 2011.

***Astragalus microcystis*** (Least bladdery milkvetch)

Legal Status: BLM Sensitive; USFS Sensitive  
Natural Heritage Rank: G5/S2; WA Sensitive



**Range:** Southern British Columbia to western Montana, south to northern Washington and Idaho. In Washington, known from Clallam, Ferry, Jefferson, Lincoln, Pend Oreille, and Stevens counties.  
**WA Ecoregions:** Canadian Rockies, Columbia Plateau, Okanogan, Pacific Northwest Coast  
**Number of Occurrences:** Known from 20 extant and seven historical occurrences in Washington. Eleven populations have been discovered or relocated since 2000 (most recently in 2019).  
**Abundance:** At least 14 of the 18 populations with recent survey data contain fewer than 500 plants (many of these have as few as 5-50 individuals). Larger populations may have up to 1,600 plants or more.  
**Habitat:** Populations from eastern Washington occur in open woods or riverbanks on gravelly to sandy soils at elevations of 580-640m (1,900-2,100 ft). Disjunct populations in the Olympic Mountains occur in alpine or subalpine cushion plant communities associated with limestone at 1,770-1,860m (5,800-6,100 ft).  
**Threats:** Trampling, grazing by mountain goats (Olympics) or livestock.  
**Trends:** Surveyed populations tend to be stable or decreasing.  
**Managed Areas:** Buckhorn SBA, Buckhorn WA, Colville NF, Little Pend Oreille SWA, Olympic NF, Roosevelt Lake NRA, Spokane BLM.  
**Protection Status in Columbia Plateau & East Cascades:** Inadequate. Only one of the two occurrences in the Columbia Plateau ecoregion is protected in Roosevelt Lake NRA (Appendix A). Statewide, eight of 27 occurrences are in Gap Status 1 or 2 lands and the species is considered adequately protected.  
**Potential Inventory or Conservation Areas:** none  
**References:** Camp and Gamon 2011.

***Astragalus misellus* var. *pauper*** (Pauper milkvetch)

**Legal Status:** BLM Sensitive  
**Natural Heritage Rank:** G3T3/S2; WA Sensitive  
**Range:** Regional endemic of eastern Washington (Benton, Douglas, Franklin, Kittitas, Klickitat, and Yakima counties).  
**WA Ecoregions:** Columbia Plateau  
**Number of Occurrences:** Known from 15 extant occurrences and two historical populations in Washington. Only seven occurrences have been resurveyed since 2000 (most recently in 2016).  
**Abundance:** The largest known occurrence contains an estimated 12,720-21,950 plants. Other surveyed populations have 150-3,000 individuals.  
**Habitat:** Sagebrush shrub-steppe on open ridgetops and slopes with patches of bare or rocky soil.  
**Threats:** Habitat loss due to military training, road construction, conversion to agriculture, or development.  
**Trends:** Poorly known, may be relatively stable at present.  
**Managed Areas:** Colockum SWA, L.T. Murray SWA, Quilomene SWA, Rock Island ACEC, Spokane BLM, Yakima River Canyon ACEC, Yakima TC.  
**Protection Status in Columbia Plateau & East Cascades:** Adequate. Five occurrences in the Columbia Plateau ecoregion are protected in the Colockum, L.T. Murray, and Quilomene SWAs, Rock Island and Yakima River Canyon ACECs, and a DNR registry site (Appendix A). Twelve other populations are on federal or private lands managed for multiple use and unprotected.  
**Potential Inventory or Conservation Areas:** Colockum and Quilomene, Wenas Wildlife Area, Titchenal Canyon, YTC.  
**References:** Alverson 1985, Camp and Gamon 2011, Salstrom 1994a.

***Astragalus pulsiferae* var. *suksdorfii*** (Ames' milkvetch)

**Legal Status:** none  
**Natural Heritage Rank:** G4T2/S1; WA Endangered  
**Range:** Northern Sierra Nevada and Cascade Range in northern California, with a disjunct population in Klickitat County, Washington.  
**WA Ecoregions:** East Cascades

Number of Occurrences: Known from a single occurrence in Washington in the Glenwood area consisting of four main subpopulations (Gamon 1995). This location was last surveyed in 2019. Suksdorf's type locality is ambiguous, mentioning both the base of Mt. Adams and Falcon Valley (Conboy NWR area) but might represent a different, historical occurrence.

Abundance: Population probably ranges between 500-1,000 individuals in a total area of 5 square kilometers (less than 2 square miles) (Camp and Gamon 2011). Rare Care volunteers counted 977 plants in a survey in 2016.

Habitat: Open Ponderosa pine forest on flat to gentle slopes on coarse-textured volcanic soils and at edge of dirt roads. Usually found on bare ashy soil with thin cover of pine needles or other debris (Fertig 2020).

Threats: Historically, fire suppression was the primary threat, which allowed dense tree and shrub cover to develop and increased the threat from catastrophic wildfire. Habitat disturbance from timber harvesting, road construction, and recreation are potential threats.

Trends: Probably stable since the population was rediscovered in 1981. Longer-term trends are not known but may be downward.

Managed Areas: Conboy Lake NWR, WA DNR, private.

Protection Status in Columbia Plateau & East Cascades: Completely Protected. A portion of this occurrence is protected in Conboy NWR, although adjacent subpopulations on state and private lands are not protected (Appendix A). These areas might be suitable for the DNR registry program.

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Barneby 1964, Camp and Gamon 2011, Fertig 2020, Gamon 1995a.

### ***Astragalus riparius*** (Piper's milkvetch)

Legal Status: BLM Sensitive

Natural Heritage Rank: G2/S2; WA Threatened

Range: Regional endemic of the lower Snake River in SE Washington and adjacent Idaho (where now considered extirpated). In Washington, known from Garfield and Whitman counties. A report from Asotin County is now believed to be a misidentification of *A. sheldonii* (Kemper 2005b).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from nine extant and five historical occurrences. Eight populations have been discovered or relocated since 2005.

Abundance: Kemper (2005) reported ca 7,300 plants at seven sites covering about 265 acres in 2005.

Habitat: Ridgelines and north-facing slopes on shallow soil in Bluebunch wheatgrass-Idaho fescue-forb communities.

Threats: Habitat loss from conversion to orchards or home sites, grazing, competition from invasive weeds, impoundment of water behind the Lower Granite Dam.

Trends: Rangewide, trends are downward (the species was cited as "locally plentiful" by Hitchcock and Cronquist, 1961). The species is now regarded as extirpated in Idaho. Trend data are not available for most Washington populations, but historically the trend is probably downward (Fertig 2020).

Managed Areas: Bonneville Power Administration, US Army Corps of Engineers, WA DNR, Washington State University lands, private.

Protection Status in Columbia Plateau & East Cascades: Unprotected. All 14 occurrences in the Columbia Plateau ecoregion are on state or private lands managed for multiple use (Appendix A).

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte, Wawawai Canyon to Silcott.

References: Fertig 2020, Hitchcock and Cronquist 1961, Kemper 2005b.

### ***Astragalus sinuatus*** (Whited's milkvetch)

Legal Status: BLM: Sensitive

Natural Heritage Rank: G1/S1; WA Endangered

Range: Endemic to southern Chelan County, Washington in the Colockum Creek and Dry Gulch area.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Formerly recognized from eight occurrences, all within a 3 square mile area (covering about 200 acres). (Gamon 1995b). Seven of these have been combined into one, large metapopulation. A second occurrence has not been observed since 1946 and is considered historical.

Abundance: Individual subpopulations contain 1,200-10,000 plants (Combs et al. 2011). Wilderman (2019) estimated the population at 33,320 individuals in 2019.

Habitat: Big sagebrush-bluebunch wheatgrass hillsides on wind-deposited volcanic ash over bedrock.

Threats: Competition from invasive weeds (especially *Bromus tectorum*), high seed predation, prolonged drought, habitat loss from high-intensity wildfire due to increased fuel density.

Trends: Wilderman (2019) summarized 25 years of monitoring data and has shown that numbers fluctuate over time in response to disturbances. The population peaked at approximately 32,000 plants in 1999 and declined to 12,750 in 2014 before increasing to 33,320 in 2019 (Wilderman 2019).

Managed Areas: Colockum Creek ACEC, Colockum SWA, Spokane BLM, Upper Dry Gulch NAP, private (WA DNR registry).

Protection Status in Columbia Plateau & East Cascades: Completely protected. The single extant occurrence is protected in the Upper Dry Gulch NAP, Colockum Creek ACEC, and a DNR private registry site. The second historical occurrence is on private or Colockum SWA lands (Appendix A).

Potential Inventory or Conservation Areas: Colockum and Quilomene.

References: Combs et al. 2011, Fertig 2020, Gamon 1995b, Wilderman 2019.

### ***Astragalus tenellus*** (Loose-flower milkvetch)

Synonym: *Astragalus multiflorus*

Legal Status: none

Natural Heritage Rank: G5/S1; WA Threatened

Range: Yukon to Manitoba, south to Montana, Nevada, New Mexico, South Dakota, and Minnesota. Disjunct in central Washington in Douglas County.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from one occurrence in Washington, last observed in 1996.

Abundance: Not known.

Habitat: In Washington, found in heavy, white clay with *Artemisia tridentata* and *Linanthus pungens*.

Threats: Habitat loss, grazing.

Trends: Not known.

Managed Areas: private.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Chester Butte, Trefry Canyon to Leahy

References: Camp and Gamon 2011, Hitchcock and Cronquist 2018.

### ***Bergia texana*** (Texas bergia)

Legal Status: none

Natural Heritage Rank: G5/SX; WA Extirpated

Range: Occurs from southern Washington (Garfield, Klickitat, and Whitman counties) to Illinois, south to northern Mexico, Texas, and Louisiana.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from two historical occurrences in Washington, not relocated since 1897.

Abundance: Unknown, probably extirpated

Habitat: Drying mud of ditch banks, ponds, marshes, and reservoirs (Holmgren et al. 2005).

Threats: Habitat loss from dam construction, conversion to agriculture.

Trends: Downward, presumed extirpated.

Managed Areas: Columbia River Gorge NSA, private

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek, Wawawai Canyon to Silcott  
References: Holmgren et al. 2005.

***Blitum spathulatum*** (Prostate povertyweed)

Synonym: *Monolepis spathulata*

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Central Oregon south to southern Nevada, California, and Baja California, with disjunct populations in Washington (Holmgren et al. 2012) in Klickitat and Okanogan counties.

WA Ecoregions: East Cascades, Okanogan

Number of Occurrences: Known from one extant occurrence (last observed in 2011) and one historical record in Washington.

Abundance: The population in Okanogan County contained 1,181 individuals when last surveyed in 2011.

Habitat: Moist streambanks and meadows, often associated with alkaline soils (Holmgren et al. 2012). In Washington, the population in Okanogan County is found in a seasonally flooded swale with alkaline soil.

Threats: Loss of habitat to development (agriculture and urbanization), competition from invasive weeds, impacts from livestock grazing.

Trends: Not known, but presumably declining and probably extirpated in the East Cascades ecoregion (though still extant in the Okanogan ecoregion).

Managed Areas: Pearrygin Lake SP.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the East Cascades ecoregion is an historical report from Bingen, last observed in 1904 and presumed to be extirpated. A second occurrence from Okanogan County (Okanogan Ecoregion) is protected in Pearrygin Lake SP (statewide, this species would be considered inadequately protected) (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Hitchcock and Cronquist 2018, Holmgren et al. 2012.

***Boechera cascadenensis*** (Littleleaf rockcress)

Synonyms: *Arabis microphylla* var. *thompsonii*

Legal Status: none

Natural Heritage Rank: G1Q/S1; WA Endangered

Range: Regional endemic of central Washington, NE Oregon, and southern British Columbia. In Washington, known from the east slope of the Cascade Range in Kittitas and Yakima counties.

WA Ecoregions: East Cascades

Number of Occurrences: Until recently, this species was only known from the type collection on "Table Mountain, Wenatchee Mountains", collected by J. William Thompson in 1933. In 2014, David Giblin discovered a second population in the Chimney Peaks area of Yakima County (though the specimen was not confirmed until 2019) (Fertig 2020).

Abundance: Not known.

Habitat: In Washington, found on thin, ashy soil associated with basaltic cliffs.

Threats: Not known.

Trends: Presumed downward before the new population was confirmed in 2019. Species may be under-collected.

Managed Areas: Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The Washington occurrences are all from Forest Service lands managed for multiple use and unprotected (Appendix A).

Potential Inventory or Conservation Areas: Naneum and Mission Peak

Comments: Based on morphologic evidence, *Boechera cascadenensis* is believed to be an apomictic species derived from hybridization between *B. microphylla* and *B. paupercula* (Windham and Al-Shehbaz 2007,

2010). It was originally recognized as a variety of *Arabis microphylla* by Rollins in 1941. Recent discoveries of new populations in southern British Columbia indicate that a change in G rank is necessary, perhaps to G2 or G3 (Fertig 2020).

References: Fertig 2020, Windham and Al-Shehbaz 2007, 2010.

***Bolandra oregana*** (Bolandra)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3/S2; WA Threatened

Range: Endemic to the lower Columbia and Snake River drainages in southern Washington, northeastern Oregon, and western Idaho. Known from Asotin, Clark (historical), Columbia, Garfield, Klickitat (historical), and Skamania counties in Washington.

WA Ecoregions: Blue Mountains, East Cascades, West Cascades

Number of Occurrences: Known from 18 occurrences in Washington, of which 12 are extant and 6 historical.

Abundance: Poorly known, as fewer than half of the known populations have been censused. These occurrences range in size from 10-100 plants.

Habitat: Moist, shaded cliffs or rocky places near streams or waterfalls.

Threats: Habitat degradation from timber harvest or recreation.

Trends: Not known.

Managed Areas: Beacon Rock SP, Chief Joseph SWA, Columbia Falls NAP, Columbia Gorge NSA, Gifford Pinchot NF, Grande Ronde ACEC, Umatilla NF, Vale BLM, Wenaha-Tucannon WA.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the East Cascades ecoregion is within the Columbia River Gorge NSA and classified as Gap status 3 (Appendix A). At least seven populations are protected elsewhere in Washington, making the statewide protection adequate.

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011, Hitchcock and Cronquist 2018.

***Botrychium hesperium*** (Western moonwort)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: British Columbia to Saskatchewan and Ontario, south to Oregon, Arizona, Minnesota, and Michigan. In Washington, known from Chelan, Ferry, King, Pend Oreille, Snohomish, and Stevens counties.

WA Ecoregions: Canadian Rockies, East Cascades, North Cascades, Okanogan

Number of Occurrences: Known from 25 extant occurrences in Washington, all of which have been discovered or relocated since 1998.

Abundance: Populations are typically small, ranging in size from two to 438 individuals. Long term monitoring at several sites in Colville National Forest demonstrates that numbers vary from year to year (the species may exhibit prolonged dormancy during periods of drought).

Habitat: Dry to moist meadows in sagebrush shrublands or the edge of Lodgepole pine-Engelmann spruce forests, usually on gravelly or sandy loam soils.

Threats: Grazing, trampling.

Trends: Washington populations are mostly stable to slowly decreasing.

Managed Areas: Colville NF, Mt. Baker-Snoqualmie NF, North Cascades NP.

Protection Status in Columbia Plateau & East Cascades: Completely Protected in East Cascades ecoregion (North Cascades NP), but inadequately protected statewide (Appendix A).

Potential Inventory or Conservation Areas: Three Brothers-Teaway Range

References: Camp and Gamon 2011.

***Botrychium paradoxum*** (Two-spiked moonwort)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G3G4/S2; WA Threatened

Range: British Columbia to Saskatchewan, south to Washington, and Montana; disjunct in Utah. In Washington, found in Chelan, Ferry, Okanogan, Pend Oreille, and Stevens counties.

WA Ecoregions: Canadian Rockies, East Cascades, Okanogan

Number of Occurrences: Known from 20 extant occurrences in Washington, all observed since 1991 (most recently in 2017). Nine of these populations have not been relocated in recent searches.

Abundance: Populations vary in size from one to 76 individuals and often co-occur with other *Botrychium* species, complicating census efforts.

Habitat: In Washington, found in wet or dry meadows, compacted old roadbeds, rocky slopes, and red-cedar or lodgepole pine forests (Camp and Gamon 2011).

Threats: Livestock grazing, trampling, recreation.

Trends: Not known. Some populations have not been relocated in repeat visits, but absence might be due to plants exhibiting prolonged dormancy, or from difficulty in finding specimens in dense vegetation.

Managed Areas: Chopaka Mountain NAP, Colville NF, Kaniksu NF, Loomis NRCA, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The two occurrences in the East Cascades ecoregion are on Okanogan NF lands managed for multiple use (Appendix A). Only one occurrence is protected statewide (Chopaka Mountain NAP/Loomis NRCA) and so the species is classified as inadequately protected.

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan.

References: Camp and Gamon 2011.

***Calochortus longebarbatus var. longebarbatus*** (Long-bearded sego lily)

Legal Status: none

Natural Heritage Rank: G4T3/S3; WA Sensitive

Range: Occurs from southern Washington (Klickitat and Yakima counties) to northern California. Reports from Whitman County are based on misidentified specimens of *C. nitidus*.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from 17 extant and three historical occurrences in Washington. Ten populations have been discovered or relocated since 2000 (most recently in 2019).

Abundance: Data are not available for most populations, but those that have been surveyed usually contain 150-2,000 plants. The Conboy Lake National Wildlife Refuge population is the largest and may have as many as 100,000 individuals.

Habitat: Seasonally moist (vernal) meadows, edges of forests, or openings in Douglas-fir or Ponderosa pine woodlands. Occasionally found on roadsides and in timber harvest areas.

Threats: Competition from encroaching trees, prolonged grazing, changes in hydrology.

Trends: Not known, but probably downward historically.

Managed Areas: Brooks Memorial SP, Columbia Land Trust, Conboy Lake NWR, Klickitat SWA, Klickitat Canyon NRCA.

Protection Status in Columbia Plateau & East Cascades: Adequate. Nine of 20 occurrences in the Columbia Plateau and East Cascades ecoregions are protected (Conboy Lake NWR, Brooks Memorial SP, Klickitat Canyon NRCA, Klickitat SWA, Columbia Land Trust property) (Appendix A).

Potential Inventory or Conservation Areas: Klickitat River.

References: Gamon 1990b.

***Calochortus macrocarpus var. maculosus*** (Sagebrush mariposa-lily)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5T2/S2; WA Sensitive

Range: Southeastern Washington, northeastern Oregon, and western Idaho. In Washington, found in Asotin, Garfield, and Whitman counties.

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from 26 extant occurrences in Washington, all discovered or re-surveyed since 1997 (most recently in 2019).

Abundance: The total population in Washington was estimated at less than 1,000 by Camp and Gamon (2011). Recent surveys have documented more populations in the Blue Mountains, some of which (Chief Joseph WA and Grande Ronde ACEC) are locally abundant.

Habitat: Undisturbed, dry grasslands on rocky hillsides and slopes with basalt outcrops.

Threats: Grazing (plant is highly palatable to livestock), competition from invasive weeds.

Trends: Poorly known, many sites lack long-term monitoring data.

Managed Areas: Asotin SWA, Chief Joseph SWA, Grande Ronde ACEC, Joseph Creek ACEC, Spokane BLM, Umatilla National Forest, Vale BLM, Wenaha-Tucannon WA.

Protection Status in Columbia Plateau & East Cascades: Unprotected. All five occurrences from the Columbia Plateau are on public lands managed for multiple use (Appendix A). Statewide, at least eight occurrences are in Gap status 1 or 2 lands and the taxon is rated as adequately protected.

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte, Wawawai Canyon to Silcott.

References: Camp and Gamon 2011.

### ***Calochortus nitidus*** (Broadfruit mariposa lily)

Legal Status: none

Natural Heritage Rank: G3/S1; WA Endangered

Range: Regional endemic of southeast Washington (Asotin, Garfield?, and Whitman counties), northeast Oregon, and north-central Idaho.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from two extant occurrences in Washington (Riser 2019). One other recent occurrence (discovered in 1995) from Umatilla NA has not been relocated in recent surveys and may be extirpated or misidentified (Fertig 2020, Riser 2019). Two other occurrences are historical and possibly extirpated.

Additional historical reports from Walla Walla County and a 1987 collection from Pullman (*B. Hunter s.n.*, WTU) need corroboration.

Abundance: This species had been considered extirpated in Washington as recently as 1995 (Baxter and Gamon 1995). Approximately 100 plants occur in the Steptoe Butte area (Riser 2019).

Habitat: Rolling hills and moist swales in Palouse grasslands on loess and alluvium.

Threats: Habitat loss from conversion of Palouse grasslands to agriculture or urbanization, competition from invasive annual plants, grazing by livestock, herbivory by gophers (Caicco 1988).

Trends: Downward. Based on the number of collections from the Pullman area from 1892-1916, this species appears to have declined sharply as its prairie habitat was converted to agriculture in the early 20<sup>th</sup> Century.

Managed Areas: proposed Steptoe Butte NAP, Umatilla NF?, private.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One occurrence is within the proposed Steptoe Butte NAP. All other populations are on private lands managed for multiple use (Appendix A).

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte, Steptoe Butte, Wawawai Canyon to Silcott

References: Arnett 2017, Baxter and Gamon 1995, Caicco 1988, Camp and Gamon 2011, Fertig 2020, Mancuso 1996.

***Calyptridium roseum*** (Rosy pussypaws)

Synonym: *Cistanthe rosea*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Southern Washington (Benton County) to southern Idaho and western Wyoming, south to central California, Nevada, and Utah.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from two extant occurrences in Washington, both observed since 1995.

Abundance: Washington populations range in size from less than 10 to over 150 plants.

Habitat: In Washington, this species is found in low swales with well-developed biological soil crust within sagebrush grassland.

Threats: Disturbance associated with hazardous materials cleanup.

Trends: Not known.

Managed Areas: Hanford ERP.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Hanford.

References: Camp and Gamon 2011.

***Camassia cusickii*** (Cusick's camas)

Legal Status: none

Natural Heritage Rank: G4/S1; WA Sensitive

Range: Regional endemic of the Snake River Canyon of NE Oregon and WC Idaho, with a disjunct population in Klickitat County, Washington (Hitchcock and Cronquist 2018).

WA Ecoregions: East Cascades

Number of Occurrences: Known from one extant occurrence in Washington, discovered in 2017

Abundance: Not known.

Habitat: Found on steep, moist cliffs associated with seeps.

Threats: Potentially threatened by habitat loss, changes in hydrology, or over-harvest.

Trends: Not known.

Managed Areas: private.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Klickitat River.

References: Hitchcock and Cronquist 2018, Kephart et al. 2019

***Carex capillaris*** (Hair-like sedge)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Circumboreal, in North America ranges from Alaska to eastern Canada, south to northern Washington, northeast Oregon, Nevada, New Mexico, South Dakota, Michigan, and Maine (Camp and Gamon 2011, Wilson et al. 2008). In Washington, known from Chelan, Okanogan, and Pend Oreille counties.

WA Ecoregions: Canadian Rockies, East Cascades, Okanogan

Number of Occurrences: Known from six extant occurrences, five of which have been discovered or relocated since 2005.

Abundance: Washington populations range in size from fewer than 10 plants to over 1,000. The total population in the state may be as low as 1,500 individuals.

Habitat: Fens, marshes, wet meadows and moist forests, usually associated with limestone (Wilson et al. 2008).

Threats: May be threatened by water development or changes in hydrology, trampling by livestock or hikers, and impacts from forestry (Camp and Gamon 2011).



Trends: not known.

Managed Areas: Colville NF, North Cascades NP, Okanogan-Wenatchee NF, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Completely Protected. The single occurrence in the East Cascades ecoregion is protected within North Cascades NP (Appendix A). Protection status is inadequate statewide.

Potential Inventory or Conservation Areas: none.

References: Camp and Gamon 2011, Wilson et al. 2008.

### ***Carex cordillerana*** (Cordilleran sedge)

Legal Status: USFS Sensitive

Natural Heritage Rank: G3G4/S1; WA Sensitive

Range: British Columbia to Alberta, south to Oregon, Utah, and Wyoming. In Washington, known from Asotin, Ferry, Okanogan, Pend Oreille, Spokane, and Stevens counties.

WA Ecoregions: Blue Mountains, Columbia Plateau, Okanogan

Number of Occurrences: Known from 10 occurrences in Washington, of which three are historical and seven extant (these discovered or relocated from 1991-2006).

Abundance: Poorly known, most populations are probably small.

Habitat: Shady deciduous forests (or occasionally with juniper) on rocky slopes and with deep leaf litter.

Threats: Grazing (highly palatable to livestock).

Trends: Not known, but probably downward over much of the northwest (Wilson et al. 2008).

Managed Areas: Colville NF, Okanogan-Wenatchee NF, Pasayten WA, Sinlahekin SWA, Umatilla NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the Columbia Plateau ecoregion is from unprotected private lands (Appendix A). Statewide, there are two populations on Gap status 1 and 2 lands, making its protection inadequate in Washington.

Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch

References: Wilson et al. 2008.

### ***Carex davyi*** (Davy's sedge)

Synonym: *Carex constanceana*

Legal Status: none

Natural Heritage Rank: G2/SX; WA Extirpated

Range: Occurs primarily from southern Oregon to eastern California with a disjunct population near Mount Adams in Yakima County, Washington.

WA Ecoregions: East Cascades

Number of Occurrences: Known from a single historical occurrence in Washington, last observed in 1909.

Abundance: Not known, presumed extirpated.

Habitat: Seasonally moist sites in open conifer forest, scablands, or ephemeral watercourses (Wilson et al. 2008).

Threats: Habitat loss from changes in hydrology, grazing, and competition from invasive weeds.

Trends: Downward, presumed extirpated.

Managed Areas: Gifford Pinchot NF?, Yakima IR? .

Protection Status in Columbia Plateau & East Cascades: Unprotected?. The single, vague historical report for Washington is mapped on Gap status 4 lands (Appendix A), but could potentially occur in the Mt. Adams WA of Gifford Pinchot NF.

Potential Inventory or Conservation Areas: none.

References: Fertig 2020, Wilson et al. 2008.

### ***Carex densa*** (Dense sedge)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Southwestern Washington and western Oregon south to southern California. In Washington, found in Clark, Lewis, Thurston, and Yakima counties.

WA Ecoregions: East Cascades, Pacific Northwest Coast, Puget Trough

Number of Occurrences: Known from nine extant and one historical occurrences in Washington. All of the extant populations have been discovered or re-surveyed since 2005 (most recently in 2018).

Abundance: At least two populations contain several thousand plants. Other occurrences have fewer than 200 plants or lack abundance data.

Habitat: Wet meadows or prairies, ditches, or intertidal marshlands. Sites usually are characterized by fluctuating water levels and summer drought.

Threats: Changes in hydrology, grazing, habitat conversion to agriculture or human habitations.

Trends: Downward historically, current trend not known.

Managed Areas: Gifford Pinchot NF, Lacamas Prairie NAP, Mt. Adams WA, WA DFW.

Protection Status in Columbia Plateau & East Cascades: Completely protected in East Cascades ecoregion (Mt Adams WA). Statewide, three of ten occurrences are protected, but the species is scored as inadequately protected (Appendix A).

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011, Wilson et al. 2008.

### ***Carex heteroneura*** (Smooth-fruit sedge)

Synonyms: *Carex atrata* var. *erecta*, *Carex epapillosa* *Carex heteroneura* var. *epapillosa*

Legal Status: USFS Sensitive

Natural Heritage Rank: G5/S2S3; WA Sensitive

Range: British Columbia to Saskatchewan, south to California, Arizona, and Colorado. Found in Okanogan, Whatcom, and Yakima counties in Washington.

WA Ecoregions: East Cascades, North Cascades, Okanogan

Number of Occurrences: Known from 23 extant and one historical occurrences in Washington. Eight populations have been discovered or resurveyed since 2000.

Abundance: Surveyed populations contain between one to several thousand plants.

Habitat: Montane to alpine stream banks, wet meadows, or rocky slopes at 1615-2400m (5300-7900 ft).

Threats: Grazing, trampling.

Trends: Not known.

Managed Areas: Loomis NRCA, Okanogan-Wenatchee NF, Pasayten WA.

Protection Status in Columbia Plateau & East Cascades: Unprotected in the East Cascades ecoregion (Appendix A). Statewide, six of 18 occurrences are in Gap status 1 or 2 areas and the species is adequately protected.

Potential Inventory or Conservation Areas: none.

References: Camp and Gamon 2011, Wilson et al. 2008.

### ***Carex macrochaeta*** (Longawn sedge)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Northeast coast of Asia, Alaska and Yukon south to southern British Columbia, with disjunct populations in southern Washington and northwest Oregon (Wilson et al. 2008). In Washington, populations have been confirmed from Pacific and Skamania counties. Additional reports from high elevations in the Cascade Range in Pierce and Yakima counties are questionable. Reports from Grays Harbor and Whatcom counties are based on misidentifications.

WA Ecoregions: East Cascades?, Pacific Northwest Coast, West Cascades. Reports from the North Cascades are now considered erroneous.

Number of Occurrences: Known from two confirmed occurrences (both observed since 2009) and two questionable historical populations.

Abundance: The largest known occurrence in Washington has about 700 plants.

Habitat: According to Wilson et al. (2008), this species is found mostly in the spray zone of waterfalls or wet, seepy north-facing cliffs in Oregon and Washington. Two other populations have been reported from alpine areas in the Cascades and may be misidentified.

Threats: Vulnerable to changes in hydrology and impacts from climate change. Important forage species for wildlife in Canada and Alaska (Wilson et al. 2008).

Trends: Confirmed populations in Washington appear to be stable over the past 20-30 years.

Managed Areas: Columbia Falls NAP, Columbia River Gorge NSA, Gifford Pinchot NF?, Mt Rainier NP?

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single report from the East Cascades Ecoregion is on Gifford Pinchot NF but is not formally protected. Peter Zika has questioned whether this record is identified correctly, and the habitat is atypical (Wilson et al. 2008). One or two occurrences in the West Cascades ecoregion are found in Gap status 1 lands, and statewide the species is considered adequately protected.

Potential Inventory or Conservation Areas: none.

References: Camp and Gamon 2011; Wilson et al. 2008

### ***Carex pauciflora*** (Few-flowered sedge)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Circumboreal; in North America from Alaska to New Brunswick south to Washington, Montana, West Virginia, and Connecticut. In Washington, found in Clallam, Jefferson, King, Kittitas, Mason, San Juan, Skagit, Snohomish, and Whatcom counties.

WA Ecoregions: East Cascades, North Cascades, Pacific Northwest Coast, Puget Trough

Number of Occurrences: Known from 19 extant and one historical occurrences in Washington. Seventeen populations have been discovered or resurveyed since 2001 (most recently in 2018).

Abundance: Often locally abundant, with at least five populations containing more than 100,000 individuals.

Habitat: Sphagnum bogs and acidic wetlands.

Threats: Trampling, changes in hydrology.

Trends: Populations with long term monitoring data appear stable.

Managed Areas: Cranberry Bog SBA, Kings Lake Bog NAP, Moran SP, Morning Star NRCA, Mt. Baker-Snoqualmie NF, Olympic NF, Snoqualmie Bog NAP, Tahuya SF, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the East Cascades (located right on the boundary with the West Cascades ecoregion) is on Forest Services lands managed for multiple use (Appendix A). Statewide, this species has seven populations in Gap status 1 or 2 lands and is considered adequately protected.

Potential Inventory or Conservation Areas: Three Brothers-Teaway Range

References: Camp and Gamon 2011, Wilson et al. 2008.

### ***Carex proposita*** (Smoky Mountain sedge)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: British Columbia to Idaho and northwest Wyoming, south to California. In Washington, found in Chelan, Okanogan, Pierce, Skamania, Snohomish, and Skagit counties. Reports from Ferry and Stevens counties are based on misidentified specimens.

WA Ecoregions: East Cascades, North Cascades, Okanogan, West Cascades. Reports from the Canadian Rockies are erroneous.

Number of Occurrences: Known from 11 extant and five historical occurrences in Washington. Only six populations have been relocated since 2000.

Abundance: Data are lacking for most populations. The Enchantment Lakes Basin contains several thousand plants.

Habitat: Dry, rocky alpine slopes, ridges, and meadows, often associated with granite.

Threats: Grazing, trampling, and impacts from recreation.

Trends: Not known, but at least five populations appear to be stable over the past 20-30 years.

Managed Areas: Alpine Lakes WA, Enchantment SBA, Gifford Pinchot NF, Glacier Peak WA, Henry M. Jackson WA, Mount Rainier NP, Mount St. Helens NVM, North Cascades NP, Okanogan-Wenatchee NF. Recent reports from Colville NF are based on misidentifications.

Protection Status in Columbia Plateau & East Cascades: Inadequate. At least three occurrences are protected in the East Cascades Ecoregion in the Alpine Lakes, Glacier Peak, and Henry M. Jackson wilderness areas and Enchantment SBA. Seven other occurrences are on Okanogan-Wenatchee National Forest lands managed for multiple use (Appendix A). Statewide, the species is considered adequately protected because seven of 16 occurrences are in Gap status 1 or 2 areas.

Potential Inventory or Conservation Areas: Stuart Range.

References: Camp and Gamon 2011, Wilson et al. 2008.

### ***Carex scirpoidea ssp. scirpoidea*** (Canadian single-spike sedge)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5T5/S2; WA Sensitive

Range: Circumboreal; in North America occurs from Alaska to Newfoundland, south to California, Utah, Colorado, Michigan, and New York. In Washington, found in Jefferson, Kittitas, Mason, Okanogan, and Whatcom counties.

WA Ecoregions: East Cascades, North Cascades, Okanogan, Pacific Northwest Coast

Number of Occurrences: Known from 11 extant occurrences and four historical populations. Two populations has been relocated since 2018.

Abundance: Data are lacking for half of the known populations. Surveyed occurrences are small, ranging from 6-500 individuals.

Habitat: Subalpine or alpine dry to moist meadows or fellfields.

Threats: Grazing.

Trends: Not known.

Managed Areas: Chopaka Mountain NAP, Mt. Baker-Snoqualmie NF, Mt. Baker WA, Okanogan-Wenatchee NF, Olympic NP, Pasayten WA.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The two occurrences from the East Cascades are on unprotected US Forest Service lands (Appendix A). Statewide, 11 of 15 populations are in Gap status 1 or 2 areas and the taxon is adequately protected.

Potential Inventory or Conservation Areas: Three Brothers-Teaway Range

References: Camp and Gamon 2011, Wilson et al. 2008.

### ***Carex sychnocephala*** (Many-headed sedge)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Alaska to Quebec, south to Oregon, Colorado, Missouri, and New York. In Washington, found in Ferry, Lincoln, Okanogan, and Pend Oreille counties.

WA Ecoregions: Canadian Rockies, Columbia Plateau, Okanogan

Number of Occurrences: Known from 13 extant populations in Washington. Most recently observed in 2015.

Abundance: Most populations contain 50-1,000 individuals.

Habitat: Marshes or seasonally wet banks of rivers and lakes, often on alkaline soils.

Threats: Grazing, impacts from recreation, and changes in hydrology.

Trends: Not known.

Managed Areas: Alta Lake SP, Okanogan-Wenatchee NF, Sinlahekin SWA, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence from the Columbia Plateau is from public lands managed for multiple use (Appendix A). Statewide, three populations occur in Gap status 1 or 2 lands and the species is ranked as inadequately protected.  
Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch, Swanson Lakes.  
References: Camp and Gamon 2011, Wilson et al. 2008.

***Carex vallicola*** (Valley sedge)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: British Columbia to South Dakota, south to California, New Mexico, and Mexico. In Washington, found in Grant and Okanogan counties.

WA Ecoregions: Columbia Plateau, Okanogan

Number of Occurrences: Known from 18 extant occurrences in Washington, but only four populations have been relocated or discovered since 2000 (most recently in 2018).

Abundance: More than half of the known populations in the state contain fewer than 50 plants. Three occurrences have more than 1,000 individuals.

Habitat: Dry meadows, sagebrush steppe, and openings in aspen or Douglas-fir forest.

Threats: Grazing, impacts from recreation.

Trends: Not known, but probably downward in past century.

Managed Areas: Okanogan-Wenatchee NF, Sinlahekin SWA, Steamboat Rock SP.

Protection Status in Columbia Plateau & East Cascades: Completely Protected in the Columbia Plateau ecoregion. The only known occurrence in the ecoregion is within Steamboat Rock SP (Appendix A). Statewide, protection is inadequate (one other site is protected in Sinlahekin SWA).

Potential Inventory or Conservation Areas: Banks Lake, Sun Lakes

References: Arnett and Björk 1996, Camp and Gamon 2011, Wilson et al. 2008.

***Castilleja cryptantha*** (Obscure Indian-paintbrush)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G2G3/S2S3; WA Sensitive

Range: Local endemic of central Washington in the vicinity of Mount Rainier (Pierce and Yakima counties).

WA Ecoregions: East Cascades, West Cascades

Number of Occurrences: Known from 21 extant occurrences. Gamon (1990c) reported 27 occurrences, but several have been combined due to their proximity.

Abundance: Most populations range in size from 20 to 2,000 plants. Two very large occurrences contain 20,000-50,000 stems.

Habitat: Subalpine and alpine meadows with lush herbaceous and low shrub cover from 1,480-2,060 meters (4,860-6,760 ft), often near stream channels and seeps. Soils are mostly derived from pumice and organic debris.

Threats: Trampling by hikers and elk.

Trends: Not known.

Managed Areas: Mount Rainier NP, Okanogan-Wenatchee NF, William O. Douglas WA.

Protection Status in Columbia Plateau & East Cascades: Completely protected. All of the known occurrences in the East Cascades ecoregion and the state of Washington are protected in Mount Rainier NP or the William O. Douglas WA.

Potential Inventory or Conservation Areas: none

References: Camp and Gamon 2011, Gamon 1990c.

***Chaenactis thompsonii*** (Thompson's chaenactis)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G3/S3; WA Sensitive

Range: Endemic to northern and central Washington (Chelan, Kittitas, and Pierce counties), mostly in the Wenatchee Mountains. Reports from Whatcom County are based on a misidentification.

WA Ecoregions: East Cascades, West Cascades

Number of Occurrences: Known from 13 extant occurrences and four historical populations. Only nine occurrences have been discovered or relocated since 2000.

Abundance: Data are lacking for most populations. At least five occurrences contain between 200-2,000 or more plants.

Habitat: Rocky montane slopes and ridges, often on serpentine-derived soils high in magnesium and low in calcium. Found at elevations of 880-2,130m (2,900-7,000 ft).

Threats: Mining.

Trends: Not known.

Managed Areas: Mt. Baker-Snoqualmie NF, Mt. Baker WA, Okanogan-Wenatchee NF, Swakane SWA.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The 16 occurrences in the East Cascades ecoregion are all on unprotected Forest Service lands (Appendix A).

Potential Inventory or Conservation Areas: Burch Mountain and Swakane Canyon, Naneum and Mission Peak, Stuart Range, Three Brothers-Teaway Range, Tumwater Mountain-Chumstick Mountain

References: Camp and Gamon 2011, WNHP 1981.

### ***Chrysolepis chrysophylla* var. *chrysophylla*** (Golden chinquapin)

Synonym: *Castanopsis chrysophylla*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5T5/S2; WA Sensitive

Range: Western Washington to central California. In Washington, native populations are known from Mason and Skamania counties. Introduced populations are also found in King and Kitsap counties.

WA Ecoregions: East Cascades, Pacific Northwest Coast, Puget Trough (escaped from cultivation?), West Cascades

Number of Occurrences: Known from at least 13 recent occurrences (discovered or surveyed since 1984) and three historical populations. Two populations from King and Kitsap counties appear to be introductions (Kruckeberg 1980).

Abundance: Most Washington populations are small with less than 50 plants (six occurrences contain a single individual). Only three sites contain more than 300 trees. Counts are difficult at some large populations due to sprouts forming from the base of plants (Salstrom 1992).

Habitat: Dry, relatively infertile, openings in conifer forests maintained by wind throw, fire, or human activities (clearcuts or thinning). Sites may be dense with regrowth of Douglas-fir, western hemlock, salal, vine maple, and other shrubs.

Threats: Heart rot and leaf fungus, impacts from logging (habitat alteration, damage to golden chinquapin plants from falling trees can provide access to infectious diseases), succession or competition from conifers, loss of habitat from dams and reservoir construction.

Trends: Monitoring data are inconsistent in Washington, but the majority of populations appear to have declined over the past 30 years.

Managed Areas: Columbia River Gorge NSA, Gifford Pinchot NF, Olympic NF, Trapper Creek WA, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The five occurrences from the East Cascades ecoregion are on public lands managed for multiple use (Appendix A). Statewide, one population is protected in the Trapper Creek WA. This species is considered inadequately protected statewide.

Potential Inventory or Conservation Areas: Catherine Creek

Comments: The disjunct occurrences from Mason County may be a reservoir of important genetic diversity for the species as a whole (Kruckeberg 1980). Golden chinquapin is the only host plant for the

Golden hairstreak butterfly (*Habrodais grunus herrii*), a species listed as Threatened by the Washington Natural Heritage Program.

References: Camp and Gamon 2011, Kruckeberg 1980, McKee 1990, Salstrom 1992.

***Chylismia scapoidea* ssp. *brachycarpa*** (Naked-stalked evening-primrose)

Synonym: *Camissonia scapoidea* ssp. *scapoidea*, *Oenothera scapoidea*

Legal Status: BLM Sensitive

Natural Heritage Rank: G5T4T5/S1; WA Threatened

Range: Eastern Oregon to Montana and Wyoming, south to Nevada, northern Arizona, and New Mexico. Disjunct in central Washington in Kittitas and Lincoln counties (and reported historically from Chelan County, but specimens need confirmation).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from three extant occurrences in Washington, all discovered or relocated since 1995 (most recently in 2016).

Abundance: Washington populations range in size from 50-100 plants to about 400.

Habitat: Washington populations occur in sparsely vegetated sandy-gravel areas in sagebrush desert or moist swales around vernal pools.

Threats: Military training exercises, gravel quarrying, competition from invasive weeds, and conversion of vernal pool habitat to agriculture.

Trends: Not known.

Managed Areas: Iron Horse Pioneer Trail SP, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of three confirmed occurrences in the Columbia Plateau (and statewide) is protected in Iron Horse Pioneer Trail SP.

Potential Inventory or Conservation Areas: YTC

References: Camp and Gamon 2011, Hitchcock and Cronquist 2018.

***Cicuta bulbifera*** (Bulb-bearing water-hemlock)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2S3; WA Sensitive

Range: Alaska to eastern Canada, south to Oregon, Idaho, Wyoming, Illinois, and North Carolina (and disjunct in Florida). In Washington, found in Chelan, Island, Pend Oreille, Stevens, Thurston, and Whatcom counties.

WA Ecoregions: Canadian Rockies, East Cascades, Puget Sound

Number of Occurrences: Known from 22 extant and one historical occurrences in Washington. Sixteen populations have been relocated or discovered since 2001 (Fertig 2018), most recently in 2019.

Abundance: Populations range in size from 1-2,000 plants. The total state population is estimated at approximately 6,700 individuals (Fertig 2018).

Habitat: Edge of marshes, streams, lakes, bogs, or wet meadows, often in shallow standing water. Also found on floating mats, beds of *Sphagnum*, or submersed logs. Many sites are associated with active beaver dams (Camp and Gamon 2011).

Threats: Changes in hydrology, competition from invasive plants (such as *Phalaris arundinacea*), impacts from recreation. Grazing has been cited as a threat, but the species is highly toxic to livestock.

Trends: Few occurrences have been resurveyed, but those that have tend to be stable (Fertig 2018).

Managed Areas: Colville NF, Elbow Lake SP, Fish Lake Bog RNA, Lake Terrell SWA, Little Pend Oreille River NAP, Little Pend Oreille NWR, Okanogan-Wenatchee NF, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The only occurrence in the East Cascades ecoregion is protected within the Fish Lake Bog RNA in Okanogan-Wenatchee NF. Statewide, five of 23 occurrences are in Gap status 1 or 2 lands and the species is adequately protected.

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan

References: Camp and Gamon 2011, Fertig 2018.

***Cirsium remotifolium* var. *remotifolium*** (Weak thistle)

Legal Status: USFS Sensitive

Natural Heritage Rank: G5TNR/S1; WA Sensitive

Range: Western Washington to northwestern California. In Washington, known from Clark, Clallam, Grays Harbor, King, Klickitat, Pierce, Skamania, and Thurston counties.

WA Ecoregions: East Cascades, Pacific Northwest Coast, Puget Trough, West Cascades

Number of Occurrences: Known from three extant occurrences (last observed in 2018) and at least 14 historical populations.

Abundance: Not known.

Habitat: Brushy forest openings, fields, and meadows.

Threats: Grazing, habitat conversion to agriculture or human development, and herbicides (may be confused with exotic thistle species and targeted for spraying).

Trends: Downward.

Managed Areas: Columbia River Gorge NSA, Conboy Lake NWR, Gifford Pinchot NF, JB Lewis McChord, Klickitat SWA, Lake Sylvania SP, Olympic NF, Soda Springs SWA, Spokane BLM?, Trout Lake NAP? White Salmon NRCA?

Protection Status in Columbia Plateau & East Cascades: Adequate. Two or three of the seven known occurrences in the East Cascades ecoregion are protected in Conboy Lake National Wildlife Refuge, Soda Springs Wildlife Area, and Trout Lake Natural Area Preserve (where reported). All of these occurrences are historical, however. Other populations are on public or private lands that are not formally protected (Appendix A). Statewide, the species is considered inadequately protected.

Potential Inventory or Conservation Areas: Klickitat River, Panakanick Prairie.

Comments: Based on rangewide distribution, this variety should be ranked T3.

References: Hitchcock and Cronquist 2018, Keil 2006.

***Collinsia sparsiflora* var. *sparsiflora*** (Few-flowered collinsia)

Synonym: *Collinsia sparsiflora* var. *bruceae*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4T4/S1; WA Threatened

Range: Occurs from southern Washington to NE Oregon and N California. In Washington, known from Clark, Klickitat, and Skamania counties.

WA Ecoregions: Columbia Plateau, East Cascades, Puget Trough, West Cascades

Number of Occurrences: Known from four extant and three historical occurrences in Washington. Most recently documented in 2014.

Abundance: Populations surveyed by Rare Care volunteers have between 2,700-17,300 individuals. The entire state population is at least 23,000.

Habitat: Seasonally moist, grassy sites on south slopes in scabland soils derived from basalt.

Threats: Competition from invasive weeds, loss of habitat to agriculture and development.

Trends: Not known.

Managed Areas: Columbia River Gorge NSA, Doug's Beach SP, Gifford Pinchot NF, Klickitat SWA, Ridgefield NWR, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two of the four known populations in the Columbia Plateau and East Cascades ecoregions are protected in Doug's Beach SP and Klickitat SWA (Appendix A). Four occurrences are protected statewide and the species is considered adequately protected.

Potential Inventory or Conservation Areas: Catherine Creek.

References: Alverson and Sheehan 1986a, Camp and Gamon 2011, Hitchcock and Cronquist 2018.

***Collomia macrocalyx*** (Bristle-flowered collomia)

Legal Status: none.



Natural Heritage Rank: G3G4/S2; WA Threatened

Range: Regional endemic of north-central Oregon and south-central Washington in Kittitas and Yakima counties.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from nine extant occurrences in Washington, all observed since 1995 (most recently in 2013).

Abundance: Population size can vary dramatically from year to year depending on precipitation.

Individual populations range from 10 to several thousand plants (Salstrom and Easterly 1996b).

Habitat: Dry lithic soils associated with basalt talus and rock outcrops in sparsely vegetated cushion plant-bunchgrass communities.

Threats: Disturbance from military training exercises, grazing.

Trends: Not known.

Managed Areas: Spokane BLM?, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Unprotected. All nine occurrences in the state are on federal lands managed for multiple use (Appendix A).

Potential Inventory or Conservation Areas: YTC.

References: Salstrom and Easterly 1996b.

### ***Corispermum pallidum*** (Pale bugseed)

Legal Status: none

Natural Heritage Rank: GH/SH; WA Extirpated

Range: Endemic to central Washington in the Quincy Basin of Grant County.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from four historical occurrences in Washington, last observed in 1953.

Abundance: Not known, presumed extirpated.

Habitat: Drifting sand dunes or sandy sagebrush plains.

Threats: Conversion of sand dune habitat to agriculture.

Trends: Downward, presumed extirpated.

Managed Areas: South Columbia Basin SWA, WA DNR, private

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of the four historical occurrences is found in the South Columbia Basin SWA (Appendix A).

Potential Inventory or Conservation Areas: Saddle Mountain.

References: Arnett 2012e, Arnett et al. 2008, Camp and Gamon 2011.

### ***Corispermum villosum*** (Hairy bugseed)

Legal Status: none

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Alberta to Quebec, south to Oregon, Idaho, Arizona, New Mexico, North Dakota, Missouri, and Illinois. In Washington, found in Grant and Klickitat counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from three extant and one historical occurrences in Washington, most recently observed in 2005.

Abundance: Not known. One extant population is described as "occasional".

Habitat: Sand dunes, gravelly shores, stream banks, and waste places, often on alkaline soils.

Threats: Herbicides, conversion of habitat to agriculture.

Trends: Not known.

Managed Areas: Columbia River Gorge NSA, State of Washington, private.

Protection Status in Columbia Plateau & East Cascades: Unprotected. All of the known occurrences are on private, state, or federal lands managed for multiple use (Appendix A).

Potential Inventory or Conservation Areas: Saddle Mountain

References: Arnett 2012e, Holmgren et al. 2012.

***Crepis bakeri*** (Baker's hawksbeard)

Synonym: *Crepis bakeri* ssp. *idahoensis*

Legal Status: none

Natural Heritage Rank: G4/S1; WA Sensitive

Range: Southern Washington to California, east to Idaho and Nevada (Hitchcock and Cronquist 2018). If recognized, ssp. *idahoensis* is a regional endemic of SE Washington and adjacent Idaho, but disjunct in California (Bogler 2006). In Washington, this species is known from Asotin and Klickitat counties. Additional historical reports from Whitman and Yakima counties need confirmation.

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from seven confirmed occurrences, all discovered since 1999 (most recently observed in 2019).

Abundance: Populations in the Blue Mountains range from 15 to 130 individuals. Approximately 50 plants were observed in Brooks Memorial SP by Paul Slichter in 2019.

Habitat: Usually found on dry, rocky slopes with bluebunch wheatgrass and sagebrush, but also reported from riparian thickets.

Threats: Destruction of bunchgrass prairie habitat for agriculture, competition from invasive weeds, and wildfire.

Trends: Not known, but historically probably downward due to loss of grassland habitat in eastern Washington.

Managed Areas: Asotin Creek SWA, Brooks Memorial SP, Chief Joseph SWA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of two occurrences in the Columbia Plateau ecoregion is found in Brooks Memorial State Park (the other is on private land) (Appendix A).

Potential Inventory or Conservation Areas: none.

References: Bogler 2006, Hitchcock and Cronquist 2018.

***Cryptantha gracilis*** (Narrow-stem cryptanth)

Legal Status: BLM Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Central Washington to southwestern Wyoming, south to California, Arizona, and New Mexico. In Washington, found in Asotin, Douglas, Grant, Kittitas, and Yakima counties.

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from 14 extant occurrences, all discovered since 1995 (most recently documented in 2016).

Abundance: Populations range in size from one plant to several hundred.

Habitat: Pockets of silty soil in dry rocky drainages, or basalt talus within sagebrush steppe at 380-820 m (1,250-2,680 ft.).

Threats: Habitat disturbance from grazing, military exercises, or off-road vehicles, conversion of habitat to agriculture, and competition from invasive weeds.

Trends: Not known. As an annual, this species is likely to fluctuate in numbers each year, depending on the amount of winter or spring precipitation.

Managed Areas: Beezley Hills Preserve (TNC), Chief Joseph SWA, Spokane BLM, Sun Lakes SP, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two of the 14 known occurrences are protected in the Beezley Hills Preserve and Sun Lakes SP (Appendix A). All other occurrences are on public or private lands managed for multiple use.

Potential Inventory or Conservation Areas: Chester Butte, Sun Lakes, YTC.

References: Beck and Caplow 1998, Camp and Gamon 2011.

***Cryptantha leucophaea*** (Gray cryptanth)

Legal Status: BLM Sensitive

Natural Heritage Rank: G2G3/S2; WA Threatened

Range: Regional endemic of central Washington and northern Oregon (where possibly extirpated). Found in Benton, Douglas, Franklin, Grant, Kittitas, Walla Walla, and Yakima counties in Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 46 occurrences, of which 37 are extant and nine historical.

Abundance: Most surveyed populations contain 15-500 individuals, although some largely populations may number in the low thousands.

Habitat: Found primarily in unstabilized sand dunes or other sandy sites, often associated with big sagebrush and bitterbrush.

Threats: Habitat loss from wildfire, competition from invasive weeds, sand stabilization, agriculture, or off-road vehicles.

Trends: Probably downward overall; individual populations may be stable.

Managed Areas: Colockum SWA, Columbia NWR, Crab Creek SWA, Ginkgo Petrified Forest SP, Grant County PUD, Hanford ERP, Hanford Reach NM, Juniper Dunes SWA, Juniper Forest ACEC, North Columbia Basin SWA, Sentinel Slope ACEC, South Columbia Basin SWA, Spokane BLM, State of Washington, Yakima TC, private.

Protection Status in Columbia Plateau & East Cascades: Adequate. Twenty-five of 46 occurrences are protected in the Columbia NWR, Juniper Dunes WA, Colockum, Crab Creek, North Columbia Basin, and South Columbia Basin SWAs, Ginkgo Petrified Forest SP, Hanford Reach NM, and Juniper Forest and Sentinel Slope ACECs (Appendix A).

Potential Inventory or Conservation Areas: Colockum and Quilomene, Hanford, Saddle Mountain, Titchenal Canyon, YTC.

References: Camp and Gamon 2011, Caplow and Beck 1995, Salstrom 1994b.

***Cryptantha rostellata*** (Beaked cryptanth)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Threatened

Range: Occurs from central and eastern Washington to eastern Oregon and central California. In Washington, known from Asotin, Kittitas, Klickitat, Walla Walla, Whitman, and Yakima counties.

WA Ecoregions: Blue Mountains, Columbia Plateau, East Cascades

Number of Occurrences: Known from 17 occurrences in Washington, of which 14 are extant and three historical.

Abundance: Salstrom (1996) documented fewer than 500 plants at eight sites surveyed in 1995. Most populations contain less than 50 individuals.

Habitat: Semi-barren sagebrush steppe on coarse-textured substrates derived from basalt.

Threats: Impacts from military training exercises, grazing, and competition from invasive weeds.

Trends: Not known.

Managed Areas: Badger Gap NAP, Chief Joseph SWA, Columbia River Gorge NSA, Spokane BLM, WA DNR, Yakima TC

Protection Status in Columbia Plateau & East Cascades: Inadequate. One occurrence in the Columbia Plateau is protected in Badger Gap NAP (Appendix A). Other populations from the East Cascades ecoregion are on Gap 3 or 4 lands. Statewide three of 17 occurrences are protected.

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott, YTC.

References: Salstrom 1996.

***Cryptantha scoparia*** (Desert cryptanth)

Legal Status: BLM Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Central Washington to Montana, south to California and Colorado. In Washington, found in Benton, Douglas, Grant, Kittitas, Whitman, and Yakima counties.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from eight extant and two historical occurrences in Washington. Most recently observed in 2016.

Abundance: Five populations contain between one and 50 plants. The largest occurrence in the state had several hundred individuals in 1998.

Habitat: South-facing slopes of small canyons with low vegetative cover and dry silty soil or talus. Found in big sagebrush shrublands at 350-650m (1,200-2,100 ft).

Threats: Conversion of habitat to agriculture, competition from invasive weeds, and wildfire.

Trends: Not known.

Managed Areas: Hanford ERP, Rattlesnake Hills RNA, Sun Lakes SP, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two populations from the Columbia Plateau ecoregion are protected in Rattlesnake Hills RNA and Sun Lakes SP. Other occurrences are on Gap status 3 lands (Appendix A).

Potential Inventory or Conservation Areas: Hanford, Rattlesnake Hills, Rattlesnake Mountain, Sun Lakes, YTC.

References: Camp and Gamon 2011.

### ***Cryptantha spiculifera*** (Snake River cryptanth)

Legal Status: BLM Sensitive

Natural Heritage Rank: G4/S2S3; WA Sensitive

Range: Central Washington to western Montana, south to northeastern California, Nevada, Utah, and northwestern Wyoming. In Washington, known from Adams, Benton, Chelan, Franklin, Grant, Klickitat, Lincoln, Okanogan, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades, Okanogan

Number of Occurrences: Known from 27 extant occurrences in Washington and two historical populations. At least 19 occurrences have been discovered or relocated since 2000 (most recently in 2019).

Abundance: The largest population in the state contains over 20,000 plants. Five other occurrences contain over 1,000 individuals. Twenty populations have 10-650 plants.

Habitat: Dry flats or low slopes on rocky soils with sparse vegetative cover within stiff sagebrush or big sagebrush shrublands.

Threats: Wildfire, conversion of habitat to agriculture, grazing, and off-road vehicle recreation.

Trends: Not known, although some populations may be in a short-term decline.

Managed Areas: Entiat Slope NAP, Hanford ERP, Keystone Point ACEC, Rattlesnake Hills RNA, Riverside Breaks NAP, Sentinel Slope ACEC, South Columbia Basin SWA, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of 21 occurrences in the Columbia Plateau and East Cascades ecoregions are protected in Entiat Slopes NAP, Rattlesnake Hills RNA, Keystone and Sentinel Slope ACECs, and South Columbia Basin SWA (Appendix A).

Potential Inventory or Conservation Areas: Burch Mountain and Swakane Canyon, Hanford, Marcellus, Rattlesnake Hills, Rattlesnake Mountain, Saddle Mountain.

References: Camp and Gamon 2011.

### ***Cryptogramma stelleri*** (Steller's rockbrake)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Alaska to Alberta south sporadically to Nevada, Utah, and Colorado; also from Ontario to Newfoundland south to Illinois and West Virginia. In Washington, found in Chelan, Okanogan, Pend Oreille, and Stevens counties.

WA Ecoregions: Canadian Rockies, East Cascades, Okanogan

Number of Occurrences: Known from seven extant occurrences and one historical population. Four occurrences have been discovered or relocated since 2006 (most recently in 2014).

Abundance: Populations range in size from one plant to several hundred.

Habitat: In Washington, found in moist, shaded rock crevices, often on limestone, at 600-1,830 m (2,000-6,000 ft).

Threats: Probably low.

Trends: Not known.

Managed Areas: Chelan-Sawtooth WA, Colville NF, Glacier Peak WA, Okanogan-Wenatchee NF, Trombetta Canyon NAP.

Protection Status in Columbia Plateau & East Cascades: Adequate. One of the two occurrences in the East Cascades ecoregion is protected in the Glacier Peak WA (Appendix A). Statewide, four of eight occurrences are in Gap status 1 or 2 lands.

Potential Inventory or Conservation Areas: Stuart Range, Three Brothers-Teaway Range.

References: Camp and Gamon 2011.

### ***Cuscuta denticulata*** (Desert dodder)

Legal Status: none.

Natural Heritage Rank: G4G5/S1; WA Threatened

Range: Southern Washington (Benton and Franklin counties) and southern Idaho to Baja California, Arizona, and Colorado.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from one extant occurrence (last observed in 1994) and one recently extirpated population.

Abundance: Individual populations are small, consisting of three to 26 plants.

Habitat: In Washington, this parasitic species is only found on sagebrush hosts.

Threats: Habitat conversion to agriculture. Many *Cuscuta* species are considered noxious weeds and might be subjected to herbicide treatments.

Trends: Not known.

Managed Areas: Hanford ERP, South Columbia Basin SWA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One occurrence in the Columbia Plateau (and statewide) is protected in the South Columbia Basin SWA.

Potential Inventory or Conservation Areas: Hanford.

References: Camp and Gamon 2011, Caplow and Beck 1995.

### ***Cusickiella douglasii*** (Douglas' draba)

Synonym: *Draba douglasii*

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G4G5/S1; WA Threatened

Range: Southern Washington (Klickitat County) to Idaho and northern Utah, south to eastern California and central Nevada.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from two occurrences in Washington, only one of which is extant (last observed in 2015).

Abundance: The Columbia Hills NAP population contained an estimated 53,000-56,000 plants when surveyed in 2002 and 2015

Habitat: In Washington, found in thin, sandy-gravelly soil over basalt on open hilltops at 790-860 meters (2,600-2,800 ft).

Threats: Habitat disturbance from grazing and off-road vehicles.

Trends: Not known, but recent trends at the Columbia Hills population appear to be up.

Managed Areas: Columbia Hills NAP, Columbia River Gorge NSA.

Protection Status in Columbia Plateau & East Cascades: Adequate. One population from the Columbia Plateau ecoregion is protected in the Columbia Hills NAP (Appendix A). The population from the East Cascades ecoregion has no protection and is historical (last observed in 1895).

Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River.

References: Camp and Gamon 2011.

***Cypripedium parviflorum*** (Yellow lady's-slipper)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Alaska to Newfoundland, south to northern California, Arizona, New Mexico, Arkansas, and Georgia. Found in Ferry, Okanogan, Spokane, and Stevens counties in Washington.

WA Ecoregions: Canadian Rockies, Columbia Plateau, Okanogan

Number of Occurrences: Known from 22 extant and one historical occurrences. Eleven populations have been discovered or revisited since 2000, most recently in 2019.

Abundance: Individual Washington populations range in size from five to 250 plants.

Habitat: In eastern Washington, this species often occurs on the edge of ponds and in low, moist areas with aspen and dogwood (Gamon 1990d).

Threats: Conversion of Channeled Scablands habitat to agriculture and home sites, grazing, timber harvest, and over-collection of plants for horticulture

Trends: Not known, but probably downward in the past century.

Managed Areas: Colville NF, Pine Creek RNA, Sinlahekin SWA, Spokane BLM, Turnbull NWR.

Protection Status in Columbia Plateau & East Cascades: Adequate. Five of the 10 known occurrences from the Columbia Plateau are protected in Pine Creek RNA and Turnbull NWR (Appendix A).

Statewide, nine occurrences are in protected areas.

Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch

Comments: Sheviak (2002) reports both var. *pubescens* and var. *makasin* from Washington. These taxa have overlapping ranges and differ in flower size and scent. Traditionally, many Washington specimens have been identified as var. *parviflorum*, which is now considered the eastern North American phase of the species (the map in Sheviak 2002 incorrectly shows Washington within its range).

References: Gamon 1990d, Hitchcock and Cronquist 2018, Sheviak 2002.

***Damasonium californicum*** (Fringed waterplantain)

Synonym: *Machaerocarpus californicus*

Legal Status: USFS Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Washington to southern Idaho south to northern California and Nevada. In Washington known from Klickitat County. Additional reports from Okanogan and Pierce counties need confirmation.

WA Ecoregions: Columbia Plateau, reported from Okanogan, Puget Trough.

Number of Occurrences: Known from at least three extant occurrences in Washington, all observed since 1983 (most recently in 2012). Two additional populations (one historic) need confirmation.

Abundance: One population had more than 6,000 plants in 2004. Data are not available for other occurrences.

Habitat: Ponds, lakes, and muddy banks.

Threats: Loss of habitat for development and agriculture and competition from invasive wetland plants.

Trends: Not known.

Managed Areas: Columbia Hills SP, Columbia River Gorge NSA, Gifford Pinchot NF.

Protection Status in Columbia Plateau & East Cascades: Completely Protected. All three known occurrences in the Columbia Plateau are protected in Columbia Hills Historical SP and a DNR registry site (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011.

***Delphinium viridescens*** (Wenatchee larkspur)

Legal Status: BLM: Sensitive; USFS: Sensitive

Natural Heritage Rank: G2/S2; WA Threatened

Range: Endemic to the Wenatchee Mountains and vicinity in Chelan and Kittitas counties. An historical report from Douglas County needs to be corroborated.

WA Ecoregions: Columbia Plateau?, East Cascades

Number of Occurrences: Known from 12 extant occurrences and two historical populations (last observed in 1893). As many as 30 occurrences have been recognized in the past, but many have been combined due to their close proximity. Eight occurrences have been revisited or discovered since 2005, most recently in 2019.

Abundance: Deriving accurate census counts for this species is difficult in areas of dense vegetation or where plants produce numerous branches. Based on WNHP records, the population is estimated at 5,000-10,000 plants.

Habitat: Springs, seeps, moist meadows, and seasonally wet openings in aspen or conifer forests at 380-1,740m. Most populations are associated with the Swauk Sandstone (Gamon 1987a).

Threats: Habitat loss from rural development, logging, grazing, and changes in hydrology.

Trends: Not known.

Managed Areas: Camas Meadows NAP, Okanogan-Wenatchee NF

Protection Status in Columbia Plateau & East Cascades: Inadequate. At least four occurrences are protected within the Camas Meadows NAP or in a DNR registry site on private lands (Appendix A). The remaining populations are on public or private lands managed for multiple use.

Potential Inventory or Conservation Areas: Naneum and Mission Peak, Stuart Range, Tumwater Mountain-Chumstick Mountain

References: Camp and Gamon 2011, Fertig 2020, Gamon 1987a.

***Diplacus cusickioides*** (Cusick's monkeyflower)

Synonym: *Mimulus cusickii* (misapplied), *Diplacus cusickii* (misapplied)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4G5/S1; WA Threatened

Range: Washington, eastern Oregon, southwestern Idaho, and northern California. In Washington, known from Asotin, Chelan, and Klickitat counties. The range map from Nesom (2013) only includes reports from Klickitat County.

WA Ecoregions: Blue Mountains, Columbia Plateau, East Cascades

Number of Occurrences: Known from two extant occurrences (most recently observed in 2013) and two historical sites.

Abundance: Not known for most populations, but the Lime Hill occurrence in the Blue Mountains ecoregion contained an estimated 2,500 plants in 2013.

Habitat: Bottomlands, sandy areas, basalt scree, or volcanic pumice.

Threats: Competition from invasive weeds and loss of habitat to agriculture or development.

Trends: Not known. The Lime Hill occurrence showed a population increase from 2010 to 2013, but this might be an artifact of different climatic conditions between the two surveys (as an annual, *D. cusickioides* may vary in numbers from year to year depending on precipitation levels).

Managed Areas: Chief Joseph SWA, Columbia River Gorge NSA, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The three occurrences from the Columbia Plateau and East Cascades are from public and private lands managed for multiple use (Appendix A). One population in the Blue Mountains is protected in the Chief Joseph SWA, making this species inadequately protected statewide.

Potential Inventory or Conservation Areas: Catherine Creek.

Comments: Traditionally considered part of *Diplacus (Mimulus) cusickii*, Nesom (2013) provided evidence that *D. cusickii* is actually a narrow endemic of Malheur County, Oregon and adjacent southwest Idaho, while plants from southern Washington to California belong to a new species, *D. cusickioides*. The

two taxa differ in leaf pubescence, with *D. cusickii* having glabrous to sparsely glandular surfaces, while *D. cusickioides* is prominently glandular hairy.

References: Camp and Gamon 2011, Nesom 2013.

***Eatonella nivea*** (White eatonella)

Legal Status: none.

Natural Heritage Rank: G4G5/S2; WA Threatened

Range: Central Washington (Grant and Kittitas counties) to southeast Oregon and western Nevada.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from eight extant occurrences, all of which have been discovered or relocated since 1992.

Abundance: Populations can range in size from several hundred to more than 2,000 plants (Salstrom and Easterly 1996c).

Habitat: Sparsely vegetated openings of fine basalt gravels and sands deposited by Pleistocene flood events.

Threats: Gravel mining, trampling, and impacts from military training.

Trends: Stable at some sites, but mostly poorly known. As an annual, numbers may fluctuate from year to year depending on differences in precipitation.

Managed Areas: Hanford ERP, Hanford Reach NM (including Saddle Mountain NWR), North Columbia Basin SWA, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four occurrences are protected in the Hanford Reach NM, North Columbia SWA, and a private DNR registry site (Appendix A).

Potential Inventory or Conservation Areas: Hanford, YTC.

References: Salstrom and Easterly 1996c.

***Eleocharis atropurpurea*** (Purple spike-rush)

Legal Status: none

Natural Heritage Rank: G4G5/SX; WA Extirpated

Range: Asia, Africa, Europe (naturalized), South America, and North America from British Columbia to Nebraska, Iowa, and Michigan south to California, Texas, and Florida. In Washington, known only from Chelan Count. A recent report from Franklin County needs confirmation.

WA Ecoregions: East Cascades (recently reported from Columbia Plateau too).

Number of Occurrences: Known from a single historical record last observed in 1892. A second population was reported in 2019, but needs to be confirmed.

Abundance: Not known, presumed extirpated.

Habitat: Lake and pond margins.

Threats: Habitat loss through changes in hydrology, inundation, or conversion to agriculture.

Trends: Downward, presumed extirpated.

Managed Areas: Okanogan-Wenatchee NF?

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan

Comments: According to Peter Zika (Hitchcock and Cronquist 2018), Washington reports of *Eleocharis atropurpurea* may be referable to *E. geniculata*, which would also be "historical" in the state and a species of conservation concern.

References: Camp and Gamon 2011, Hitchcock and Cronquist 2018, Smith et al. 2002.

***Eleocharis coloradoensis*** (Dwarf spike-rush)

Legal Status: none

Natural Heritage Rank: GNR/S1; WA Sensitive



Range: Occurs from SE Washington (Benton, Grant, Okanogan, and Whitman counties) to Manitoba and Minnesota, south to California, northern Mexico, Texas, and Alabama.

WA Ecoregions: Columbia Plateau, Okanogan

Number of Occurrences: Known from four extant and one historical occurrences in Washington. Three populations have been newly discovered since 2014.

Abundance: Not known.

Habitat: Dry lake or pond margins, vernal pools, and other (often ephemeral) wetlands.

Threats: Changes in hydrology, conversion of habitat to agriculture, and competition with invasive weeds.

Trends: Not known.

Managed Areas: private, Columbus Park (DOD), South Columbia Basin SWA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two of the four known occurrences in the Columbia Plateau ecoregion are protected in the South Columbia Basin SWA (Appendix A).

Potential Inventory or Conservation Areas: Fishtrap Lake -Miller Ranch.

Comments: Based on its rangewide distribution and abundance, this species probably should be ranked G3 or G4.

References: Smith et al 2002.

### ***Eleocharis rostellata*** (Beaked spikerush)

Legal Status: none.

Natural Heritage Rank: G5/S2; WA Sensitive

Range: British Columbia to Ontario and Newfoundland, south to California, Texas, Louisiana, Florida, Mexico, and the West Indies. In Washington found in Grant, Okanogan, Pend Oreille, and Yakima counties. This species has also been reported from Pierce County (Joe Rocchio, personal communication, 2017).

WA Ecoregions: Canadian Rockies, Columbia Plateau, Okanogan. Also reported in West Cascades.

Number of Occurrences: Known from 13 extant and two historical occurrences in Washington. Nine populations have been discovered or relocated since 2000.

Abundance: *Eleocharis rostellata* can be the dominant species in its own community type. Surveyed populations may have 1,000-15,000 or more individuals.

Habitat: In Washington, found in streambanks, marshes, alkaline wet meadows, and fens.

Threats: Competition from invasive species, succession (increase in density of shrubs), trampling, changes in hydrology.

Trends: Not known.

Managed Areas: Colville NF, Grant County PUD, Sinlahekin SWA, Sun Lakes SP, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Three of nine known occurrences in the Columbia Plateau ecoregion are protected in Sun Lakes SP (Appendix A). Statewide, at least five occurrences are protected in Gap status 1 or 2 lands and the species is considered adequately protected.

Potential Inventory or Conservation Areas: Sun Lakes, YTC

Comments: The Washington Natural Heritage Program recognizes four rare *Eleocharis rostellata* vegetation types in the state: *Eleocharis rostellata* Alkaline Wet Meadow, *E. rostellata* Marsh, *E. rostellata-Epipactis gigantea* Seep, and *E. rostellata* Fen (Rocchio et al. 2015).

References: Camp and Gamon 2011, Rocchio et al. 2015.

### ***Eremogone franklinii* var. *thompsonii*** (Thompson's sandwort)

Synonyms: *Arenaria franklinii* var. *thompsonii*

Legal Status: none

Natural Heritage Rank: G4T2Q/S2; WA Sensitive

Range: Southern Washington to Central Oregon. In Washington, known from Benton and Grant counties (Fertig 2020, Hitchcock and Cronquist 2018).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from at least three extant sites, most recently observed in 1991. A fourth occurrence, observed in 1997, needs to be confirmed but may be a mixed population of var. *thompsonii* and typical *franklinii* (Consortium of Pacific Northwest Herbaria website, www.pnwherbaria.org).

Abundance: Poorly known, some sites reported as “locally common” to “common but scattered” or “occasional”.

Habitat: Sand dunes and sandy swales, often associated with bitterbrush and Sandberg bluegrass.

Threats: Development of habitat for agriculture, competition from invasive weeds, and habitat loss from dams and reservoirs.

Trends: Not known.

Managed Areas: Hanford ERP, South Columbia Basin SWA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of three reported occurrences is protected in the South Columbia Basin SWA (Appendix A).

Potential Inventory or Conservation Areas: Hanford.

Comments: Gamon (1986a) questioned whether this taxon was distinct from var. *franklinii* in Washington and believed that var. *thompsonii* might be endemic to Oregon. Hartman et al. (2005) recognized both varieties as distinct and present in Washington.

References: Fertig 2020, Gamon 1986a, Hartman et al. 2005, Hitchcock and Cronquist 2018.

### ***Eremothera minor*** (Small-flower evening-primrose)

Synonyms: *Camissonia minor*, *Oenothera minor*

Legal Status: none

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Southern Washington (Benton, Grant, Kittitas, Klickitat, and Yakima counties) to Montana, south to California, Nevada, Utah, and Wyoming.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from eight extant occurrences and two historical populations in Washington.

Abundance: Populations range from 50-1,000 plants.

Habitat: Sparsely vegetated basalt slopes and hillsides with big sagebrush shrublands from 140-350 m (460-1,140 ft).

Threats: Competition from invasive annuals and wildfire.

Trends: Not known. As an annual, abundance may vary depending on seasonal moisture availability.

Managed Areas: Hanford ERP, Hanford Reach NM, Rattlesnake Hills RNA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Three of 10 occurrences in the Columbia Plateau and East Cascades ecoregions are protected in the Rattlesnake Hills RNA (Appendix A). Other occurrences are on federal and private lands managed for multiple use.

Potential Inventory or Conservation Areas: Hanford, Rattlesnake Hills.

References: Camp and Gamon 2011.

### ***Eremothera pygmaea*** (Dwarf evening-primrose)

Synonyms: *Camissonia pygmaea*, *Oenothera pygmaea*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3/S3; WA Sensitive

Range: Endemic to eastern Washington, northeastern Oregon, and southern Idaho. In Washington, found in Benton, Douglas, Franklin, Grant, Kittitas, and Yakima counties.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 33 extant occurrences and one historical population in Washington. Only seven populations have been relocated since 2000.

Abundance: Populations can range in size from three plants to more than 10,000. Only five occurrences in Washington have been noted to contain over 1,000 plants.

Habitat: Dry outwash flood deposits of Quaternary gravel or sand on low slopes and flats within big sagebrush scrublands at 140-625 m (450-2050 ft).

Threats: Gravel mining, road construction, off-road vehicle recreation, and competition from invasive weeds.

Trends: As an annual, population numbers vary from year to year based on moisture availability. At one site in Saddle Mountain, Caplow and Beck (1995) found a single live plant amid 220 dead stalks from the previous year.

Managed Areas: Grant County PUD, Hanford ERP, Hanford Reach NM, North Columbia Basin SWA, Rattlesnake Hills RNA, Rock Island Canyon ACEC, South Columbia Basin SWA, Spokane BLM, Steamboat Rock SP, Sun Lakes SP, WA DNR, Yakima TC

Protection Status in Columbia Plateau & East Cascades: Adequate. At least 14 occurrences are protected in Hanford Reach NM (including Saddle Mountain NWR), Rattlesnake Hills RNA, North Columbia Basin and South Columbia Basin SWAs, Rock Island ACEC, and Steamboat Rock and Sun Lakes SPs (Appendix A). Twenty other populations are on unprotected Gap status 3 or 4 lands.

Potential Inventory or Conservation Areas: Banks Lake, Chester Butte, Hanford, Rattlesnake Hills, Saddle Mountain, Sun Lakes, Titchenal Canyon, YTC.

References: Caplow and Beck 1995, Salstrom and Easterly 1996a.

### ***Erigeron basalticus*** (Basalt daisy)

Legal Status: BLM Sensitive

Natural Heritage Rank: G2/S2; Threatened

Range: Endemic to Kittitas and Yakima counties in south-central Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from six extant occurrences, all observed since 2007 (most recently in 2019).

Abundance: Surveys in 2007 documented approximately 15,600 plants at all six main populations (Gibble 2007). Individual populations vary widely in size, from as low as 12 plants to over 5,000 (Gamon 1998a).

Habitat: Crevices in steep basalt canyon walls (found only in the Yakima Basalt Formation).

Threats: Basalt quarrying, road construction/expansion, and herbicide drift from adjacent agricultural fields.

Trends: Not known, probably stable.

Managed Areas: L.T. Murray SWA, Selah Cliffs NAP, Spokane BLM, Yakima River Canyon ACEC, Yakima TC

Protection Status in Columbia Plateau & East Cascades: Adequate. Four of the six known occurrences are protected in the Selah Cliffs NAP, L.T. Murray SWA, and Yakima River ACEC (Appendix A).

Potential Inventory or Conservation Areas: Wenas Wildlife Area, YTC

References: Camp and Gamon 2011, Fertig 2020, Gamon 1998a, Gibble 2007.

### ***Erigeron salishii*** (Salish fleabane)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3/S2; WA Sensitive

Range: Vancouver Island, British Columbia and the Cascade Mountains of north-central Washington in Chelan and Snohomish counties.

WA Ecoregions: East Cascades, North Cascades

Number of Occurrences: Known from 11 extant populations and one historical occurrence in Washington. Nine occurrences have been discovered or re-surveyed since 2003 (most recently in 2019).

Abundance: Data are lacking for most occurrences. The largest known population in the state is from Big Jim Mountain in the Alpine Lakes WA and contained an estimated 1,000 or more plants in 2007. At least five populations have less than 50 plants.

Habitat: Alpine dry scree slopes and ridgetops on granite, sand, or loess. Found at elevations from 2,000-2,800 m (6,600-9,000 ft.).

Threats: Probably low, but may be impacted by recreation activities.

Trends: Not known.

Managed Areas: Alpine Lakes WA, Chelan-Sawtooth WA, Enchantment SBA, Glacier Peak WA, Lake Chelan NRA, Mt. Baker-Snoqualmie NF, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Adequate. Seven of the 11 populations from the East Cascades are protected in the Alpine Lakes, Chelan-Sawtooth, and Glacier Peak wilderness areas, Enchantment SBA, and Lake Chelan NRA (Appendix A).

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan, Stuart Range, Three Brothers-Teaway Range.

References: Camp and Gamon 2011.

### ***Eriogonum codium*** (Umtanum desert buckwheat)

Legal Status: Threatened

Natural Heritage Rank: G1/S1; WA Endangered

Range: Endemic to the east end of Umtanum Ridge in Benton County, Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single native occurrence (consisting of three discrete subpopulations) first discovered in 1993 and last censused in 2019. Two out-plantings have been attempted, but have apparently failed to become established (Newsome and Goldie 2017).

Abundance: In July 2019, the entire population was censused using pin flags and 3,016 flowering and vegetative plants were observed. The population was also counted in 2018 using hand clickers, but only 2,515 plants were found (Fertig 2019). The one-year increase in 2019 was probably due to more careful sampling. Overall, the population has declined from a high of 5,169 plants censused in 2011 (Arnett 2012a).

Habitat: Found on the rim of north-facing basalt cliffs on fine pebbly basalt of the Kiona Silt loam series in sparse cushion plant-bunchgrass community bordered by sagebrush grassland.

Threats: wildfire, competition from invasive annuals, trampling, and low rate of seedling establishment (Fertig 2019).

Trends: Downward. Kaye (2007) conducted a population viability assessment based on 10 years of monitoring data and predicted a 72% chance of the population declining by half within 100 years. About 60% of the population burned in the Silver Dollar fire in July 2017 (Newsome 2017). Based on long-term demographic monitoring data, the population declined by nearly 40% following the fire (Fertig 2019). Surviving plants were found to be significantly smaller in size and produced fewer inflorescences.

Managed Areas: Hanford Reach NM.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The single known occurrence is protected within the Hanford Reach NM (DOE-managed portion) (Appendix A).

Potential Inventory or Conservation Areas: Hanford, YTC.

References: Arnett 2012a, Beck 1999a, Caplow 2005a, Fertig 2019, Kaye 2007, Newsome 2017, Newsome and Goldie 2017, Reveal et al. 1995, Rush and Gamon 1999.

### ***Eriogonum maculatum*** (Spotted buckwheat)

Legal Status: none

Natural Heritage Rank: G5/SX; WA Extirpated

Range: Southeast Oregon to southern Idaho and Utah, south to California and Arizona. Disjunct in Yakima County, Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single historic occurrence, last observed in 1884.

Abundance: Not known, presumed extirpated.

Habitat: Arid sagebrush desert on sandy to clay soils.

Threats: Conversion of habitat to agriculture.

Trends: Downward, presumed extirpated.

Managed Areas: private.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Hanford, YTC.

References: Camp and Gamon 2011.

***Eritrichium argenteum*** (Pale alpine forget-me-not)

Synonyms: *Eritrichium nanum* var. *elongatum*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S1; WA Sensitive

Range: Circumboreal; in North America extending from Alaska to Montana south to Oregon and New Mexico. Disjunct in Washington along the Chelan/Okanogan county line in the East Cascades.

WA Ecoregions: East Cascades, Okanogan

Number of Occurrences: Known from one occurrence, last observed in 2013.

Abundance: Locally abundant. Population estimated at 15,000 plants in 2005.

Habitat: Alpine cushion plant community among granitic rock at 2,200-2,600m (7,300-8,300 ft).

Threats: Trampling, climate change.

Trends: Population has been stable to increasing.

Managed Areas: Chelan-Sawtooth WA, Okanogan-Wenatchee NF

Protection Status in Columbia Plateau & East Cascades: Completely protected in the Chelan-Sawtooth WA (Appendix A).

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan

References: Camp and Gamon 2011, Murray 2015.

***Eryngium articulatum*** (Jointed coyote-thistle)

Legal Status: none

Natural Heritage Rank: G5/SH; WA Extirpated

Range: Eastern Washington and northern Idaho to northern California. In Washington, known from historic records in Spokane and Whitman counties.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from three historic records in Washington, not relocated since 1916.

Abundance: Not known, ranked historical but possibly extirpated.

Habitat: Wet soils or partially submerged along shores of lakes and streams.

Threats: Habitat loss through changes in hydrology, inundation, or conversion to agriculture.

Trends: Downward, possibly extirpated.

Managed Areas: unknown, but probably all private

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte.

References: Camp and Gamon 2011.

***Eryngium petiolatum*** (Oregon coyote-thistle)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Threatened

Range: Endemic to southern Washington and the Willamette Valley of Oregon. In Washington, found in Clark, Klickitat, and Lewis counties.

WA Ecoregions: East Cascades, Puget Trough

Number of Occurrences: Known from nine extant occurrences in Washington, all discovered or revisited since 1995 (most recently in 2018).

Abundance: Most populations consist of 25-200 plants, but two large occurrences at Conboy Lake National Wildlife Refuge contain more than 10,000-22,000 individuals apiece.

Habitat: Wet prairies, shallow ditches, and moist swales, usually in sites that are flooded in the spring but are drier in the summer. Historically, these sites may have been maintained by anthropogenic fires.

Threats: Habitat loss through changes in hydrology, conversion to agriculture, residential development, and competition from invasive weeds.

Trends: Historically, probably downward. Individual populations show fluctuations in numbers which may be an artifact of different sampling methods.

Managed Areas: Columbia River Gorge NSA, Conboy Lake NWR, Klickitat SWA, Lacamas Prairie NAP, private.

Protection Status in Columbia Plateau & East Cascades: Completely protected in the East Cascades ecoregion in Conboy Lake NWR, Klickitat SWA, and a DNR private registry site (Appendix A). Statewide, four of five occurrences are in Gap Status 1 or 2 lands and the species is considered inadequately protected.

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011, Engler and Stutte 2010.

### ***Erythranthe jungermannioides*** (Liverwort monkeyflower)

Synonyms: *Mimulus jungermannioides*

Legal Status: none

Natural Heritage Rank: G3/SH; WA Extirpated

Range: Endemic to the Columbia River drainage in southern Washington (Klickitat County) and northern Oregon.

WA Ecoregions: East Cascades

Number of Occurrences: Known from a single occurrence in Washington, last confirmed in 1892. Nesom (2012) cites a potential observation on the Washington side of the Columbia River in the 1990s that needs corroboration.

Abundance: Not known, but possibly extirpated in Washington.

Habitat: Moist crevices in basalt cliffs.

Threats: Changes in hydrology, competition from invasive species.

Trends: Downward, possibly extirpated.

Managed Areas: Columbia River Gorge NSA, private.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single known occurrence is on Gap Status 3 lands (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011, Nesom 2012.

### ***Erythranthe patula*** (Stalk-leaved monkeyflower)

Synonym: *Mimulus patulus*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3?/S2?; WA: Threatened

Range: Nesom (2012) considers the range of *E. patula* to be from southeastern Washington (Asotin and Whitman counties) and northeastern Oregon to northern Idaho, western Montana, southern Alberta, and northwestern Wyoming. Additional reports from Okanogan County, Washington may represent specimens of *M. pulsiferae*.

WA Ecoregions: Blue Mountains, Columbia Plateau, reported from Okanogan

Number of Occurrences: Known from two confirmed occurrences and one historical record in southeast Washington. Four other extant populations are reported from Okanogan County in north-central Washington.

Abundance: Most populations range from 20-200 plants. One population in Okanogan NF contained 1,500 plants before a wildfire in 2006 (this occurrence may actually be *M. pulsiferae*).

Habitat: Moist basalt outcrops or fine gravel in small drainages or seeps or seasonally moist canyon grasslands.

Threats: Habitat disturbance from changes in hydrology, conversion to agriculture, or wildfire.

Trends: Not known.

Managed Areas: Asotin Creek SWA, Grande Ronde ACEC, Okanogan-Wenatchee NF, Vale BLM.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The single occurrence in the Columbia Plateau ecoregion is protected within the Asotin Creek SWA. Statewide, only 2 out of 6 populations are in Gap status 1 or 2 lands and the species is considered inadequately protected.

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott

References: Camp and Gamon 2011, Nesom 2012.

### ***Erythranthe pulsiferae* (Pulsifer's monkeyflower)**

Synonyms: *Mimulus pulsiferae*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Eastern Washington to western Oregon and northern California. In Washington, known from Klickitat, Okanogan, Skamania, Walla Walla, Whitman, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades, Okanogan, West Cascades

Number of Occurrences: Known from six extant occurrences and eight historical populations in Washington. Six populations have been discovered or resurveyed since 2006 (most recently in 2013).

Reports of *Erythranthe patula* from the Okanogan region may represent *E. pulsiferae*.

Abundance: Populations in Washington range from less than 10 to several thousand plants.

Habitat: Seasonally wet areas on exposed mineral soil in openings in Ponderosa pine, Douglas-fir, or oak communities from 480-1,220m (1,580-4,000 ft).

Threats: Changes in hydrology, conversion of habitat to agriculture or human development, competition with invasive weeds.

Trends: Downward, based on at least seven populations being historical and possibly extirpated. Recent trends are not known. Due to the annual growth habit of this species, numbers are likely to fluctuate from year to year based on available moisture.

Managed Areas: Columbia River Gorge NSA, Conboy Lake NWR, Gifford Pinchot NF, Klickitat Canyon NRCA, Okanogan-Wenatchee NF, Trout Lake NAP.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Only three of 12 occurrences in the Columbia Plateau and East Cascades ecoregions are protected in Conboy Lake NWR, Trout Lake NAP, and Klickitat Canyon NRCA.

Potential Inventory or Conservation Areas: Ahtanum, Albion Road/Smoot Hill/Kamiak Butte, Catherine Creek

References: Camp and Gamon 2011, Nesom 2012.

### ***Erythranthe suksdorfii* (Suksdorf's monkeyflower)**

Synonyms: *Mimulus suksdorfii*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2S3; WA Sensitive

Range: Eastern Washington to Montana and Wyoming, south to southern California, Arizona, and Colorado. In Washington, found in Adams, Benton, Chelan, Douglas, Grant, Kittitas, Klickitat, Okanogan, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades, Okanogan

Number of Occurrences: Known from 33 extant occurrences and four historical populations. Only seven populations have been discovered or revisited since 2000.

Abundance: Populations range from one plant to over 4,000.

Habitat: Seasonally moist swales and vernal pools in dry sagebrush steppe communities at 130-2,160m (430-7,100 ft). Often associated with slightly disturbed soil.

Threats: Trampling, changes in hydrology, conversion of habitat to agriculture or human development, and competition from invasive plants.

Trends: As an annual, populations are likely to vary from year to year depending on moisture availability. General trends appear to be stable at a subset of occurrences with more than two years of monitoring data.

Managed Areas: Beezley Hills Preserve, Columbia River Gorge NSA, Crab Creek SWA, Gifford Pinchot NF, Hanford ERP, Marcellus Shrub Steppe NAP, Moses Coulee Preserve, Mt. Adams WA, North Columbia Basin SWA, Okanogan-Wenatchee NF, Roger Lake RNA, Steamboat Rock SP, Sun Lakes SP, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Adequate. Eight populations from the Columbia Plateau and East Cascades ecoregions are protected in the Beezley Hills and Moses Coulee preserves (TNC), Marcellus Shrub Steppe NAP, Mt. Adams WA, and Crab Creek and North Columbia Basin SWAs (Appendix A).

Potential Inventory or Conservation Areas: Banks Lake, Chester Butte, Cleman Mountain, Hanford, Marcellus, Sawtooth Ridge to Lake Chelan, Sun Lakes, Teanaway, YTC.

References: Camp and Gamon 2011, Salstrom and Easterly 1996d.

### ***Erythranthe washingtonensis*** (Washington monkeyflower)

Synonyms: *Mimulus washingtonensis*

Legal Status: none

Natural Heritage Rank: G4/SH; WA Extirpated

Range: According to Nesom (2012), *E. washingtonensis* is endemic to northern Oregon and southern Washington (Klickitat County). Additional reports from Adams, Columbia, Okanogan, and Skamania counties in Washington need to be verified.

WA Ecoregions: East Cascades (also reported from Columbia Plateau, Okanogan, and West Cascades, but need confirmation)

Number of Occurrences: Known from at least one historical record (the holotype) collected by W.N. Suksdorf at Bingen in 1885 (Nesom 2012). Seven other historic populations have been reported in Washington (most recently in 1979), but these all need corroboration.

Abundance: Not known. Species may be extirpated in Washington.

Habitat: Shallow basalt gravels along channels and intermittent streams or open rocky or sandy slopes and shelves near seeps (Nesom 2012).

Threats: Changes in hydrology, loss of habitat from dam and reservoir construction.

Trends: Probably downward, may be extirpated in Washington.

Managed Areas: Single confirmed site is on private lands in the Columbia River Gorge NSA.

Unconfirmed historical records are from Conboy Lake NWR. Recent unconfirmed reports come from Okanogan-Wenatchee NF and Umatilla NF (Wenaha-Tucannon WA).

Protection Status in Columbia Plateau & East Cascades: Inadequate. Just one of four confirmed reports from the East Cascades is protected in Conboy Lake NWR, but was last observed in 1903 (Appendix A).

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011, Nesom 2012.

### ***Gentiana douglasiana*** (Swamp gentian)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Southern Alaska to western British Columbia and northwestern Washington (Clallam, King, and Kittitas counties).

WA Ecoregions: East Cascades, Pacific Northwest Coast, West Cascades.

Number of Occurrences: Known from nine extant and one historical occurrences (most recently observed in 2019).

Abundance: Data lacking for most populations. Two sites that have been monitored contain between 60 and 2,500 individuals.

Habitat: Moist meadows, seeps, wet prairies, bogs, and seasonally flooded areas near the coast or at 890-930 m (2,920-3,050 ft) in the Cascade Mountains.



Threats: Succession, road construction.

Trends: Not known.

Managed Areas: Okanogan-Wenatchee NF (administered by Mt. Baker Snoqualmie NF), Olympic NP.

Protection Status in Columbia Plateau & East Cascades: Unprotected in the East Cascades ecoregion, where it occurs along the boundary of the West Cascades ecoregion. The single known occurrence is on National Forest lands managed for multiple use. Statewide, at least eight occurrences are protected in Olympic NP (Appendix A)

Potential Inventory or Conservation Areas: Three Brothers-Teaway Range

References: Camp and Gamon 2011.

### ***Geum rossii* var. *depressum*** (Ross' avens)

Legal Status: USFS Sensitive

Natural Heritage Rank: G5T1/S1; WA Endangered

Range: If recognized, var. *depressum* is a local endemic of the Wenatchee Mountains in central Washington (Chelan County). The full species occurs from northern Asia to Alaska, northern Canada, and Greenland south to Oregon, Nevada, Arizona, and New Mexico.

WA Ecoregions: East Cascades

Number of Occurrences: Known from five occurrences, of which two are historical. Most recently relocated in 2018.

Abundance: One population in the Alpine Lakes Wilderness Area contained between 1,000-2,050 plants in surveys from 2004 to 2009. Other occurrences have 25-50 plants.

Habitat: Alpine talus slopes and rock outcrops, often on serpentine-derived soils.

Threats: Habitat degradation from trampling, grazing, or climate change.

Trends: Not known.

Managed Areas: Alpine Lakes WA, Enchantment SBA, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Adequate. Four of the five occurrences in Washington are protected in the Alpine Lakes WA and Enchantment SBA (Appendix A).

Potential Inventory or Conservation Areas: Stuart Range, Three Brothers-Teaway Range

Comments: Var. *depressum* is not recognized in the *Flora of North America* (Rohrer 2015). Of the three varieties in Hitchcock and Cronquist (1961), it is the only one found in Washington.

References: Camp and Gamon 2011, Fertig 2020, Hitchcock and Cronquist 1961, 2018; Rohrer 2015.

### ***Githopsis specularioides*** (Common blue-cup)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S2S3; WA Sensitive

Range: Southern British Columbia to southern California. In Washington, known from Chelan, Klickitat, Lewis, Mason, Pierce, Skamania, Thurston, Walla Walla, and Whitman counties.

WA Ecoregions: Columbia Plateau, East Cascades, Pacific Northwest Coast, Puget Trough, West Cascades

Number of Occurrences: Known from 24 extant and four historical occurrences in Washington. At least 11 populations have been discovered or relocated since 2000.

Abundance: Populations range from 20 plants to several thousand.

Habitat: Seasonally moist, gravelly prairies or open meadows on thin soils over bedrock or talus.

Threats: Changes in hydrology, competition from invasive plants, and conversion of habitat to agriculture or development.

Trends: Probably downward in the past century; current trends not well known due to absence of repeat monitoring data. As an annual, population numbers for this species are likely to fluctuate yearly.

Managed Areas: Bald Hill NAP, Chelan-Sawtooth WA, Columbia Land Trust, Columbia River Gorge NSA, Gifford Pinchot NF, Hamma Hamma Balds NAP, Klickitat SWA, Lake Chelan NRA, Okanogan-Wenatchee NF, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Adequate. Eight occurrences in the Columbia Plateau and East Cascades are protected in Chelan-Sawtooth WA, Klickitat SWA, Lake Chelan NRA, and a Columbia Land Trust preserve (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River, Sawtooth Ridge to Lake Chelan.

References: Alverson and Sheehan 1986b, Camp and Gamon 2011.

***Hackelia cinerea*** (Gray stickseed)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Central and eastern Washington to western Montana and central and southern Idaho. In Washington, found in Chelan, Kittitas, Lincoln, Spokane, and Stevens counties

WA Ecoregions: Columbia Plateau, Okanogan (also reported from East Cascades)

Number of Occurrences: Known from at least five extant occurrences (most recently reported in 2017) and one questionable historical record. Some sites from central Washington (Chelan, Douglas, and Kittitas counties) need to be confirmed.

Abundance: Populations often small, with only 15-140 individuals.

Habitat: Open areas in cliffs or talus in sagebrush or Ponderosa pine or Douglas-fir woodlands.

Threats: Dam construction and reservoir management, competition from invasive plants, loss of habitat to agriculture or human development.

Trends: Not known.

Managed Areas: Ginkgo Petrified Forest SP, Okanogan-Wenatchee NF, Riverside SP.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two of the four occurrences in the Columbia Plateau and East Cascades ecoregions are protected in Ginkgo Petrified Forest and Riverside SPs (Appendix A).

Potential Inventory or Conservation Areas: Burch Mountain and Swakane Canyon

References: Camp and Gamon 2011, Gentry and Carr 1976, Morrison et al. 2019.

***Hackelia diffusa* var. *diffusa*** (Diffuse stickseed)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4T3/S2; WA Threatened

Range: Southern Washington (Columbia, Kittitas, Klickitat, Yakima counties) and northern Oregon, with a disjunct population in southern British Columbia. Also reported for Spokane County, Washington.

WA Ecoregions: Blue Mountains, East Cascades

Number of Occurrences: Known from five extant and three historical occurrences in Washington. The report from the Blue Mountains in Columbia County needs confirmation (Camp and Gamon 2011).

Abundance: Populations range from 10 to 3,500 individuals.

Habitat: Cliffs, talus slopes, roadsides, and disturbed areas, mostly at 300-550 m (1,000-1,800 ft); found up to 800m (2,600 ft) in the Blue Mountains.

Threats: Probably low.

Trends: Not known.

Managed Areas: Columbia River Gorge NSA, Ginkgo Petrified Forest SP, Klickitat Canyon NRCA, Klickitat SWA, Umatilla NF.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two populations are protected in Ginkgo Petrified Forest SP, Klickitat River NRCA, and Klickitat SWA (Appendix A).

Potential Inventory or Conservation Areas: Klickitat River.

References: Camp and Gamon 2011, Gentry and Carr 1976, Morrison et al. 2019.

***Hackelia hispida* var. *disjuncta*** (Sagebrush stickseed)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4T3/S3; WA Sensitive

Range: Endemic to central Washington in Chelan, Douglas, Grant, and Kittitas counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from 17 extant and four historical occurrences. Only five populations have been discovered or resurveyed since 2005 (most recently in 2016).

Abundance: Most populations contain between 25 and 2,800 plants. Often reported as scattered to locally common.

Habitat: Dry, sparsely vegetated sites on basalt talus, cliffs or outcrops amid sagebrush shrublands.

Threats: Habitat conversion to agriculture, grazing.

Trends: Not known.

Managed Areas: Columbia NWR, McCartney Creek Preserve, Moses Coulee Preserve, Okanogan-Wenatchee NF, Rock Island Canyon ACEC, Spokane BLM, Sun Lakes SP, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Adequate. Seven of 21 occurrences in the Columbia Plateau and East Cascades ecoregions (and statewide) are protected in Columbia NWR, the McCartney Creek and Moses Coulee preserves (TNC), Quincy Lakes SWA, Rock Island ACEC, and Sun Lakes SP (Appendix A). The 14 other occurrences in the state are on Gap status 3 or 4 lands.

Potential Inventory or Conservation Areas: Burch Mountain and Swakane Canyon, Chester Butte, Sun Lakes, Titchenal Canyon.

References: Camp and Gamon 2011, Gentry and Carr 1976.

### ***Hackelia taylorii*** (Taylor's stickseed)

Synonym: "*Hackelia species novum*" in Camp and Gamon (2011); formerly included within *Hackelia venusta*.

Legal Status: USFS Sensitive

Natural Heritage Rank: G2/S2; WA Threatened

Range: Local endemic of the Wenatchee Mountains in Chelan County, Washington.

WA Ecoregions: East Cascades

Number of Occurrences: Known from four extant populations, all discovered or relocated since 2006 (most recently observed in 2013).

Abundance: Rangelwide surveys in 2006-2009 found just over 1,000 plants at the four known occurrences.

Habitat: Steep, loose, granitic scree and talus slopes at 2,130-2,290 meters (6,540-7,500 ft).

Threats: Not known.

Trends: Unknown.

Managed Areas: Alpine Lakes WA, Okanogan-Wenatchee NF

Protection Status in Columbia Plateau & East Cascades: Adequate. Three of the four known occurrences are protected in the Alpine Lakes WA of Okanogan-Wenatchee NF (Appendix A).

Potential Inventory or Conservation Areas: Stuart Range

Comments: Harrod et al. (2013) recognized the high elevation, small blue-flowered phase of *Hackelia venusta* as a new taxon, *H. taylorii*.

References: Arnett 2014a, Camp and Gamon 2011, Fertig 2020, Harrod et al. 2013.

### ***Hackelia venusta*** (Showy stickseed)

Legal Status: USFWS Endangered

Natural Heritage Rank: G1/S1; WA Endangered

Range: Local endemic of the Wenatchee Mountains (Chelan County) in central Washington.

WA Ecoregions: East Cascades

Number of Occurrences: Known from one extant occurrence (revisited annually, most recently in 2019) and one imprecise historical population, last observed in 1968. The historical report is vague enough that it might be considered part of the extant occurrence. In the past, several high elevation populations with blue flowers were included in *H. venusta*, but these are now considered to represent a separate species, *H. taylorii* (Harrod et al. 2013). Two out-plantings were first established in 1994 but one has not been

relocated since 2003 and the other contained fewer than 10 plants in 2019. A new out-planting was established about 1.5 miles north of the extant occurrence in 2019 (Gibble 2019).

Abundance: The single extant population contained at least 477 plants in 2012 (Arnett and Goldner 2017).

Habitat: Loose granitic sand and talus on sparsely vegetated slopes at 470-825 meters (1500-2700 ft).

Threats: Fire suppression has increased competing vegetation cover, highway construction and maintenance has altered habitat, and plants appear to have low fecundity.

Trends: The population declined from 1984 to 2011, but appeared to increase in 2012 (though some of the increase may have been due to the discovery of new subpopulations) (Arnett and Goldner 2017).

Monitoring results since 2014 suggest a continued modest decline. Out-planted occurrences have slowly declined after their initial establishment, although some seedling plants have been detected in recent years, suggesting reproduction is occurring (Gibble 2019, Fertig 2019).

Managed Areas: Tumwater SBA, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Inadequate. The single extant occurrence in the East Cascades ecoregion is protected within the Tumwater SBA (Appendix A). A second historical occurrence and the three out-planted populations are on Okanogan-Wenatchee NF lands managed for multiple use (but not formally protected).

Potential Inventory or Conservation Areas: Tumwater Mountain-Chumstick Mountain

References: Arnett 2007, Arnett and Goldner 2017, Camp and Gamon 2011, Caplow 2004, Fertig 2019, Gibble 2018, 2019, Harrod et al. 2013.

### ***Heterotheca oregona*** (Oregon goldenaster)

Synonym: *Chrysopsis oregona*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Western Washington, Oregon, and California. In Washington, found in King, Kittitas, Lewis, Mason, Pierce, Thurston, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades, Pacific Northwest Coast, Puget Trough, West Cascades

Number of Occurrences: Known from 14 occurrences in Washington, of which 11 are extant and three historical. All extant populations have been discovered or revisited since 2001, most recently in 2019.

Abundance: Data lacking for most occurrences. Populations may range from 50 to 1,000 plants.

Habitat: Sandy riverbanks and gravel bars at the edge of Douglas-fir or Ponderosa pine forests or roadcuts.

Threats: Changes in hydrology, development of dams or reservoirs, succession in the absence of flooding.

Trends: Not known.

Managed Areas: Federation Forest SP, JB Lewis-McChord, Mather Memorial Parkway SBA, Mt Rainier NP, Oak Creek SWA, Okanogan-Wenatchee NF, Olympic NF.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two of nine occurrences in the Columbia Plateau and East Cascades ecoregions are protected in the Mather Memorial Parkway SBA and Oak Creek SWA (Appendix A).

Potential Inventory or Conservation Areas: Ahtanum, Cleman Mountain.

References: Camp and Gamon 2011.

### ***Howellia aquatilis*** (Water howellia)

Legal Status: USFWS Threatened

Natural Heritage Rank: G3/S2; WA Threatened

Range: Washington, northern Idaho, western Montana, western Oregon, and northern California. In Washington, found in Clark, Mason, Pierce, Spokane, and Thurston counties.

WA Ecoregions: Columbia Plateau, Puget Trough

**Number of Occurrences:** In Washington, 73 extant and two historical occurrences are recognized. At least 55 occurrences have been relocated since 2000 (most recently in 2019). Many occurrences in the Spokane area and on Joint Base Lewis-McChord are found in the same drainage or are less than 1.5 km from other populations and might be lumped into larger “metapopulations”. If occurrences are aggregated, Washington has only 10-12 main metapopulations (Fertig 2019).

**Abundance:** Individual occurrences may contain 1-20 plants or number in the hundreds to low thousands. Long-term monitoring studies indicate that numbers fluctuate from year to year in response to moisture conditions and availability of mudflats for fall germination. Mincemoyer (2005) tabulated census data from 49 of 68 sites in Washington and found the minimum and maximum number of plants statewide was 6,724-37,694 (for an average of 137-769 plants per site). These totals are influenced by a relatively few large populations. At least 28 of the 49 occurrences with data contained fewer than 100 plants.

**Habitat:** In eastern Washington, populations are found in aspen (*Populus tremuloides*) wetlands within channeled scablands. Occurrences in western Washington occur mostly in small vernal ponds or wetlands with Oregon ash (*Fraxinus latifolia*). Populations across the state are usually found on clayey soils that are dry in fall but inundated in the spring.

**Threats:** Competition from invasive plant species (especially *Phalaris arundinacea*), succession, changes in hydrology (flooding or dewatering), impacts from timber harvest, and effects of climate change (Kleinknecht et al. 2019).

**Trends:** The number of occurrences has steadily increased with more survey. Trend data are lacking for nearly 40% of all Washington populations. Abundance data can be variable, depending on changes in hydrology from year to year. Changes in habitat quality (especially invasion of woody plants and *Phalaris* and the increase in woody debris) is probably leading to a population decline at Joint Base Lewis-McChord.

**Managed Areas:** Blackwater Island RNA, Dishman Hills NRCA, JB Lewis McChord, Ridgefield NWR, Scatter Creek SWA, Spokane BLM, Turnbull NWR.

**Protection Status in Columbia Plateau & East Cascades:** Adequate. 37 of 50 occurrences in the Columbia Plateau ecoregion are protected in Turnbull NWR, Dishman Hills NRCA, or private (DNR) registry sites. Statewide, 39 occurrences are protected (Appendix A).

**Potential Inventory or Conservation Areas:** Fishtrap Lake-Miller Ranch, Reardan-Audubon Lake.

**Comments:** Proposed for de-listing as Threatened by USFWS in October 2019 on the basis of recovery.

**References:** Gamon 1992, 1998b, 1998c, Fertig 2019, Kleinknecht et al. 2019, Lesica 1992, Mincemoyer 2005, Rush 1998a.

### ***Hypericum majus*** (Canadian St. John's-wort)

**Legal Status:** none

**Natural Heritage Rank:** G5/S2; WA Sensitive

**Range:** British Columbia to Nova Scotia, south to Oregon, Idaho, Colorado, Oklahoma, Illinois, and Pennsylvania. Found in Benton, Franklin, Grays Harbor, King, Kitsap, Pend Oreille, Skagit, Thurston, and Whatcom counties in Washington.

**WA Ecoregions:** Canadian Rockies, Columbia Plateau, North Cascades, Pacific Northwest Coast, Puget Trough

**Number of Occurrences:** Known from 20 extant and two historical occurrences. Only six populations have been discovered or resurveyed since 2008, most recently in 2019.

**Abundance:** Most populations range from 50 to 200 individuals, but at least two have 2,000-10,000 plants. Census can be difficult due to the distribution of this species among dense wetland vegetation.

**Habitat:** Wetlands along ponds, lakes, rivers, and streams, especially sites that are flooded for part of the year.

**Threats:** Competition with invasive weeds, such as *Lythrum salicaria* or *Phalaris arundinacea*, changes in hydrology (dewatering or permanent flooding by reservoirs), and conversion of habitat for agriculture or residential use.

**Trends:** Not known.

Managed Areas: Colville NF, Hanford ERP, South Columbia Basin SWA, Square Lake SP?.  
Protection Status in Columbia Plateau & East Cascades: Inadequate. Only one of three occurrences in the Columbia Plateau are protected in South Columbia Basin SWA (Appendix A). Statewide, two of 22 occurrences are protected.  
Potential Inventory or Conservation Areas: Hanford.  
References: Camp and Gamon 2011.

***Isöetes minima*** (Midget quillwort)

Legal Status: BLM Sensitive; USFS Sensitive  
Natural Heritage Rank: G1G2/S1; WA Sensitive  
Range: Regional endemic of southern British Columbia and eastern Washington (Kittitas, Okanogan, and Spokane counties). Newly reported from southern Idaho in 2017.  
WA Ecoregions: Columbia Plateau, East Cascades, Okanogan  
Number of Occurrences: Known from three extant and one historical occurrences in Washington (last observed in 2010).  
Abundance: Poorly known. Two populations surveyed in 2010 contained 30 and 155 plants.  
Habitat: Seasonally wet low spots and swales in big sagebrush shrub steppe at 1,370-1,620m (4,500-5,300 ft).  
Threats: Changes in hydrology, conversion of habitat to grazing or agriculture, and competition with invasive plants.  
Trends: Not known.  
Managed Areas: Okanogan-Wenatchee NF, WA DNR.  
Protection Status in Columbia Plateau & East Cascades: Unprotected. The three populations in the Columbia Plateau and East Cascades are from state or private lands and not protected (Appendix A).  
Potential Inventory or Conservation Areas: Colockum and Quilomene.  
References: Ceska and Ceska 2001, Fertig 2020, WNHP 2005.

***Isöetes nuttallii*** (Nuttall's quillwort)

Legal Status: BLM Sensitive, USFS Sensitive  
Natural Heritage Rank: G4?/S2; WA Sensitive  
Range: Southern British Columbia through western Washington and Oregon to southern California. In Washington, known from Clark, Cowlitz, Klickitat, Lewis, Pierce, San Juan, and Thurston counties.  
WA Ecoregions: East Cascades, Puget Trough  
Number of Occurrences: Known from nine extant and three historical occurrences in Washington. Eleven populations have been discovered or resurveyed since 2002 (most recently in 2014).  
Abundance: Populations may range from 20 to several hundred individuals. The species is grass-like and inconspicuous, and might be more common than presently known (Camp and Gamon 2011).  
Habitat: More terrestrial than most quillwort species, occurring in seasonally wet sites in mud near vernal pools, seeps, and ephemeral streams.  
Threats: Loss of habitat for agriculture or human development.  
Trends: Not known.  
Managed Areas: Bald Hill NAP, Cattle Point NRCA, Columbia Hills Historical SP, Columbia River Gorge NSA, Conboy Lake NWR, JB Lewis-McChord, Klickitat SWA.  
Protection Status in Columbia Plateau & East Cascades: Inadequate. Four populations from the East Cascades ecoregion are protected in Conboy Lake NWR, Columbia Hills Historic SP, Klickitat SWA and by the Columbia Land Trust. Statewide, six of 15 known occurrences are in Gap status 1 or 2 lands and the species is considered adequately protected (Appendix A).  
Potential Inventory or Conservation Areas: Catherine Creek, Panakanick Prairie.  
References: Camp and Gamon 2011, Hitchcock and Cronquist 2018.

***Juncus hemiendytus* var. *hemiendytus*** (Dwarf rush)

Legal Status: none

Natural Heritage Rank: G5T5/S1; WA Threatened

Range: Southern and eastern Washington (Klickitat, Spokane, and Yakima counties) to Idaho, south to southern California and Utah.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from five extant occurrences (all discovered from 1997-2012) and one historical population (last seen in 1910).

Abundance: Surveyed populations contain between 80 to 500 plants apiece. The total state population may be as low as 1,000 plants. Since this plant is an annual, numbers may vary widely depending on yearly moisture conditions.

Habitat: Found on mud flats, moist meadows, and the edge of vernal pools.

Threats: Conversion of habitat to agriculture.

Trends: Not known.

Managed Areas: Conboy Lake NWR, Klickitat Canyon NRCA, Turnbull NWR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Three of six occurrences are protected in Conboy Lake NWR, Turnbull NWR, and Klickitat Canyon NRCA (Appendix A).

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011, Ertter 1986.

***Juncus howellii*** (Howell's rush)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Washington to southern Idaho and northern California. In Washington, confirmed records are known from Kittitas and Skamania counties. Additional reports are from Asotin, Columbia, Pierce, and Walla Walla counties need confirmation.

WA Ecoregions: confirmed from the East Cascades. Reported from Blue Mountains, Columbia Plateau, and West Cascades.

Number of Occurrences: Known from three extant occurrences, documented from 1977 to 2008. Six additional extant populations and two historical records need to be confirmed.

Abundance: No formal population counts have been made at any sites in Washington. One population was cited as "occasional" in 2008.

Habitat: Moist meadows and the base of wet basalt cliffs at 870-1,070 meters (2,840-3,500 ft).

Threats: Changes in hydrology, grazing.

Trends: Not known.

Managed Areas: Known from Gifford Pinchot NF and Okanogan-Wenatchee NF. Additional unverified reports are from Mt. Baker-Snoqualmie NF, Umatilla NF, and Wenaha-Tucannon WA.

Protection Status in Columbia Plateau & East Cascades: Unprotected. All confirmed occurrences in the state are from Gap status 3 or 4 lands (Appendix A).

Potential Inventory or Conservation Areas: Teanaway.

References: Camp and Gamon 2011.

***Juncus kelloggii*** (Kellogg's rush)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3?/S1; WA Endangered

Range: British Columbia to southern California and east to southwest Idaho and northeast Nevada. In Washington, known from Klickitat and Yakima counties.

WA Ecoregions: East Cascades

Number of Occurrences: Known from two recent occurrences (revisited or discovered from 2006 to 2012) and one historical record (last observed in 1894).

Abundance: Poorly known. One population had 30-35 plants in 2006.

Habitat: Seasonally wet sites on sandy to clayey soils in seeps and bottoms that dry out by summer.

Threats: Loss of habitat to agriculture or residential development and changes in hydrology.

Trends: Not known.

Managed Areas: Columbia River Gorge NSA, Conboy Lake NWR, Klickitat Canyon NRCA.

Protection Status in Columbia Plateau & East Cascades: Adequate. Two of the three occurrences in the East Cascades ecoregion are protected in Conboy Lake NWR and Klickitat Canyon NRCA (Appendix A).

Potential Inventory or Conservation Areas: Klickitat River, Panakanick Prairie.

References: Camp and Gamon 2011, Ertter 1986.

### ***Juncus tiehmii*** (Tiehm's rush)

Legal Status: BLM Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Southeast Oregon and southwest Idaho to northern Nevada, southern California, and Baja California. Disjunct in Douglas County, Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single occurrence in the state, first discovered in 1998 and not revisited since.

Abundance: The single Washington occurrence was estimated in the hundreds to thousands of individuals in 1998.

Habitat: in Washington, found in moist, mossy silt benches at the base of basalt cliffs and talus.

Threats: Not known.

Trends: Not known, but being an annual the population size may fluctuate from year to year.

Managed Areas: Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the state is on federal land managed for multiple use (Appendix A).

Potential Inventory or Conservation Areas: Chester Butte

References: Camp and Gamon 2011, Ertter 1986.

### ***Juncus uncialis*** (Inch-high rush)

Legal Status: BLM Sensitive

Natural Heritage Rank: G3G4/S2; WA Threatened

Range: Washington south to western Nevada and southern California. Found in Adams, Douglas, Grant, Klickitat, Lincoln, and Spokane counties in Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 12 extant occurrences, all discovered since 1983 (most recently observed in 2011).

Abundance: Individual populations typically contain 10 to 3,000 plants.

Habitat: Found in vernal pools and edges of ponds within channeled scablands.

Threats: Loss or degradation of habitat due to grazing, conversion to agriculture, or development.

Trends: Not known.

Managed Areas: Columbia Hills Historical SP, Columbia River Gorge NSA, Fairchild AFB, Marcellus Shrub Steppe NAP, North Columbia Basin SWA, Swanson Lakes SWA.

Protection Status in Columbia Plateau & East Cascades: Adequate. Five of the 12 populations from the Columbia Plateau are protected in the Marcellus Shrub Steppe NAP, Columbia Hills Historical SP, and North Columbia Basin and Swanson Lakes SWAs (Appendix A).

Potential Inventory or Conservation Areas: Banks Lake, Chester Butte, Fishtrap Lake-Miller Ranch, Marcellus, Swanson Lakes.

References: Camp and Gamon 2011, Caplow 2005b, Ertter 1986.



***Kalmia procumbens*** (Alpine azalea)

Synonym: *Loiseleuria procumbens*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Circumboreal; in North America extends south to Washington, Alberta, Manitoba, Quebec, and New York. In Washington found in Chelan and Skagit counties.

WA Ecoregions: East Cascades, North Cascades

Number of Occurrences: Known from two historical occurrences in Washington, both last observed in 1963.

Abundance: Uncommon, only two sprigs found at one site in 1963.

Habitat: Alpine slopes and tundra. In Washington, found from 1,800-2,000 meters (6,100-6,550 ft) elevation.

Threats: Trampling, grazing.

Trends: Downward, populations not relocated in 1997 or 2004.

Managed Areas: Glacier Peak WA, Mt. Baker-Snoqualmie NF, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Completely protected in the Glacier Peak WA, but populations are historical (Appendix A)

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan.

References: Camp and Gamon 2011.

***Lasthenia glaberrima*** (Smooth goldfields)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: British Columbia to central California, west of the Cascades. Known from Clark and Klickitat counties in Washington.

WA Ecoregions: Columbia Plateau, Puget Trough

Number of Occurrences: Known from one extant occurrence discovered in 1998 and last observed in 2003. Also known from one historical population, not seen since 1928.

Abundance: Fewer than 500 plants were reported at the Columbia Hills Historical State Park site in 1998.

Habitat: In Washington, found on the margins of seasonally wet, receding ponds on basalt tablelands.

Threats: Competition from invasive weeds, loss of habitat for agriculture or development.

Trends: Downward; the population dropped from about 500 in 1998 to less than 10 in 2003. It was not relocated in surveys in 2011 and 2013 by Rare Care.

Managed Areas: Columbia Hills Historical SP, Columbia River Gorge NSA.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The one population in the Columbia Plateau is protected within Columbia Hills Historical SP (Appendix A). Statewide, only one of the two known occurrences is in a Gap Status 1 or 2 site and the species is scored as inadequately protected.

Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River.

References: Camp and Gamon 2011, Fairbarns 2003.

***Lathrocasis tenerrima*** (Delicate gilia)

Synonym: *Gilia tenerrima*

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Southern British Columbia to Montana, south to Oregon, Nevada, Utah, and Wyoming. Found in Chelan, Douglas, and Okanogan counties in Washington.

WA Ecoregions: Columbia Plateau, East Cascades, Okanogan

Number of Occurrences: Known from six extant occurrences in Washington, all documented since 2004 (most recently in 2015).

Abundance: No census data available; populations reported as scattered to locally abundant.  
Habitat: Rocky outcrops and bare, silty-gravelly openings in big sagebrush steppe at 500-1,640m (1,650-5,380 ft).  
Threats: Trampling, grazing.  
Trends: Not known, as species has only been documented from Washington since 2004.  
Managed Areas: Okanogan-Wenatchee NF, Spokane BLM, state of Washington.  
Protection Status in Columbia Plateau & East Cascades: Unprotected. All Washington populations are from federal or private lands managed for multiple use (Appendix A).  
Potential Inventory or Conservation Areas: Chester Butte.  
References: Johnson and Weese 2000.

***Leptosiphon bolanderi*** (Baker's linanthus)

Synonyms: *Linanthus bakeri*, *Linanthus bolanderi*

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G4G5/S2; WA Sensitive

Range: Southern Washington (Klickitat County) to central California.

WA Ecoregions: East Cascades

Number of Occurrences: Known from seven extant occurrences (last observed in 2014) and two historical populations.

Abundance: Data are lacking for most populations, but those that have been surveyed may be locally abundant, with thousands to nearly one million individuals. Because the plant is an annual, the number of individuals may vary widely from year to year depending on climatic conditions.

Habitat: Sparsely vegetated slopes with bare mineral soil and basalt rocks. Often found on serpentine in California (Hitchcock et al. 1959).

Threats: Loss of habitat to development, trampling by horses.

Trends: Not known.

Managed Areas: Columbia River Gorge NSA, Klickitat SWA, Spokane BLM, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of nine occurrences in the East Cascades are protected in the Klickitat SWA (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River.

References: Camp and Gamon 2011, Hitchcock et al. 1959.

***Leymus flavescens*** (Yellow wildrye)

Synonyms: *Elymus flavescens*

Legal Status: BLM Sensitive

Natural Heritage Rank: G4/S1; WA Sensitive

Range: Endemic to the Snake and Columbia river drainages in southern Washington, northern Oregon, and western Idaho. In Washington, known from Adams, Benton, Franklin, Garfield, Grant, Kittitas, Klickitat, Skamania, Walla Walla and Whitman counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from five extant and 13 historical occurrences. Only two occurrences have been located since 2010 (most recently in 2018).

Abundance: Populations tend to be small, with 50-100 individuals.

Habitat: Found in shifting sand dunes and disturbed sandy areas along ditches or road banks. Some populations are found along riverbanks.

Threats: Conversion of habitat to agriculture, grazing, trampling by off-road vehicles, competition with invasive weeds, and dune stabilization are the primary threats.

Trends: Probably downward, as 13 occurrences have not been relocated since the late 1930s and may be extirpated.

Managed Areas: Columbia River Gorge NSA, Crow Butte Park, Gifford Pinchot NF, Hanford Reach NM, Juniper Dunes WA, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two occurrences are protected in the Hanford Reach NM and Juniper Dunes WA (Appendix A).

Potential Inventory or Conservation Areas: Hanford.

Comments: The *Leymus flavescens* association is ranked S2 in Washington and occurs in actively eroding sand dunes areas in the Juniper Dunes and Hanford areas (Hallock et al. 2007).

References: Hallock et al. 2007, Roché et al. 2019

***Liparis loeselii*** (Bog twayblade)

Legal Status: none

Natural Heritage Rank: G5/S1; WA Endangered

Range: Saskatchewan to Nova Scotia south to Nebraska, Arkansas, and Alabama. Disjunct populations occur in northwestern North America in northern British Columbia, western Montana, and western Washington (Klickitat and San Juan counties).

WA Ecoregions: East Cascades, Puget Trough

Number of Occurrences: Known from two extant occurrences (last observed in 1983) and one historical population. The Killebrew Lake NAP population could not be relocated in surveys in 1999, 2001, 2002, or 2004.

Abundance: Not known; two Washington populations may be extirpated.

Habitat: In Washington, found in peatlands, often associated with *Sphagnum*.

Threats: Livestock grazing, changes in hydrology.

Trends: Probably downward.

Managed Areas: Conboy Lake NWR, Killebrew Lake NAP.

Protection Status in Columbia Plateau & East Cascades: Adequate. One of two occurrences in the East Cascades ecoregion is protected in Conboy Lake NWR (although this is an historical population) and the other is from private land (Appendix A).

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011.

***Lipocarpha aristulata*** (Halfchaff awned sedge)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S1S2; WA Threatened

Range: Southeastern Washington to Wyoming and Minnesota, south to California, New Mexico, and Texas. In Washington, found in Asotin, Benton, Garfield, Grant, Klickitat, Spokane, Whitman, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from four extant occurrences (most recently observed in 2011) and six historical populations in Washington.

Abundance: Data are lacking for most occurrences. Populations vary from 24 to several thousand individuals.

Habitat: Wet sand, mud, or silt on sandbars, beaches, and shorelines or islands.

Threats: Loss of habitat from dam and reservoir construction.

Trends: Not known.

Managed Areas: Columbia River Gorge NSA, Crab Creek SWA, Fish Lake Regional Park?, Hanford Reach NM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Three of 10 occurrences in the Columbia Plateau and East Cascades ecoregions are protected in the Hanford Reach NM and Crab Creek SWA (Appendix A).

Potential Inventory or Conservation Areas: Chandler Butte, Hanford.

References: Camp and Gamon 2011.

***Lobelia kalmii*** (Kalm's lobelia)

Legal Status: none

Natural Heritage Rank: G5/S1; WA Endangered

Range: Canada south to Washington (Yakima County), Montana, South Dakota, Illinois, and Pennsylvania. A recent report from Snohomish County needs to be confirmed. Hitchcock et al. (1959) also report this species from northeast Washington, but do not cite a more specific county or locality.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single extant occurrence in Washington, last observed in 2009.

Abundance: 55 plants were observed in 2008 by Rare Care volunteers.

Habitat: The Yakima Training Center population occurs in seep and perennial spring wetlands surrounded by sagebrush grassland at 170m (550 ft).

Threats: Livestock grazing, changes in hydrology.

Trends: Not known.

Managed Areas: Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the state is from Gap status 3 lands (Appendix A).

Potential Inventory or Conservation Areas: YTC.

References: Camp and Gamon 2011, Hitchcock et al. 1959.

### ***Loeflingia squarrosa*** (Spreading pygmyleaf)

Legal Status: none

Natural Heritage Rank: G5/S1; WA Threatened

Range: Northern California to southern Utah, Wyoming, Nebraska, and Arkansas, south to Baja California, Sonora, and Texas. Disjunct in Benton County, Washington and southeastern Oregon.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from four extant occurrences in Washington, last observed in 1997.

Abundance: Populations consist of about 100 to several thousand plants (perhaps over 10,000 at Gable Mountain in the Hanford ERP).

Habitat: Vernal pools and low swales dominated locally by annuals within a matrix of big sagebrush vegetation.

Threats: Road maintenance, herbicides, and competition from invasive annuals.

Trends: Not known. Populations for this annual species are likely to fluctuate based on seasonal moisture availability.

Managed Areas: Hanford ERP.

Protection Status in Columbia Plateau & East Cascades: Unprotected. All of the state populations are unprotected on the Hanford Site (Appendix A).

Potential Inventory or Conservation Areas: Hanford.

References: Camp and Gamon 2011, Caplow and Beck 1995.

### ***Lomatium knokei*** (Knoke's desert-parsley)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G1/S1; WA Threatened

Range: Narrow Endemic to Kittitas County in central Washington.

WA Ecoregions: East Cascades

Number of Occurrences: Known from a single occurrence, first discovered in 2003 and last surveyed in 2019.

Abundance: Reported as locally common. Between 500-1,000 plants were observed in 2018 (Fertig 2020).

Habitat: Seasonally moist meadows and depressions of fine-grained clay-loam on a flat ridgetop within a matrix of conifer forest (Darrach 2014, Fertig 2020).

Threats: Grazing, off-road recreation, competition with invasive species, and conifer encroachment.

Trends: Not known.

Managed Areas: Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single known occurrence is on National Forest lands managed for multiple use (Appendix A).

Potential Inventory or Conservation Areas: Cleman Mountain, Wenas Wildlife Area.

References: Darrach 2014, Fertig 2020.

***Lomatium laevigatum*** (Smooth desert-parsley)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3/S2S3; WA Threatened

Range: Endemic to the Columbia River Gorge in southern Washington (Klickitat County) and northern Oregon.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from eight extant occurrences and one historical record. Most recently relocated in 2017.

Abundance: Washington populations usually contain between 30 and 1,000 plants.

Habitat: Dry ledges and cracks in basalt cliffs and rocky slopes in sagebrush grasslands at 50-300 m (180-960 ft).

Threats: Probably low, but some sites might be impacted by quarrying or grazing.

Trends: Not known.

Managed Areas: Columbia Hills Historical SP, Columbia River Gorge NSA, Gifford Pinchot NF.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two of nine occurrences are protected in Columbia Hills Historical SP (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek

References: Camp and Gamon 2011, Jolley 1988.

***Lomatium lithosolamans*** (Hoover's tauschia)

Synonym: *Tauschia hooveri*

Legal Status: BLM Sensitive

Natural Heritage Rank: G2G3/S2S3; WA Sensitive

Range: Endemic to south-central Washington in Kittitas and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from 24 extant and seven historical occurrences. Six populations have been discovered or relocated since 2010.

Abundance: Populations can be locally abundant, numbering in the hundreds to thousands.

Habitat: Flats or depressions over shallow basalt bedrock in openings in Stiff sagebrush steppe communities.

Threats: Habitat conversion to agriculture and housing, recreation activities

Trends: Trend data are lacking for most occurrences, but the large number of historical records suggests a downward projection.

Managed Areas: Cowiche Canyon ACEC, Fort Simcoe SP, L.T. Murray SWA, Spokane BLM, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four populations are protected in Cowiche Canyon ACEC, LT Murray SWA, and a DNR registry site. Nearly 87% of the state's populations are unprotected (Appendix A).

Potential Inventory or Conservation Areas: Ahtanum, Cleman Mountain, Wenas Wildlife Area, YTC.

Comments: Natural Heritage Rank may need to be revised to G3/S3.

References: Camp and Gamon 2011, Gamon and Salstrom 1993.

***Lomatium rollinsii*** (Rollins' desert-parsley)

Legal Status: BLM Sensitive; USFS Sensitive  
Natural Heritage Rank: G3/S2; WA Threatened  
Range: Endemic to the Snake and Salmon River drainage in southeastern Washington (Asotin County), northeastern Oregon, and western Idaho.  
WA Ecoregions: Blue Mountains, Columbia Plateau  
Number of Occurrences: Known from eight extant and two historical occurrences. Four populations have been surveyed since 2002 (most recently in 2014).  
Abundance: Populations vary widely in size, with smaller sites containing 1 to 120 plants, and larger occurrences having up to 10,000 individuals.  
Habitat: Gentle to steep slopes of rocky to loamy canyons in big sagebrush-bunchgrass grasslands.  
Threats: Livestock grazing, conversion of habitat to agriculture, wildfire.  
Trends: Probably downward over the past century. Current trends not well known due to lack of consistent monitoring data.  
Managed Areas: Chief Joseph SWA, Fields Spring SP, Grande Ronde ACEC, Umatilla NF, Vale BLM.  
Protection Status in Columbia Plateau & East Cascades: Inadequate. Only two of eight occurrences from the Columbia Plateau are protected in the Asotin and Chief Joseph SWAs (Appendix A). Statewide, four populations are protected.  
Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott  
References: Camp and Gamon 2011, Moseley 1988.

***Lomatium roneorum*** (Leavenworth desert-parsley)

Legal Status: none.  
Natural Heritage Rank: G1/S1; WA Endangered  
Range: Endemic to the Wenatchee Mountains between Leavenworth and Plain in Chelan County, Washington.  
WA Ecoregions: East Cascades  
Number of Occurrences: Known from five extant occurrences, all discovered since 1987 (and most recently relocated in 2017).  
Abundance: Individual populations tend to be small, ranging from five to about 800 individuals (Darrach 2018). The entire population may be as low as 1,000 plants (McCauley 2019).  
Habitat: Steep, sparsely vegetated south or west-facing slopes with thin soil over crumbly tuff derived from arkosic sandstones of the Chumstick Formation (Darrach 2018).  
Threats: May be threatened by competition from invasive weeds and long-term impacts of climate change (Darrach 2018).  
Trends: Not known.  
Managed Areas: Okanogan-Wenatchee NF.  
Protection Status in Columbia Plateau & East Cascades: Unprotected. All known occurrences are found on Gap status 3 or 4 lands (Appendix A).  
Potential Inventory or Conservation Areas: Tumwater Mountain-Chumstick Mountain.  
References: Darrach 2018, Fertig 2020, McCauley 2019.

***Lomatium serpentinum*** (Snake Canyon desert parsley)

Legal Status: BLM Sensitive  
Natural Heritage Rank: G4/S2; WA Sensitive  
Range: Regional endemic of the Snake River drainage in southeastern Washington, western Idaho, and eastern Oregon. Found in Asotin, Columbia, Garfield, Grant, Walla Walla, and Whitman counties in Washington.  
WA Ecoregions: Blue Mountains, Columbia Plateau  
Number of Occurrences: Known from 13 occurrences, of which five are extant (most recently observed in 2014) and eight historical.  
Abundance: Extant populations contain between 89 and 470 individuals.

Habitat: Basalt ledges and talus or granite outcrops on old floodplains at 200-400m (750-1,200 ft) elevation.

Threats: Habitat loss from dam and reservoir construction, conversion of habitat to agriculture.

Trends: Several historical Washington populations have probably been destroyed by reservoirs. Extant populations that have been monitored are relatively stable at present.

Managed Areas: Chief Joseph SWA, Grande Ronde ACEC, McNary SWA, Vale BLM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of six occurrences in the Columbia Plateau is protected in McNary SWA (Appendix A). Statewide, three populations are protected.

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott.

References: Camp and Gamon 2011.

### ***Lomatium suksdorfii*** (Suksdorf's desert parsley)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3/S3; WA Sensitive

Range: Endemic to the lower Columbia River in Klickitat County, Washington and Wasco and Hood River counties, Oregon.

WA Ecoregions: East Cascades

Number of Occurrences: Known from 21 extant and one historical occurrences in Washington, of which 13 have been documented since 2000.

Abundance: Some populations are quite large with 10,000-32,000 individuals (the largest, at Penny Ridge on DNR lands, was estimated at 212,000 by Rare Care volunteers in 2010).

Habitat: Sparsely vegetated scrub oak communities on rocky, open hillsides and steep slopes on clay soils derived from basalt.

Threats: Livestock grazing, road construction, conversion of habitat to agriculture or residential development, timber management, and insecticides that might harm pollinators.

Trends: Numbers can vary widely from year to year at sites with long-term monitoring.

Managed Areas: Columbia Land Trust, Columbia River Gorge NSA, Gifford Pinchot NF, Klickitat SWA, Spokane BLM, Trust for Public Lands, White Salmon Oak NRCA.

Protection Status in Columbia Plateau & East Cascades: Adequate. Eight of 22 occurrences in the East Cascades are protected in private lands managed by the Columbia Land Trust and Trust for Public Lands, Klickitat SWA, and White Salmon Oak NRCA (WA DNR) (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River.

References: Camp and Gamon 2011, Kemp et al. 1978.

### ***Lomatium tamanitchii*** (Ribseed biscuitroot)

Synonym: *Lomatium packardiae* var. *tamanitchii*

Legal Status: USFS Sensitive

Natural Heritage Rank: G3/S2; WA Sensitive

Range: Endemic to the Columbia River Valley in southern Klickitat County, Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from nine extant occurrences, all discovered since 2008 and last observed in 2014 (Fertig 2020).

Abundance: Populations are often reported as locally abundant and based on extrapolations from limited density data the species may number in the hundreds of thousands within its narrow and specialized habitat (Darrach et al. 2010).

Habitat: Hardened, silica-rich volcanic ash over basalt on the tops of plateaus and gentle, south-facing slopes in dry bunchgrass communities.

Threats: Primarily threatened by conversion of grassland habitat to crops or human settlements, wildfire, and competition from invasive weeds (Darrach et al. 2010).

Trends: Not known.

Managed Areas: Cleveland Shrub Steppe NAP?, Columbia River Gorge NSA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of nine occurrences is probably protected in the Cleveland Shrub Steppe NAP (Appendix A). All other populations are on state or private lands managed for multiple use.

Potential Inventory or Conservation Areas: none.

References: Darrach et al. 2010, Fertig 2020.

***Lomatium tenuissimum*** (Leiberg's tauschia)

Synonym: *Lomatium orogenioides*, *Tauschia tenuissima*

Legal Status: none

Natural Heritage Rank: G3/SX; WA Extirpated

Range: Regional endemic of northern Idaho and eastern Washington (Spokane County).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from one historical record in Washington, last relocated in 1916.

Abundance: Not known, probably extirpated in Washington.

Habitat: Moist grassy meadows, floodplains, and streambanks.

Threats: Conversion of habitat to agriculture and human settlements.

Trends: Downward, probably extirpated.

Managed Areas: private.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch.

References: Camp and Gamon 2011, Lorain 1990.

***Lomatium tuberosum*** (Hoover desert parsley)

Legal Status: BLM Sensitive

Natural Heritage Rank: G2G3/S2S3; WA Sensitive

Range: Endemic to the Columbia Basin of central Washington in Benton, Grant, Kittitas, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from 13 extant occurrences and two historical populations in Washington. Eight occurrences have been relocated since 2000, most recently in 2019.

Abundance: The largest known occurrences in the Yakima River Canyon and Yakima Training Center contain several thousand plants. Eight extant populations only have 50-300 individuals.

Habitat: Sparsely vegetated basalt talus slopes or ridgetops in Stiff sagebrush steppe at 140-1220 m (460-4000ft).

Threats: Livestock grazing, gravel quarrying, military training exercises, collecting for food (root is edible).

Trends: Not known.

Managed Areas: Columbia NWR, Crab Creek SWA, Hanford ERP, McCoy Canyon ACEC, Oak Creek SWA, Sentinel Slope ACEC, Spokane BLM, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of 15 occurrences are protected in Columbia NWR, Crab Creek SWA, and McCoy Canyon and Sentinel Slope ACECs (Appendix A).

Potential Inventory or Conservation Areas: Hanford, Saddle Mountain, Wenas Wildlife Area, YTC.

References: Camp and Gamon 2011, Mastrogioseppe et al. 1985, Salstrom and Gamon 1995.

***Lupinus sabinianus*** (Sabin's lupine)

Legal Status: none

Natural Heritage Rank: G3/S1; WA Endangered

Range: Endemic to the Blue Mountains of southeastern Washington (Asotin and Walla Walla counties) and northeastern Oregon.



WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from two extant occurrences in Washington and two historic populations. The species was last relocated in 1992.

Abundance: One occurrence contained 90-100 plants in three subpopulations in 1992.

Habitat: Dry transition zone between grasslands and lower montane Douglas-fir, Ponderosa pine, or Grand fir forests.

Threats: Fire suppression, grazing, herbicides, conversion of habitat to agriculture or human developments.

Trends: Not known, but probably declining.

Managed Areas: private.

Protection Status in Columbia Plateau & East Cascades: Unprotected. No occurrences are protected in the East Cascades ecoregion. Statewide, one population occurs on Gap status 2 lands and the species is ranked as inadequately protected (Appendix A).

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott

References: Camp and Gamon 2011.

***Luzula arcuata* ssp. *unalaschensis*** (Curved woodrush)

Legal Status: USFS Sensitive

Natural Heritage Rank: G5T3T5/S1; WA Threatened

Range: Alaska to Alberta, south to Oregon and Montana. Found in Okanogan, Pierce, Skagit, and Yakima counties in Washington.

WA Ecoregions: East Cascades, North Cascades, Okanogan, West Cascades

Number of Occurrences: Known from four extant occurrences and one historical population in Washington. Three populations have been relocated since 2002 (most recently in 2005).

Abundance: Occurrences contain 12-100 plants.

Habitat: Meadows, rocky ridges, talus slopes and bare soil below snow fields in alpine or subalpine areas at 2145-2510m (7040-8230 ft).

Threats: Grazing, trampling.

Trends: Not known.

Managed Areas: Gifford Pinchot NF, Mt. Adams WA, Mount Rainier NP, Okanogan-Wenatchee NF, Pasayten WA.

Protection Status in Columbia Plateau & East Cascades: Completely protected in East Cascades ecoregion (single occurrence is from Mt Adams WA). Statewide, four of five populations are in Gap status 1 or 2 lands and the species is ranked as adequately protected (Appendix A).

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan.

References: Camp and Gamon 2011.

***Lycopodium lagopus*** (One-cone clubmoss)

Legal Status: none.

Natural Heritage Rank: G5/S1; WA Sensitive

Range: Eurasia, Alaska to Greenland, south to central British Columbia, Alberta, Michigan, and Maine; disjunct in northern Washington (Chelan, King, and Whatcom counties) and NW Montana (Hitchcock and Cronquist 2018, Wagner and Beitel 1993).

WA Ecoregions: East Cascades, North Cascades

Number of Occurrences: Known from four extant occurrences in Washington, all discovered or relocated since 2008.

Abundance: Not known. Reported as uncommon at one site, but locally common at another.

Habitat: Washington occurrences are on damp, mossy slopes, in partial shade or full sun in openings bordering forests (including a ski slope and roadside).

Threats: May be impacted by changes in hydrology or encroachment by woody vegetation.

Trends: Not known.

Managed Areas: Mt. Baker-Snoqualmie NF, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The two occurrences found in the East Cascades ecoregion are on Okanogan-Wenatchee NF lands managed for multiple use and are not formally protected.

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan.

References: Hitchcock and Cronquist 2018; Wagner and Beitel 1993

***Meconella oregana*** (White meconella)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G2G3/S1; WA Endangered

Range: Southern British Columbia to western Washington, western Oregon (Willamette Valley) and southern California. In Washington, found in Island, King, Klickitat, Pierce, and San Juan counties.

WA Ecoregions: East Cascades, Puget Trough

Number of Occurrences: Known from four extant and four historical occurrences in Washington. The extant populations have all been relocated since 2008.

Abundance: Populations range from 30 to 6,645 plants.

Habitat: Seasonally moist meadows and grasslands, sometimes in openings in Ponderosa pine or Oregon white oak woods.

Threats: Competition from invasive weeds, trampling, and soil compaction, loss of habitat to agriculture or human development, and fire suppression.

Trends: Monitored populations vary in numbers from year to year (as expected for an annual plant), but appear to be approximately stable over the past decade. Long-term trends are probably down based on extensive habitat loss and the high number of historical occurrences.

Managed Areas: Columbia River Gorge NSA, Deception Pass SP, Gifford Pinchot NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The three populations from the East Cascades ecoregion all occur on Gap status 3 lands (Appendix A). Statewide, one occurrence is protected and the species is ranked as inadequately protected.

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011.

***Micromonolepis pusilla*** (Red poverty-weed)

Synonym: *Monolepis pusilla*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Central Washington (Douglas, Grant, and Yakima counties) to Idaho and Wyoming, south to California, Utah, and Colorado.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from two extant occurrences in Washington (most recently observed in 1997) and three historical records.

Abundance: One population surveyed in 1997 contained 5,000-10,000 individuals, and another observed in 1983 was reported as "frequent".

Habitat: Desert habitats, often on dry, alkaline or salt-encrusted soils or along edges of alkaline ponds in greasewood communities.

Threats: Trampling, grazing.

Trends: Not known.

Managed Areas: Hanford ERP.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Banks Lake, Chester Butte, Foster Creek, Hanford, Jameson Lake

References: Camp and Gamon 2011.

***Microseris borealis*** (Northern microseris)

Synonym: *Apargidium boreale*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Southern Alaska to northwestern California, west of the Cascades. In Washington, known from Clallam, Pierce, and Skamania counties.

WA Ecoregions: East Cascades, Pacific Northwest Coast, West Cascades

Number of Occurrences: Known from eight extant occurrences and two historical populations in Washington. Seven populations have been relocated since 2004.

Abundance: Populations can be locally abundant with as many as 793,000 individuals estimated at Babyshoe Pass by Rare Care volunteers in 2012. At least four occurrences contains less than 130 plants.

Habitat: Sphagnum bogs, conifer swamps, and wet meadows along the Pacific Coast or in the Cascade Range.

Threats: Grazing (especially by elk) and off-road vehicle trampling in wet meadows.

Trends: Not known.

Managed Areas: Gifford Pinchot NF, Mt. Adams WA, Mount Rainier NP, Mt. St. Helens NVM, Olympic NP.

Protection Status in Columbia Plateau & East Cascades: Completely protected in East Cascades ecoregion, with the single known occurrence protected in Mt St. Helens NVM (Appendix A). Statewide, seven of 10 occurrences are present in Gap 1 or 2 lands and the species is considered adequately protected.

Potential Inventory or Conservation Areas: none

References: Camp and Gamon 2011.

***Mimetanthe pilosa*** (False monkeyflower)

Legal Status: none

Natural Heritage Rank: G5/S1; WA Sensitive

Range: Eastern Washington to southern Idaho, south to California, Nevada, Utah, and Baja California. In Washington, found in Benton, Douglas, Grant, Klickitat, Skamania, Walla Walla, Whitman, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from two extant occurrences (most recently documented in 1998) and six historical populations in Washington.

Abundance: Not known, but probably very low.

Habitat: Gravelly or sandy, seasonally moist openings, creek beds, or riverbanks.

Threats: Changes in hydrology, development of dams or reservoirs, competition with invasive weeds.

Trends: Probably downward. As an annual, numbers may fluctuate yearly depending on winter and spring precipitation levels.

Managed Areas: Department of Defense, Gifford Pinchot NF, McCartney Creek Preserve (TNC).

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of eight occurrences in the state is protected in the McCartney Creek Preserve (Appendix A). All other populations are found in Gap status 3 or 4 lands.

Potential Inventory or Conservation Areas: Ahtanum, Thornton Unit, YTC.

References: Cronquist et al. 1984.

***Montia diffusa*** (Branching montia)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S1S2; WA Sensitive

Range: Southern British Columbia to northern California, mostly west of the Cascades. Found in Clallam, Clark, Grays Harbor, Jefferson, King, Klickitat, Lewis, Pierce, Skagit, Skamania, and Snohomish counties in Washington.

WA Ecoregions: East Cascades, North Cascades, Pacific Northwest Coast, Puget Trough, West Cascades

Number of Occurrences: Known from seven extant occurrences and 12 historical populations. Several extant populations have not been relocated in recent years, however. Most recently relocated in 2018.

Abundance: Data lacking for most populations, but those that have been surveyed usually contain 15-200 plants. One population relocated in 2018 had 2,000 individuals.

Habitat: Lowland and lower montane moist forests or open Douglas-fir woodlands.

Threats: Impacts from timber harvest, trampling, competition with invasive weeds, conversion of habitat to agriculture or urban development.

Trends: Probably downward; at least two recent populations may be extirpated.

Managed Areas: Columbia River Gorge NSA, Gifford Pinchot NF, Mt St. Helens NVM, Olympic NP, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The seven occurrences in the East Cascades are from public or private lands managed for multiple use (Appendix A). Statewide, at least three populations occur in Gap status 1 or 2 lands and the species is considered inadequately protected.

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011.

### ***Muhlenbergia glomerata*** (Marsh muhly)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Yukon to Newfoundland, south to Oregon, Utah, Colorado, Iowa, Kentucky, and North Carolina. In Washington, found in Okanogan, Pend Oreille, and Spokane counties.

WA Ecoregions: Canadian Rockies, Columbia Plateau, Okanogan

Number of Occurrences: Known from seven extant occurrences and one historical population. Four occurrences have been revisited since 2003 (most recently in 2016).

Abundance: Populations usually contain at least 100-1,000 plants, though counting and distinguishing individuals can be a challenge in dense cover.

Habitat: Slightly drier hummocks in bogs, alkaline fens, lakeshores, streamsides, and wet meadows.

Threats: Changes in hydrology, grazing

Trends: Not known.

Managed Areas: Colville NF, Halliday Fen RNA, Kaniksu NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the Columbia Plateau ecoregion is from private land. Statewide, one of eight populations is found on Gap status 1 or 2 lands and the species is considered inadequately protected (Appendix A).

Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch

References: Camp and Gamon 2011.

### ***Myosurus alopecuroides*** (Tiny mousetail)

Synonym: *Myosurus clavicaulis*, *M. minimus* var. *clavicaulis*

Legal Status: BLM Sensitive

Natural Heritage Rank: G3?/S2; WA Threatened

Range: Eastern Washington, southeastern Oregon, southern California, and northern Baja California. In Washington, it is found in Adams, Benton, Klickitat, Lincoln, and Spokane counties.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 13 extant occurrences, all of which have been documented since 1997 (most recently in 2019).

Abundance: Populations range in size from a single plant to about 5,000.

Habitat: Hard, dried sparsely vegetated clay soils at the margins of seasonally flooded vernal pools.

Threats: Changes in hydrology, loss of habitat to development or agriculture.

Trends: Not known.

Managed Areas: Columbia Hills Historical SP, Columbia River Gorge NSA, Fairchild AFB, Hanford ERP, Klickitat SWA, Marcellus Shrub Steppe NAP, Spokane BLM, Turnbull NWR, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of the 13 occurrences in the Columbia Plateau are protected in the Marcellus Shrub Steppe NAP, Turnbull NWR, Columbia Hills Historical SP, and Klickitat SWA (Appendix A).

Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch, Hanford, Marcellus, Swanson Lakes.

Comments: Whittemore (1997a) considered *Myosurus alopecuroides* to be a hybrid between *M. minimus* and *M. sessilis*. Until 2017, *M. alopecuroides* was thought to occur outside the known range of *M. sessilis*.

References: Camp and Gamon 2011, Caplow 2005b, Whittemore 1997a.

### ***Myosurus sessilis*** (Vernal pool mousetail)

Legal Status: none.

Natural Heritage Rank: G2/S1; WA Endangered.

Range: Endemic to central California with disjunct populations in NE Oregon and southern Washington (Klickitat County) (Whittemore 1997a, Hitchcock and Cronquist 2018).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single occurrence in Washington, first discovered in 2017.

Abundance: Not known.

Habitat: Vernal pools and alkali flats (Whittemore 1997a). The Washington occurrence is associated with a seasonally wet cattle pond.

Threats: Changes in hydrology, development of vernal habitats for agriculture.

Trends: Not known.

Managed Areas: WA DNR?

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the Columbia Plateau (and in Washington State) is on WA DNR or private lands (the exact location is not certain) and is not formally protected (Appendix A).

Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch, Hanford, Marcellus, Swanson Lakes.

Comments: Karen Brimacombe discovered this species in Washington in 2017 and sent fruiting material to David Giblin at the University of Washington for positive confirmation. This species is one of the putative parents of *M. alopecuroides* and differs from it in having sessile inflorescences borne among the basal leaves and longer achene beaks.

References: Fertig 2020, Hitchcock and Cronquist 2018, Whittemore 1997a.

### ***Myriopteris gracilis*** (Fee's lip-fern)

Synonym: *Cheilanthes feei*

Legal Status: BLM Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Southern British Columbia and Alberta to Montana, Minnesota, and Illinois, south to northern Mexico, Texas, and Arkansas. In Washington, known from Asotin and Whitman counties.

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from one extant population in the Blue Mountains and one historical record at Almota in the Columbia Plateau (Whitman County), last observed in 1964.

Abundance: The Lime Hill population in the Blue Mountains contained approximately 500 plants (genets) in 2002.

Habitat: Found in shady crevices in limestone or sandstone cliffs or rocky talus slopes.

Threats: Loss of habitat from mining, flooding, or competition from invasive plants.

Trends: Not known.

Managed Areas: Grande Ronde ACEC, Vale BLM, private.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The one population in the Columbia Plateau ecoregion is on private land (Appendix A). One occurrence in the state is on Gap 2 lands (Grande Ronde ACEC) and so the species is ranked as inadequately protected statewide.

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott.

Comments: Recent phylogenetic studies demonstrate that North American fern species previously ascribed to *Cheilanthes* belong to a separate genus, *Myriopteris* (Grusz and Windham 2013). *Cheilanthes feei* becomes *Myriopteris gracilis* based on this new classification. *Myriopteris gracilis* is an asexual triploid which, despite its large geographic range, consists of numerous regional subpopulations that have arisen independently (Wickell 2015). The phase in Washington and adjacent states may represent a cryptic taxon with a relatively small geographic range and consequently a higher conservation significance.

References: Camp and Gamon 2011, Grusz and Windham 2013, Wickell 2015.

***Navarretia leucocephala* ssp. *diffusa*** (Least pincushion-plant)

Legal Status: none.

Natural Heritage Rank: G4T1/S1; WA Threatened.

Range: Local endemic of the eastern Columbia Plateau in Lincoln County, Washington. Also reported from Spokane County by Hitchcock and Cronquist (2018).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from six extant occurrences, all discovered since 1996 and most recently revisited in 2014 (Fertig 2020).

Abundance: Not known. Some populations have been reported as "common" but no quantitative data are available on actual abundance.

Habitat: Margins of shallow, rocky-bottomed vernal pools in channeled scablands (Björk 2002).

Threats: Conversion of vernal pond habitat to agriculture or changes in hydrology (Björk and Dunwiddie 2004)

Trends: Probably downward due to historic loss of vernal wetlands in eastern Washington (Björk and Dunwiddie 2004)

Managed Areas: Spokane BLM, Swanson Lakes SWA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four occurrences are protected in the Swanson Lakes SWA (Appendix A).

Potential Inventory or Conservation Areas: Swan Lakes.

References: Björk 2002, Björk and Dunwiddie 2004, Fertig 2020, Hitchcock and Cronquist 2018

***Navarretia tagetina*** (Marigold navarretia)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Southern Washington (Klickitat County) to southern California.

WA Ecoregions: East Cascades

Number of Occurrences: Known from a single extant occurrence (last observed in 2010) and two historical populations (including the type locality near the mouth of the Klickitat River).

Abundance: The Washington population was estimated at 1,800 plants in 2007.

Habitat: Rocky areas, grasslands, and vernal sites at the transition zone of dry valley bottoms and Ponderosa pine woodlands. In Washington, found at elevations of 75-140m (250-450 ft).

Threats: Competition from invasive weeds, impacts from recreation.

Trends: Not known. As an annual, population numbers are likely to fluctuate yearly based on seasonal moisture availability.

Managed Areas: Columbia River Gorge NSA, Gifford Pinchot NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The three occurrences from the East Cascades ecoregion are from Gap status 3 lands (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011, Hitchcock et al. 1959.

***Nicotiana attenuata*** (Coyote tobacco)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Southern British Columbia to Montana, south to Baja California and New Mexico. In Washington, found in Benton, Chelan, Douglas, Franklin, Grant, Kittitas, Klickitat, Whitman, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from 25 extant occurrences in Washington and 14 historical populations. Only seven populations have been documented since 2000.

Abundance: Data are lacking for many populations, but those that have been censused contain between 1 and 250 plants. The largest population contained 2,500 individuals in 2015.

Habitat: Disturbed, open areas within big sagebrush communities, sandy bottoms, rocky washes, or roadsides.

Threats: Over-harvest (used for tobacco by Native Americans), fire suppression, competition from invasive plants, military training exercises, conversion of habitat to agriculture, herbicides.

Trends: Probably downward during the past century.

Managed Areas: Colockum SWA, Columbia River Gorge NSA, Ginkgo Petrified Forest SP, Hanford ERP, Moses Coulee Preserve (TNC), Oak Creek SWA, Okanogan-Wenatchee NF, Rock Island Canyon ACEC, Spokane BLM, Two Steppe NAP, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Six of 39 occurrences in the Columbia Plateau and East Cascades are protected in Moses Coulee Preserve, Two Steppe NAP, Colockum SWA, Ginkgo Petrified Forest SP, Oak Creek SWA, and Rock Island ACEC.

Potential Inventory or Conservation Areas: Burch Mountain and Swakane Canyon, Chester Butte, Cleman Mountain, Colockum and Quilomene, Hanford, Rattlesnake Mountain, Titchenal Canyon, Tumwater Mountain-Chumstick Mountain, YTC.

References: Camp and Gamon 2011, Salstrom and Easterly 1996e.

***Oenothera cespitosa ssp. cespitosa*** (Cespitose evening-primrose)

Legal Status: BLM Sensitive

Natural Heritage Rank: G5T5/S2; WA Sensitive

Range: Alberta to Manitoba south to eastern Oregon, Nevada, New Mexico, and Nebraska. In Washington, known from Benton, Grant, Kittitas, Klickitat, and Yakima counties.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 10 extant occurrences and two historical populations in Washington. Five populations have been discovered or relocated since 2011.

Abundance: Populations range in size from one plant to over 700.

Habitat: Open areas in big sagebrush communities on loose talus, gravelly slopes, or sand at 125-550m (410-1800 ft).

Threats: Trampling, conversion of habitat to agriculture, wildfire.

Trends: Data are lacking for most occurrences. Four sites that have been monitored in recent years are mostly stable.

Managed Areas: Columbia NWR, Hanford ERP, Hanford Reach NM, Rattlesnake Hills RNA, Saddle Mountain NWR, Spokane BLM, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of 12 occurrences in the Columbia Plateau are protected in the Columbia NWR, Hanford Reach NM (including Saddle Mountain NWR), and Rattlesnake Hills RNA (Appendix A).

Potential Inventory or Conservation Areas: Hanford, Rattlesnake Hills, Saddle Mountain, YTC  
References: Camp and Gamon 2011.

***Oenothera cespitosa ssp. marginata*** (Tufted evening-primrose)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5T3T5/S1; WA Threatened

Range: Southern Washington (Asotin, Klickitat, and Whitman counties) east to Idaho and Wyoming, south to California, Colorado, and Texas.

WA Ecoregions: Blue Mountains, Columbia Plateau, East Cascades

Number of Occurrences: Known from seven occurrences of which four are extant (most recently observed in 2011) and three historical.

Abundance: Washington populations vary from 12 to over 1,000 individuals.

Habitat: Dry hills, rocky slopes, road cuts, and dry washes in grasslands.

Threats: Herbicides, conversion of habitat to agriculture, trampling.

Trends: Not known.

Managed Areas: Asotin Creek SWA, Chief Joseph SWA, Grande Ronde ACEC, Vale BLM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two occurrences from the Columbia Plateau and East Cascades ecoregions are protected in Asotin Creek SWA (Appendix A).

Potential Inventory or Conservation Areas: Hanford.

References: Camp and Gamon 2011.

***Oenothera flava ssp. flava*** (Long-tubed evening-primrose)

Legal Status: none

Natural Heritage Rank: G5T3T5/SH; WA Extirpated

Range: Southern Washington to Saskatchewan and North Dakota, south to California, Arizona, and Texas. In Washington, known from Yakima County.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single historical record, last observed in 1903.

Abundance: Not known, possibly extirpated

Habitat: Streamsides, vernal pools, or seasonally moist meadows or swales in sagebrush grasslands.

Threats: Conversion of habitat to agriculture

Trends: Downward, possibly extirpated.

Managed Areas: unknown.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Ahtanum.

References: Camp and Gamon 2011.

***Ophioglossum pusillum*** (Adder's-tongue)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: British Columbia to western Montana, northern Idaho, and northern California. Also in eastern North America from North Dakota to New Brunswick, south to Nebraska, Ohio, and Virginia. In Washington, found in Chelan, Douglas, Kittitas, Klickitat, Mason, Okanogan, Pend Oreille, San Juan, and Stevens counties.

WA Ecoregions: Canadian Rockies, Columbia Plateau, East Cascades, Okanogan, Pacific Trough, Puget Trough

Number of Occurrences: Known from 16 extant occurrences and four historical populations. Ten populations have been discovered or resurveyed since 2010 (most recently in 2019).

Abundance: Populations vary in size from three plants to over 850.



Habitat: Seasonally wet places in meadows, pastures, roadside ditches, bogs, fens, floodplains, or moist woods. Elevations range from 10-1000m (40-3200 ft).

Threats: Trampling, grazing, logging, changes in hydrology.

Trends: The few populations that have been monitored exhibit oscillations in population size from year to year that may reflect periods of prolonged dormancy more than shifts in actual numbers.

Managed Areas: Colville NF, Conboy Lake NWR, Killebrew Lake NAP, Little Pend Oreille NWR, Spokane BLM, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of six populations from the Columbia Plateau and East Cascades ecoregions is protected in Conboy Lake NWR (Appendix A). Statewide, three occurrences are protected.

Potential Inventory or Conservation Areas: Panakanick Prairie, Teanaway.

References: Camp and Gamon 2011.

### ***Orthocarpus bracteosus*** (Rosy owl-clover)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3?/S2; WA Threatened

Range: Southern British Columbia to western Oregon and northeastern California. In Washington, found in Klickitat, San Juan, Skamania, Whatcom, and Yakima counties.

WA Ecoregions: East Cascades, Puget Trough (historical)

Number of Occurrences: Known from 10 extant occurrences and three historical populations in Washington. All ten extant sites have been discovered or revisited since 2001 (most recently in 2018).

Abundance: Population numbers range from less than 10 plants to estimates of 2 million individuals (Conboy Lake NWR). Abundance can vary from year to year at the same site from tens of thousands to 1,500-2,500 (Trout Lake NAP).

Habitat: Moist forb grass-dominated meadows with low cover of shrubs or trees at the edge of Ponderosa pine and Douglas-fir forests at 500-1,000m (1,800-3,000 ft).

Threats: Grazing, herbicides, conversion of habitat to agriculture, road maintenance, changes in hydrology.

Trends: Populations of this annual species that have been monitored since 2001 show large swings in abundance from year to year, perhaps reflecting differences in annual precipitation.

Managed Areas: Conboy Lake NWR, Gifford Pinchot NF, Trout Lake NAP.

Protection Status in Columbia Plateau & East Cascades: Adequate. Seven of the 10 occurrences in the East Cascades are protected in Conboy Lake NWR and Trout Lake NAP (Appendix A).

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011.

### ***Oxalis suksdorfii*** (Western yellow oxalis)

Legal Status: none

Natural Heritage Rank: G4/SH; WA Extirpated

Range: Occurs from British Columbia to northern California in and west of the Cascade Range. In Washington, known from historical records in Clallam, Clark, Kitsap, and Klickitat counties

WA Ecoregions: East Cascades, Pacific Northwest Coast, Puget Trough

Number of Occurrences: Known from four historical records (observed from 1892-1977) in Washington.

Abundance: Not known.

Habitat: Meadows, grassy dunes, and moist forests.

Threats: Habitat loss from urbanization, impacts from recreation.

Trends: Probably downward.

Managed Areas: Columbia River Gorge NSA.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011.

***Oxytropis campestris* var. *gracilis*** (Slender crazyweed)

Synonyms: *Oxytropis campestris* var. *spicata*, *O. monticola*

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5T5/S2; WA Sensitive

Range: British Columbia to Manitoba, south to northern Washington (Clallam, Jefferson, Kittitas, Okanogan, Pierce, San Juan, and Whatcom counties), Colorado, and South Dakota.

WA Ecoregions: East Cascades, North Cascades, Okanogan, Pacific Northwest Coast, Puget Trough, West Cascades.

Number of Occurrences: Known from nine extant occurrences and nine historical populations in Washington. Two occurrences have been discovered or relocated since 2010 (most recently in 2018).

Abundance: Data are lacking for most populations. Those occurrences with recent survey information contain between 2 and 500 individuals.

Habitat: Most populations in Washington are on glacial outwash terraces and alpine tundra on sandy loam or scree from 570-2,300 m (1870-7600 ft). In the San Juan Islands, this species occurs in grasslands and rock outcrops exposed to salt spray.

Threats: Grazing, trampling.

Trends: Not known, but probably downward based on the high percentage of historical (and possibly extirpated) populations.

Managed Areas: Buckhorn WA, Mt. Baker-Snoqualmie NF, Mt. Baker WA, Mount Rainier NP, Okanogan-Wenatchee NF, Olympic NF, Olympic NP, Pasayten WA, San Juan Islands NWR.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence from the East Cascades ecoregion is on Okanogan-Wenatchee NF lands managed for multiple use (Appendix A). Statewide, 11 populations are in Gap status 1 or 2 lands and the species is considered adequately protected.

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan.

References: Camp and Gamon 2011.

***Oxytropis campestris* var. *wanapum*** (Wanapum crazyweed)

Legal Status: BLM: Sensitive

Natural Heritage Rank: G5T1/S1; WA Endangered

Range: Endemic to Grant County in central Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from one population, last observed in 2018

Abundance: Population estimated at over 7,100 plants in 2002. Surveys in 2018 found patches to be small, often with 6-11 individuals (Fertig 2020).

Habitat: Steep, north-facing slopes below rim in narrow band of whitish ashy mudstone or sandstone embedded within thick deposits of brown talus and bedrock in rubber rabbitbrush-bluebunch wheatgrass-Dorr's sage community with 50-60% vegetation cover and 30% rock cover (Fertig 2020).

Threats: Grazing, mineral exploration, wildfire.

Trends: Not known, but probably stable at present.

Managed Areas: Spokane BLM, private.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence is on BLM and private lands located just outside of the Columbia NWR and Lower Crab Creek SWA (Appendix A).

Potential Inventory or Conservation Areas: Saddle Mountain.

References: Camp and Gamon 2011, Fertig 2020, Joyal 1990.

***Packera bolanderi* var. *harfordii*** (Harford's ragwort)

Synonyms: *Senecio bolanderi* var. *harfordii*, *Senecio harfordii*

Legal Status: USFS Sensitive

Natural Heritage Rank: G4TUQ/S1; WA Sensitive

Range: Northern Washington to western Oregon. In Washington, known from Skamania and Wahkiakum counties. Reports from Chelan and Okanogan counties are erroneous.

WA Ecoregions: East Cascades, Pacific Northwest Coast. Reports from Okanogan and West Cascades are based on misidentified specimens.

Number of Occurrences: Known with certainty from one extant and four historical occurrences in Washington. At least six additional historical reports may be misidentified.

Abundance: Twenty-one plants were observed at one site in 2017.

Habitat: In Washington, reported from moist rocky slopes and ledges and wet basalt cliffs.

Threats: Not known.

Trends: Probably downward, may be extirpated.

Managed Areas: Beacon Rock SP, Columbia River Gorge NSA, Gifford Pinchot NF,

Protection Status in Columbia Plateau & East Cascades: Unprotected in East Cascades ecoregion (Appendix A). Statewide, at least two populations are in Gap status 1 or 2 lands and the taxon is considered inadequately protected.

Potential Inventory or Conservation Areas: Catherine Creek.

Comments: Based on its global distribution and number of populations, the T rank is probably T3?Q

References: Cronquist 1955, Trock 2006.

### ***Parnassia kotzebuei*** (Kotzebue's grass-of-Parnassus)

Legal Status: BLM Sensitive, USFS Sensitive.

Natural Heritage Rank: G5/S1; WA Threatened.

Range: Asia, Alaska to Greenland, south to northern Washington, Nevada, and Colorado. In Washington, found in Chelan and Okanogan counties.

WA Ecoregions: East Cascades, Okanogan

Number of Occurrences: Known from three extant and one historical occurrences in the state. The extant populations have all been discovered or relocated since 2004 (most recently in 2018).

Abundance: Populations are often small and localized, ranging from 30-600 individuals. The entire state population may be less than 1,000 individuals.

Habitat: Usually restricted to damp, shady, mossy ledges on steep granite cliffs fed by springs or snowmelt. Also occasionally found amid granitic talus (Camp and Gamon 2011).

Threats: Changes in hydrology due to global warming.

Trends: One population in Washington has declined from 92 to six plants from 1980 to 2008.

Managed Areas: Chelan-Sawtooth WA, Lake Chelan NRA, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The single occurrence in the East Cascades ecoregion is protected in Lake Chelan NRA (Appendix A). Statewide, two of four occurrences are in Gap status 1 or 2 lands and the species is considered adequately protected.

Potential Inventory or Conservation Areas: Sawtooth ridge to Lake Chelan.

Comments: The Crescent Mine population in Okanogan County has been considered a separate variety (var. *pumila*) in the past based on its narrow and toothed staminodia (sterile stamens) (Hitchcock and Cronquist 1961), but is no longer recognized as taxonomically significant (Hitchcock and Cronquist 2018).

References: Camp and Gamon 2011, Hitchcock and Cronquist 1961, 2018.

### ***Pedicularis pulchella*** (Mountain lousewort)

Legal Status: USFS Sensitive

Natural Heritage Rank: G3/S1; WA Sensitive

Range: Regional endemic of southwestern Montana and northwestern Wyoming. Disjunct in the Cascade Mountains in north-central Washington (Chelan County).

WA Ecoregions: East Cascades

Number of Occurrences: Known from one occurrence in Washington, discovered in 2008 by Joe Arnett.

Abundance: Not known.

Habitat: Steep, exposed, alpine ridge with *Salix nivalis*.

Threats: Impacts from recreation.

Trends: Not known.

Managed Areas: Alpine Lakes WA, Okanogan-Wenatchee NF

Protection Status in Columbia Plateau & East Cascades: Completely Protected. The one population in Washington is protected in the Alpine Lakes WA (Appendix A).

Potential Inventory or Conservation Areas: Stuart Range.

References: Hitchcock and Cronquist 2018.

### ***Pedicularis rainierensis*** (Mt. Rainier lousewort)

Legal Status: USFS Sensitive

Natural Heritage Rank: G2G3/S2S3; WA Sensitive

Range: Endemic to central Washington in the vicinity of Mount Rainier in Lewis, Pierce, and Yakima counties.

WA Ecoregions: East Cascades, West Cascades

Number of Occurrences: Known from 17 occurrences in Washington, of which 14 are extant. At least six populations have been relocated since 2007 (most recently in 2019) based on WNHP and iNaturalist records (www.inaturalist.org).

Abundance: Populations range in size from less than 10 plants to 9,725 individuals. The total population is probably 15,000-20,000.

Habitat: Subalpine or alpine moist meadows, rocky slopes, and openings in Subalpine fir-Mountain hemlock forests. Soils vary from deep loam to moist talus or gravel. Elevation ranges from 1,400-2,100 meters (4,800-6,800 ft).

Threats: Hybridization with *Pedicularis bracteosa*, trampling by hikers, grazing by elk or marmots.

Trends: Not known.

Managed Areas: Clearwater WA, Mather Memorial Parkway SBA, Mt. Baker-Snoqualmie NF, Mt Rainier NP, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Completely protected. One occurrence in the East Cascades ecoregion is protected in the Mather Memorial Parkway SBA of Okanogan-Wenatchee NF (Appendix A). Statewide, 16 of 17 occurrences are in Gap status 1 or 2 lands (mostly in Mt. Rainier NP) and the species is considered adequately protected.

Potential Inventory or Conservation Areas: none

References: Camp and Gamon 2011.

### ***Pediocactus nigrispinus*** (Snowball cactus)

Synonym: *Pediocactus simpsonii* var. *robustior* (misapplied)

Legal Status: BLM Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Regional endemic of eastern Washington, northern Idaho, and eastern Oregon. In Washington, found in Douglas, Grant, Kittitas, and Yakima counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from 29 extant and seven historical occurrences in Washington. Twenty-two populations have been discovered or relocated since 2010.

Abundance: Populations range in size from two plants to 13,000. Often reported as locally abundant.

Habitat: Thin, rocky soil on ridgetops, low mountains, and desert valleys with *Artemisia rigida* scabland vegetation at 300-1,200m (1,000-4,000 ft).

Threats: Wildfire, conversion of habitat to agriculture, over-collection for horticulture.

Trends: Data lacking for many occurrences. Those with monitoring data show fluctuations over time, but mostly a downward trend.

Managed Areas: Beezley Hills Preserve (TNC), Colockum SWA, Ginkgo Petrified Forest SP, L.T. Murray SWA, North Columbia Basin SWA, Quilomene SWA, Spokane BLM, WA DNR, Yakima TC.  
Protection Status in Columbia Plateau & East Cascades: Adequate. Ten populations are protected in the Beezley Hills Preserve (TNC), Colockum, L.T. Murray, North Columbia Basin, and Quilomene SWAs, and Ginkgo Petrified Forest SP (Appendix A).  
Potential Inventory or Conservation Areas: Cleman Mountain, Colockum and Quilomene, Wenas Wildlife Area, Titchenal Canyon, YTC.  
References: WNHP 2005.

***Pellaea brachyptera*** (Sierra cliff-brake)

Legal Status: BLM Sensitive; USFS Sensitive  
Natural Heritage Rank: G4G5/S2; WA Sensitive  
Range: Northern California to southern Oregon; disjunct in Chelan County in north-central Washington.  
WA Ecoregions: East Cascades  
Number of Occurrences: Known from five extant occurrences, all discovered since 1984 (most recently relocated in 1998).  
Abundance: Some populations contain as few as 12-35 plants. The Rattlesnake Creek population was reported at over 5,000 fronds in 1984.  
Habitat: In Washington, found in rocky, southwest-facing slopes and the base of boulders derived from Swakane biotite gneiss in dry, sparsely vegetated openings in conifer woods.  
Threats: Competition with invasive weeds, grazing by horses  
Trends: Poorly known, but downward at two sites from 1984 to 1998.  
Managed Areas: Chelan-Sawtooth WA, Okanogan-Wenatchee NF.  
Protection Status in Columbia Plateau & East Cascades: Completely protected in the Chelan-Sawtooth WA (Appendix A).  
Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan  
References: Alverson and Arnett 1986, Camp and Gamon 2011, Gamon 1991a.

***Pellaea breweri*** (Brewer's cliff-brake)

Legal Status: USFS Sensitive  
Natural Heritage Rank: G5/S2; WA Sensitive  
Range: Northern Washington (Chelan, Jefferson, Kittitas, Mason, Okanogan, and Stevens counties) to western Montana and western Wyoming, south to California, Nevada, and Utah.  
WA Ecoregions: Canadian Rockies, East Cascades, North Cascades, Okanogan, Pacific Northwest Coast  
Number of Occurrences: Known from 10 extant and three historical occurrences in Washington (most recently documented in 2019).  
Abundance: Data lacking for most occurrences. Recently surveyed populations consist of 1-30 clumps of fronds.  
Habitat: Crevices and ledges in cliffs, talus, and outcrops of basalt, sandstone, or granite at 1,430-2,040m (4,700-6,700 ft).  
Threats: Low at present, but could be impacted by rock-climbing. Climate change is a long-term threat.  
Trends: Not known.  
Managed Areas: Buckhorn WA, Enchantment SBA, Glacier Peak WA, Mt. Baker-Snoqualmie NF, Okanogan-Wenatchee NF, Olympic NF, Olympic NP, Spokane BLM.  
Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of eight occurrences from the East Cascades ecoregion are protected in Glacier Peak WA and Enchantment SBA (Appendix A). Statewide, six populations are in Gap status 1 or 2 areas and the species is considered adequately protected.  
Potential Inventory or Conservation Areas: Stuart Range, Three Brothers-Teaway Range.  
References: Camp and Gamon 2011.

***Penstemon barrettiae*** (Barrett's beardtongue)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G2/S2; WA Threatened

Range: Endemic to the Columbia River Gorge in southern Washington and northern Oregon. In Washington, restricted to Klickitat and Skamania counties.

WA Ecoregions: East Cascades

Number of Occurrences: Known from eleven extant and two historical occurrences in Washington. Of the extant populations, one may consist of hybrid plants and two others were not relocated in recent surveys. Eight occurrences have been discovered or resurveyed since 2011 (most recently in 2019).

Abundance: Individual populations range from seven to 1,666 plants. Wentworth (1996) estimated the total population in Washington at approximately 5,000.

Habitat: Basalt cliffs, ledges, and talus within *Pinus ponderosa* and *Pseudotsuga menziesii* forests below 1,000 meters (3,200 ft).

Threats: Overharvest for horticultural trade, quarrying, disturbance from highway construction and maintenance, impacts from logging.

Trends: Poorly known, but may be stable.

Managed Areas: Columbia River Gorge NSA, Gifford Pinchot NF, Klickitat SWA, Spokane BLM, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four of 13 populations are protected in the Klickitat SWA and DNR registry sites (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River.

References: Fertig 2020, Wentworth 1996b.

***Penstemon deustus* var. *variabilis*** (Hot-rock beardtongue)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5T1T2/S1; WA Threatened

Range: Regional endemic of southern Washington (Klickitat County) and northern Oregon. Intermediate plants with var. *deustus* occur in the Blue Mountains of southeastern Washington (Asotin, Columbia, and Garfield counties) (Fertig 2020).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from three extant occurrences (most recently observed in 2014) and one historical population.

Abundance: The Columbia Hills NAP population contains 300-400 plants. Other occurrences have not been surveyed recently, but may have as few as three to 35 individuals.

Habitat: Dry foothill grasslands in bluebunch wheatgrass-Idaho fescue communities with low shrub cover on thin soils over basalt.

Threats: Grazing, conversion of habitat to agriculture, wildfire, competition from invasive plants, and herbicide drift.

Trends: Not known, but presumably downward in the past 150 years (Fertig 2020).

Managed Areas: Columbia Hills NAP, Columbia River Gorge NSA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of four known occurrences is protected in the Columbia Hills NAP (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011, Fertig 2020.

***Penstemon eriantherus* var. *whitedii*** (Whited's fuzzytongue beardtongue)

Legal Status: BLM Sensitive, USFS Sensitive.

Natural Heritage Rank: G4T2/S2; WA Threatened.

Range: Regional endemic of eastern Washington. Found in Chelan, Douglas, Franklin, Grant, Kittitas, Klickitat, Lincoln, and Spokane counties.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from 19 extant and four historical occurrences in Washington. Fourteen populations have been discovered or relocated since 2008, most recently in 2019.

Abundance: Most populations range in size from less than 20 to 2,200 individuals. The total state population is estimated at 6,600-10,000.

Habitat: West-facing, dry rocky canyons, slopes, and ridgetops, often with caliche fragments in sagebrush-bunchgrass communities (Camp and Gamon 2011). Often on sandy to mineral soil with high rock cover.

Threats: May be impacted by grazing, recreational activities (such as off-road vehicles), and over-collection.

Trends: Poorly known, but some populations may be stable to slowly decreasing.

Managed Areas: Colockum SWA, Entiat Slopes NAP, Hanford ERP, Hanford Reach NM, Okanogan-Wenatchee NF, Peshastin Pinnacles SP, Riverside SP, South Columbia Basin SWA, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Adequate. Eight occurrences are protected in the Entiat Slopes NAP, Hanford Reach NM, Colockum and South Columbia Basin SWAs and Peshastin Pinnacles and Riverside SPs. Two other populations occur on state park lands.

Potential Inventory or Conservation Areas: Naneum & Mission Peak, Burch Mountain & Swakane Canyon.

Comments: Based on recent discoveries, the T and S rank of this taxon should be adjusted to T2T3/S2S3 (Fertig 2020)

References: Camp and Gamon 2011, Fertig 2020.

### ***Penstemon wilcoxii*** (Wilcox's beardtongue)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Regional endemic of eastern Washington to northwestern Montana, south to northeastern Oregon and Idaho. In Washington, known from Columbia, Grant, Okanogan, Skamania, Spokane, and Whitman counties.

WA Ecoregions: Blue Mountains, Columbia Plateau, Okanogan, West Cascades

Number of Occurrences: Known from five extant occurrences in Washington and three historical populations. Most recently observed in 2018.

Abundance: Census data are lacking for nearly all Washington populations. One occurrence contained 1,000-1,500 plants in 1995 and another had 220 plants in 2018.

Habitat: Forested slopes, shrubby areas, and open rocky sites from 700-1,280 meters (2,300-4,200 ft).

Threats: Habitat loss, hybridization, and over-collecting for nursery plants.

Trends: Not known, may be downward based on the number of historic populations.

Managed Areas: Columbia River Gorge NSA, Gifford Pinchot NF, Kamiak Butte County Park, Liberty Lake Regional Park, North Columbia Basin SWA, Okanogan-Wenatchee NF, Trapper Creek WA, Umatilla NF.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One population from the Columbia Plateau is protected in the North Columbia Basin SWA (Appendix A).

Potential Inventory or Conservation Areas: Albion/Smoot Hill/Kamiak Butte, Banks Lake.

References: Camp and Gamon 2011.

### ***Petrophytum cinerascens*** (Chelan rockmat)

Synonym: *Petrophyton cinerascens*

Legal Status: BLM: Sensitive; USFS: Sensitive

Natural Heritage Rank: G1G2/S1S2; WA Endangered

Range: Endemic to central Washington (Chelan and Douglas counties) along the Columbia River between Chelan and Wenatchee.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from five extant occurrences, all located within a 27 km band along the Columbia River. All known populations have been observed since 2008, with the most recent survey in 2018.

Abundance: Population estimated at about 8,200 genets (this species forms dense clumps, with each clump presumed to represent a single genet). Almost 98% of the total population is found in just two sites (Earthquake Point and Rocky Reach Dam).

Habitat: Sparsely vegetated east or west-facing metamorphic granitic cliffs.

Threats: Probably low, but potentially impacted by quarrying, highway expansion, or over-collection for rock gardening.

Trends: Probably stable.

Managed Areas: Colockum SWA, Earthquake Point ACEC, Okanogan-Wenatchee NF, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Three of five known occurrences are protected in the Chelan SWA, Colockum SWA, Earthquake Point ACEC, and a DNR registry site (Appendix A).

Potential Inventory or Conservation Areas: Burch Mountain and Swakane Canyon.

References: Camp and Gamon 2011, Fertig et al. 2017, Fertig 2020, Gamon 1989.

### ***Phacelia lenta*** (Sticky phacelia)

Legal Status: BLM: Sensitive

Natural Heritage Rank: G2/S2?; WA Threatened

Range: Endemic to central Washington (Douglas County)

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from nine extant occurrences, all within the Badger Mountain/Rock Island Creek area. Most recently observed in 2018 (Fertig 2020).

Abundance: Population estimated at 3,000 individuals in 1986 (Gamon 1986b).

Habitat: Miocene-age basalt cliffs and talus below rock outcrops.

Threats: Potentially threatened by road construction, rock quarrying, or drift of herbicides from adjacent agricultural lands.

Trends: Apparently stable.

Managed Areas: Rock Island ACEC, Spokane BLM, private.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One occurrence is protected in the Rock Island Canyon ACEC, managed by the Spokane BLM. This population extends onto adjacent private lands enrolled in the DNR registry program. 89% of the known occurrences are unprotected (Appendix A).

Potential Inventory or Conservation Areas: Titchenal Canyon, Wenas Wildlife Area.

References: Camp and Gamon 2011, Fertig 2020, Gamon 1986b.

### ***Phacelia minutissima*** (Least phacelia)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3/S1; WA Endangered

Range: Northeastern Nevada and southwestern Idaho to northeast Oregon, with a disjunct occurrence in Kittitas County, Washington.

WA Ecoregions: East Cascades

Number of Occurrences: Known from a single population in Washington, last observed in 2010.

Abundance: Population estimated at 600 in 2010.

Habitat: Seasonally moist sites along streams or in meadows with alder, asters, and Kittitas larkspur (*Delphinium multiplex*).

Threats: Livestock grazing, changes in hydrology.

Trends: Not known.

Managed Areas: Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).



Potential Inventory or Conservation Areas: Naneum and Mission Peak.

References: Camp and Gamon 2011, Moseley 1995.

***Phacelia tetramera*** (Dwarf phacelia)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Northeastern Washington (Douglas and Grant counties) to Nevada and Wyoming, south to California and Utah.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from five extant populations, all relocated or discovered since 1983 (most recently in 2008).

Abundance: Washington populations range in size from 28 to approximately 1,000 plants.

Habitat: Vernal pools, swales, and moist low areas in sagebrush steppe or greasewood communities, often on alkaline soils.

Threats: Habitat disturbance from grazing or conversion to agriculture.

Trends: As an annual, population numbers are likely to fluctuate yearly depending on moisture conditions. No monitoring data are available to assess recent trends.

Managed Areas: Spokane BLM, Sun Lakes SP.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of five occurrences in the Columbia Plateau is protected in Sun Lakes SP (Appendix A).

Potential Inventory or Conservation Areas: Banks Lake, Chester Butte, Foster Creek, Sun Lakes.

References: Camp and Gamon 2011.

***Physaria douglasii* var. *tuplashensis*** (White Bluffs bladderpod)

Synonym: *Lesquerella tuplashensis*

Legal Status: USFWS Threatened

Natural Heritage Rank: G4?T1/S1; WA Endangered

Range: Endemic to a 17 km band along the east bank of Columbia River in Franklin County, Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from one large occurrence, first discovered in 1994 and monitored annually since 1997 (most recently in 2019).

Abundance: Based on sampling from permanent monitoring plots, the population reached a peak of abundance in 2011 with an estimated 58,887 plants (Arnett and Goldner 2017). In 2019, the population was estimated at 22,872 plants (Fertig 2019, Newsome 2019).

Habitat: Restricted to sparsely vegetated rims and upper slopes of the White Bluffs of the Columbia River, on a dry, barren, nearly vertical exposure of calcium carbonate caliche soil.

Threats: Landslides and erosion of slope habitat (potentially enhanced by irrigation), trampling by off-road vehicles, competition from invasive weeds, and wildfire (Fertig 2019).

Trends: Since monitoring began in 1997, numbers have oscillated around a relatively stable mean of approximately 24,300 individuals (Fertig 2019, Newsome 2018). The population reached a low point in 2010 and 2015-2016 with estimated numbers ranging from 1,367 to 5,378 (Newsome 2019). Peak numbers occurred in 2011 (31,831 plants estimated) and 2017 (30,026 estimated). Since 2017, numbers have declined towards the long term mean, with 22,872 plants estimated in 2019 (Newsome 2019).

Managed Areas: Hanford Reach NM, Bureau of Reclamation, South Columbia Basin SWA, private.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The single known occurrence is mostly contained and protected within Hanford Reach NM (USFWS-managed portion) and South Columbia Basin SWA (Appendix A).

Potential Inventory or Conservation Areas: Hanford.

Comments: The US Fish and Wildlife Service and volunteers from the Rare Care program at the University of Washington out-planted 893 plants from 2013 to 2015. As of May 2018 only five of the

original cohort were still alive, but 201 first or second-generation plants had become established from seed (Newsome 2018)

References: Arnett and Goldner 2017, Beck 1999b, Camp and Gamon 2011, Caplow 2003a, Fertig 2019, Newsome 2018, 2019; Rollins et al. 1995, Rush 1998b.

***Pilularia americana*** (American pillwort)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2; WA Threatened

Range: Washington to Baja California, also Great Plains from Nebraska to Texas and Arkansas and the Southern Appalachians in Tennessee and Georgia. In Washington, known from Adams, Lincoln, and Spokane counties

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from seven extant occurrences, all discovered or relocated since 1997 (most recently in 2011).

Abundance: Numbers may vary from year to year based on moisture levels. Most populations in Washington are small, often with 1-10 plants (rarely to 300).

Habitat: In Washington, found in vernal pools in biscuit-swale topography at 590-730 m (1,930-2,400 ft) elevation.

Threats: Disturbance from cattle grazing, loss of habitat to agriculture or development.

Trends: Not known, probably downward historically.

Managed Areas: Fairchild AFB, Marcellus Shrub Steppe NAP, Spokane BLM, Swanson Lakes SWA?, Turnbull NWR.

Protection Status in Columbia Plateau & East Cascades: Adequate. Five occurrences in the Columbia Plateau are protected in the Marcellus Shrub Steppe NAP, Turnbull NWR, and Swanson Lakes SWA (Appendix A).

Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch, Marcellus, Swanson Lakes.

References: Camp and Gamon 2011, Caplow 2005b, Johnson 1993.

***Plectritis brachystemon*** (Short-spurred plectritis)

Synonym: *Plectritis congesta* var. *brachystemon*

Legal Status: none.

Natural Heritage Rank: G5/S1; WA Sensitive.

Range: Southern British Columbia to California, west of the Cascades and in the Columbia River Gorge (Hitchcock and Cronquist 2018). In Washington, found in Clallam, Grays Harbor, Island, Klickitat, Mason, San Juan, Skagit, and Skamania counties.

WA Ecoregions: East Cascades, Pacific Northwest Coast, Puget Trough, West Cascades

Number of Occurrences: Known from 20 occurrences in Washington, of which four are extant and 16 historical and potentially extirpated.

Abundance: Not known for most populations. One extant occurrence described as "common". About 500 plants were observed at one site on Whidbey Island in 2019.

Habitat: In Washington, found in moist open meadows, rocky balds, and south-facing moist slopes in clearings.

Threats: Competition from invasive weeds, loss of habitat to development and agriculture, impacts from wildfire, herbicides.

Trends: Historically downward, as most populations are historical and possibly extirpated (especially in the Columbia Gorge area).

Managed Areas: Anacortes CF, Columbia River Gorge NSA, Conboy Lake NWR, Deception Pass SP, Elwha SWA, Fort Casey SP, Gifford Pinchot NF, Olympic NF, Olympic NP, Trout Lake NAP?

Protection Status in Columbia Plateau & East Cascades: Inadequate. Only one of six occurrences in the East Cascades is protected in Conboy Lake NWR (Appendix A), although this population is historical.

Statewide, seven populations occur in Gap status 1 or 2 lands and the species is classified as adequately protected.

Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River.

References: Hitchcock and Cronquist 2018.

***Polemonium pectinatum*** (Washington polemonium)

Legal Status: BLM Sensitive

Natural Heritage Rank: G2/S2; WA Threatened

Range: Endemic to eastern Washington in Adams, Lincoln, Spokane, and Whitman counties.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 39 extant occurrences and five historical populations. Fourteen populations have been surveyed since 2010.

Abundance: The state population was estimated at 15,000-20,000 plants by Gamon and Baxter (1995). Typical populations contain 300-1,000 individuals.

Habitat: Moist valley bottoms, creek terraces, ephemeral creeks, and mounds in biscuit scablands. Usually on alluvial soils in shrub-grassland communities of serviceberry, big sagebrush, and Wood's rose.

Threats: Habitat loss from conversion of grassland habitat to farming or grazing, changes in hydrology, wildfire, and competition from invasive weeds.

Trends: Monitored populations are generally stable. Long-term trends are down.

Managed Areas: Coal Creek ACEC, Spokane BLM, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Only four of the 44 known occurrences are protected in the Coal Creek ACEC and DNR registry sites (Appendix A).

Potential Inventory or Conservation Areas: Coal Creek-Lamona, Marcellus, Steptoe Butte, Swanson Lakes.

References: Camp and Gamon 2011, Fertig 2020, Gamon 1985, Gamon and Baxter 1995.

***Polyctenium fremontii*** (Fremont's combleaf)

Legal Status: BLM Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Central Oregon to central Idaho, south to California and Nevada. Disjunct in northeastern Washington (Grant County).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single occurrence in Washington, first discovered in 2001 and last observed in 2012.

Abundance: The state population was estimated at 100-200 plants in 2001, but only 68 were observed in 2012.

Habitat: Sparsely vegetated vernal pool on silty loam soil surrounded by sagebrush grassland.

Threats: Conversion of habitat to agriculture or grazing.

Trends: Declining, at least in the short-term.

Managed Areas: Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Banks Lake.

References: Camp and Gamon 2011.

***Polygonum austinae*** (Austin's knotweed)

Synonym: *Polygonum douglasii* var. *austinae*

Legal Status: none.

Natural Heritage Rank: G4/S1; WA Threatened

Range: British Columbia to Alberta, south to California, Nevada, Montana, and Wyoming. In Washington, found in Columbia, Garfield, Grant, and Spokane counties.

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from five extant occurrences, all discovered or relocated since 2002. Three new occurrences were documented in the Blue Mountains in 2018-2019.

Abundance: Washington populations contain at least 100-200 plants apiece. This species is small and easily overlooked and probably more common than the few records suggest.

Habitat: In the Columbia Plateau, this species occurs in Stiff sagebrush (*Artemisia rigida*) communities on dry, thin, basalt-derived soils at 450-700m (1470-2240 ft). In the Blue Mountains, populations are associated with barren basalt outcrops on upper slopes and rims in cushion plant/bunchgrass communities.

Threats: Competition from invasive weeds, wildfire, and conversion of habitat to agriculture.

Trends: Stable in short term. Being an annual, population numbers are likely to fluctuate depending on drought conditions.

Managed Areas: State of Washington, Sun Lakes SP, Umatilla NF.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of the two occurrences in the Columbia Plateau is protected in Sun Lakes SP (Appendix A).

Potential Inventory or Conservation Areas: Fishtrap Lakes-Miller Ranch, Sun Lakes.

References: Camp and Gamon 2011.

### ***Polygonum parryi*** (Parry's knotweed)

Legal Status: none.

Natural Heritage Rank: G4/S1; WA Threatened

Range: Southern Washington (Klickitat County) to southern California.

WA Ecoregions: East Cascades

Number of Occurrences: Known from one extant occurrence (last documented in 2000) and one historical population from 1886.

Abundance: The population north of Trout Lake was estimated at 100-300 plants in 2000.

Habitat: Seasonally moist areas in otherwise droughty sites on gravelly volcanic clay soil in open oak woodlands at 640m (2100 ft).

Threats: Trampling, conversion of habitat to agriculture, wildfire.

Trends: Not known.

Managed Areas: Conboy Lake NWR, Trout Lake NAP.

Protection Status in Columbia Plateau & East Cascades: Completely protected. Both occurrences are protected in Conboy Lake NWR and Trout Lake NAP (Appendix A).

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011.

### ***Potentilla breweri*** (Brewer's cinquefoil)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Washington to California and east to Nevada and Utah. In Washington, found in Clallam, Kittitas, Lewis, and Yakima counties.

WA Ecoregions: East Cascades, Pacific Northwest Coast, West Cascades

Number of Occurrences: Known from two extant and four historical occurrences in Washington. Two populations have been discovered since 2005, most recently in 2009.

Abundance: Data are lacking for most populations. One site contained 150 plants in 2009.

Habitat: Moist meadows, stream banks, and lake edges in upper montane to alpine areas from 1,500-2,000 m (5,000-6,000 ft).

Threats: Grazing, trampling.

Trends: Not known, but probably declining based on the number of historical (and possibly extirpated) populations.

Managed Areas: Gifford Pinchot NF, Goat Rocks WA, Okanogan-Wenatchee NF, Olympic NP.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The four populations in the East Cascades occur on public, tribal, or private lands managed for multiple use. Statewide, two occurrences are in Gap status 1 or 2 lands and the species is considered inadequately protected (Appendix A).

Potential Inventory or Conservation Areas: Naneum and Mission Peak.

References: Camp and Gamon 2011.

***Potentilla newberryi*** (Newberry's cinquefoil)

Legal Status: none

Natural Heritage Rank: G3G4/SH; WA Extirpated

Range: Southern Oregon to California and Nevada. Disjunct in southern Washington (Klickitat County).

WA Ecoregions: East Cascades

Number of Occurrences: Known from one historical occurrence, last observed in 1898.

Abundance: Not known, probably extirpated.

Habitat: In Washington, found on receding shorelines and mudflats on the Columbia River.

Threats: Inundation of habitat from dam and reservoir construction.

Trends: Downward, probably extirpated.

Managed Areas: Columbia River Gorge NSA, private.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011.

***Pyrrocoma hirta* var. *sonchifolia*** (Sticky goldenweed)

Synonym: *Haplopappus hirtus* var. *sonchifolius*

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G4G5T3/S2; WA Threatened

Range: Regional endemic of central Washington (Kittitas County), northeastern Oregon, and western Idaho.

WA Ecoregions: East Cascades

Number of Occurrences: Known from seven extant occurrences in Washington. All sites have been documented since 1996 (most recently in 2019).

Abundance: Populations range from 100-5,000 individuals. The total state population is between 8,800-10,000 plants.

Habitat: Sagebrush meadows, sparsely wooded slopes, and rocky vernal wet sites in the foothills zone.

Threats: Grazing, conversion of habitat to agriculture or human settlements.

Trends: Not known.

Managed Areas: WA DNR, L.T. Murray SWA, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of seven occurrences in the East Cascades ecoregion is protected in the L.T. Murray SWA (Appendix A).

Potential Inventory or Conservation Areas: Cleman Mountain, Colockum and Quilomene, Naneum and Mission Peak, Wenas Wildlife Area.

References: Camp and Gamon 2011.

***Pyrrocoma liatrifomis*** (Small-head goldenweed)

Synonym: *Haplopappus liatrifomis*

Legal Status: none

Natural Heritage Rank: G2/S2; WA Threatened

Range: Regional endemic of southeastern Washington (Spokane and Whitman counties) and western Idaho.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 26 extant occurrences (last observed in 2018) and five historical populations.

Abundance: The largest populations in Washington occur on the Campus Prairie and Kramer Palouse biological study areas managed by Washington State University and contain 1,000-2,600 plants. Most occurrences are significantly smaller, containing 4-200 plants. The total population in Washington is currently estimated at 5,800.

Habitat: Palouse grassland and native bunchgrass prairie and Ponderosa pine foothills grasslands. Most populations occur on silt/loam or loess on middle to upper slopes.

Threats: Competition from invasive weeds, herbicides (direct application or drift), mowing, livestock grazing, conversion of habitat to agriculture, habitat fragmentation (Kemper 2005c).

Trends: Long-term trends are downward. Recently monitored populations are mostly in decline with some notable exceptions, such as the Campus Prairie Biological Study Area.

Managed Areas: Campus Prairie BSA, Kramer Palouse BSA, Rose Creek Preserve (TNC), Smoot Hill BSA, Steptoe Butte SP, proposed Steptoe Butte NAP, private (DNR registry).

Protection Status in Columbia Plateau & East Cascades: Adequate. Eight populations are currently protected, representing 25.8% of all occurrences in Washington (Appendix A). These occur in the proposed Steptoe Butte NAP, Steptoe Butte SP, Campus Prairie, Kramer Prairie, and Smoot Hills BSAs (Washington State University), and DNR registry sites.

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte, Steptoe Butte, Wawawai Canyon to Silcott

Comments: Collections from Asotin County formerly attributed to *Pyrrocoma liatrisiformis* are now segregated as *P. scaberula* following morphologic and genetic studies by Björk and Darrach (2009) and Smith et al. (2010).

References: Björk and Darrach 2009, Camp and Gamon 2011, Fertig 2020, Kemper 2005c, Smith et al. 2010.

### ***Pyrrocoma scaberula*** (Palouse goldenweed)

Synonym: Formerly included in *Haplopappus liatrisiformis* (Cronquist 1955).

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G2/S1; WA Endangered

Range: Regional endemic of the Snake River drainage of southeast Washington (Asotin County) and north-central Idaho.

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from seven extant occurrences, all documented since 2003 (most recently in 2011).

Abundance: About 1,300 plants have been observed in Washington (Fertig 2020).

Habitat: *Festuca idahoensis*-*Elymus spicatus* prairies and mosaic of prairie and Douglas-fir or Ponderosa pine woodlands in canyons and ridgetops on loess soil over basalt or limestone at 730-1,300m (2,400-4,300 ft).

Threats: Grazing, competition from invasive plants, conversion of habitat to agriculture, and wildfire.

Trends: Not known.

Managed Areas: Chief Joseph SWA, Fields Spring SP, Grande Ronde ACEC, Umatilla NF, Vale BLM.

Protection Status in Columbia Plateau & East Cascades: Unprotected in the Columbia Plateau ecoregion (all known populations are on Umatilla NF or private lands and managed for multiple use). Statewide, three occurrences are found in Gap status 2 lands and the species is considered inadequately protected (Appendix A).

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott

References: Björk and Darrach 2009, Fertig 2020, Smith et al. 2010.

### ***Ranunculus hebecarpus*** (Downy buttercup)

Legal Status: none

Natural Heritage Rank: G5/S1; WA Threatened

Range: Eastern Washington (Adams, Garfield?, Klickitat, and Whitman counties) to Idaho, south to California, Arizona, and Baja California.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from one extant occurrence (last observed in 2009) and three historical populations in Washington.

Abundance: No data available.

Habitat: Shady, moist to dry hillsides in open white oak woods and rocky areas at 380-1,300m (115-4,300 ft).

Threats: Competition from invasive plants, habitat degradation from timber harvest or road construction.

Trends: Not known, but probably declining based on the number of historical populations.

Managed Areas: Canyon Ranch BSA, Columbia River Gorge NSA, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One occurrence in the Columbia Plateau is protected in the Canyon Ranch BSA (Appendix A).

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott

References: Washington Natural Heritage Program 2005.

### ***Ranunculus triternatus*** (Obscure buttercup)

Synonym: *Ranunculus reconditus*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G2/S1S2; WA Endangered

Range: Local endemic of southern Washington (Klickitat County) and northern Oregon in the Columbia River drainage. Reports from Nevada and Idaho are considered erroneous by Holmgren et al. (2012). Additional observations and collections of atypical buttercups from Yakima County and vicinity may represent hybrids between *Ranunculus triternatus* and *R. glaberrimus* or an undescribed variety of *R. triternatus* (Arnett 2013).

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: Known from five extant and one historical occurrences in Washington. All of the extant sites have been discovered or relocated since 2009 (most recently in 2019).

Abundance: Surveys from 2010-2014 suggest a current statewide population of at least 9,800 plants (Fertig 2020).

Habitat: Typically found in bunchgrass meadows on north-facing slopes and ridge crests of loess over basalt. Occasionally found in grasslands with scattered white oaks. Elevation ranges from 580-1,220m (1,900-4,000 ft).

Threats: Grazing, conversion of habitat to agriculture, competition from invasive plants, wildfire, drought, long-term climate change (Fertig 2020).

Trends: Long-term trends are probably downward in Washington, as the amount of potentially suitable habitat has declined. Monitoring at the Columbia Hills NAP site documented a decline of 39-76% at each of five sampling sites from 2003-2012 (Wilderman 2012).

Managed Areas: Columbia Hills Historical SP, Columbia Hills NAP, Columbia Land Trust, Columbia River Gorge NSA, Klickitat SWA, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Adequate. Four occurrences in the state are protected in the Columbia Hills NAP, Columbia Hills Historical SP, and private land (Columbia Land Trust (Appendix A).

Potential Inventory or Conservation Areas: Klickitat River.

References: Arnett 2013, Camp and Gamon 2011, Fertig 2020, Holmgren et al. (2012), Whittemore 1997b, Wilderman 2001, 2012

### ***Ribes cereum* var. *colubrinum*** (Wax currant)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5T3/S1; WA Endangered

Range: Endemic to the Snake River Canyon area of southeastern Washington (Asotin County), northeastern Oregon, and western Idaho.

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from four extant and three historical occurrences in Washington. Three populations have been discovered or relocated since 2002 (most recently in 2007).

Abundance: Surveyed occurrences contain between 1 to 20 plants.

Habitat: Dry, rocky canyon bottoms or flats bordering streams in tall shrub communities at 300-1,000 m (1000-3300 ft).

Threats: Conversion of habitat to agriculture or development.

Trends: Not known.

Managed Areas: Asotin SWA, Grande Ronde ACEC, Vale BLM

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of four occurrences in the Columbia Plateau is protected in the Asotin Creek SWA (Appendix A).

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott.

References: Camp and Gamon 2011.

***Ribes oxycanthoides* var. *irriguum*** (Idaho gooseberry)

Synonym: *Ribes irriguum*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5T4/S2; WA Threatened

Range: Southeastern British Columbia to western Montana, south to Oregon and north-central Idaho. In Washington, known from Asotin, Spokane, and Whitman counties. Historical reports from Clark, Ferry and Stevens counties are based on misidentified specimens.

WA Ecoregions: Blue Mountains and Columbia Plateau. Reports from Okanogan and Puget Trough are erroneous.

Number of Occurrences: Known from 12 occurrences in Washington, of which only five are extant (last observed in 2015) and seven historical.

Abundance: Data lacking for most occurrences. Two of the extant populations consist of a single clump of plants and another has eight individuals. Sinnott (1985) reported this species as “not in imminent danger of becoming extinct” and “relatively frequent” and “the most common gooseberry in the Blue Mountains of Oregon and Washington”, but cited only three collections from Washington.

Habitat: Small meadows, openings, and canyon bottoms along streams. Usually associated with conifers or deciduous shrubs.

Threats: Conversion of habitat to agriculture or human development.

Trends: Probably downward.

Managed Areas: Chief Joseph SWA, Fields Spring SP, Umatilla NF.

Protection Status in Columbia Plateau & East Cascades: Unprotected. Eight occurrences in the Columbia Plateau ecoregion are all from private lands (Appendix A). At least two occurrences are protected in the Blue Mountains ecoregion and statewide the species is scored as inadequately protected.

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte.

Comments: S rank needs to be changed to S1 to reflect the updated number of verified occurrences.

References: Camp and Gamon 2011, Sinnott 1985.

***Rorippa columbiae*** (Columbia yellowcress)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3/S2; WA Threatened

Range: Occurs along the Columbia River in Washington and Oregon and from southern Oregon to northern California. Washington populations are known from Benton, Franklin, Grant, Klickitat, and Skamania counties.

WA Ecoregions: Columbia Plateau, East Cascades, West Cascades



**Number of Occurrences:** Known from two extant and two historical occurrences in Washington (most recently surveyed in 2012).

**Abundance:** Salstrom and Gehring (1994) estimated that several million ramets might be present along the 40 miles of shoreline in the Hanford Reach, with densities of 10-70 stems per square meter. Actual number of individuals is difficult to measure because the species is rhizomatous.

**Habitat:** Gently to moderately sloping banks and islands within the remaining free-flowing (undammed) sections of the Columbia River, in areas that are at least seasonally flooded. Found on clay, sand, sandy silt, or cobblestones.

**Threats:** Current water management practices (high water events during the flowering and fruiting period may reduce reproduction), competition from invasive plants, succession.

**Trends:** Historically downward due to loss of seasonally flooded or scoured reaches of the Columbia River from dam and reservoir construction. Areas on the upper banks of the Columbia River may have provided suitable habitat in the past, but are now too infrequently scoured to prevent woody vegetation from becoming established (Habegger et al. 2001).

**Managed Areas:** Beacon Rock SP, Columbia River Gorge NSA, Hanford Reach NM, McNary NWR, Pierce Island Preserve (Columbia Land Trust), Pierce NWR, South Columbia Basin SWA, Yakima River-Columbia Island ACEC.

**Protection Status in Columbia Plateau & East Cascades:** Adequate. One extensive occurrence in the Columbia Plateau ecoregion is protected within the Hanford Reach NM (including Saddle Mountain NWR), McNary NWR, Yakima River-Columbia Island ACEC, and South Columbia Basin SWA (Appendix A). A second protected occurrence in the Pierce Island area of the Columbia River is within the West Cascades Ecoregion.

**Potential Inventory or Conservation Areas:** Hanford

**References:** Camp and Gamon 2011, Fertig 2020, Habegger et al. 2001, Salstrom and Gehring 1994, Scherer 1991.

### ***Rotala ramosior*** (Lowland toothcup)

**Legal Status:** BLM Sensitive; USFS Sensitive

**Natural Heritage Rank:** G5/S2; WA Sensitive

**Range:** British Columbia and Ontario, south to California, Montana, Arizona, Texas, Florida, and Mexico. In Washington, found in Benton, Chelan, Franklin, Garfield, Klickitat, Spokane, and Whitman counties. Previous reports from Whatcom County are based on a misidentification (Fertig 2018).

**WA Ecoregions:** Columbia Plateau, East Cascades. Report from the Puget Trough is erroneous.

**Number of Occurrences:** Known from five extant and three historical occurrences in Washington. Three populations have been discovered or relocated since 2002 (most recently in 2014).

**Abundance:** May be locally abundant, with populations ranging from several hundred to 20,000.

**Habitat:** Seasonally flooded river banks, swampy areas, lake and pond shores, and mudflats on sand or silt at 60-690m (200-2,260 ft).

**Threats:** Changes in hydrology, conversion of habitat to agriculture, competition from invasive plants.

**Trends:** As an annual, numbers may fluctuate yearly. Overall trends may be downward, based on the high number of historical (and possibly extirpated) populations in the state.

**Managed Areas:** Columbia Land Trust, Columbia River Gorge NSA, Conboy Lake NWR, Hanford ERP, Hanford Reach NM, Okanogan-Wenatchee NF, Saddle Mountain NWR, Spokane BLM, Turnbull NWR.

**Protection Status in Columbia Plateau & East Cascades:** Adequate. Four of eight occurrences are protected in Conboy NWR, Hanford Reach NWR, Turnbull NWR, and private lands managed by the Columbia Land Trust (Appendix A).

**Potential Inventory or Conservation Areas:** Hanford, Panakanick Prairie.

**References:** Camp and Gamon 2011, Fertig 2018.

### ***Rubus nigerrimus*** (Northwest raspberry)

**Synonym:** *Rubus leucodermis* var. *nigerrimus*

Legal Status: BLM Sensitive

Natural Heritage Rank: G2/S2; WA Threatened

Range: Endemic to southeastern Washington in Asotin, Garfield and Whitman counties. Reports from northeast Oregon and Idaho have not been corroborated (Alice et al. 2015).

WA Ecoregions: Blue Mountains, Columbia Plateau

Number of Occurrences: Known from 16 extant and two historical occurrences in Washington. Ten populations have been discovered or relocated since 2000 (most recently in 2019), but at least five sites could not be relocated in 2019 (Fertig 2020).

Abundance: Populations range from one to 130 plants. Kemper (2005d) estimated the total population at 700 genets in 2005.

Habitat: Bottoms and slopes of steep, narrow canyons in shrubby thickets and open woods along streams or cut banks, often in more xeric sites than other *Rubus* species (Kemper 2005d).

Threats: Livestock grazing, competition from invasive weeds (including *Rubus bifrons*), inbreeding depression resulting from population fragmentation, and road construction and widening (Kemper 2005e).

Trends: Apparently downward; most populations have not been monitored systematically. Surveys in 2019 found that many populations appeared to have been displaced by *Rubus bifrons* (Fertig 2020)

Managed Areas: Army Corps of Engineers, Grande Ronde ACEC, Vale BLM, WA DNR, private.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of 16 occurrences in the Columbia Plateau is protected in a DNR private registry site. Statewide, only two populations are protected (Appendix A).

Potential Inventory or Conservation Areas: Wawawai Canyon to Silcott

References: Alice et al. 2015, Camp and Gamon 2011, Fertig 2020, Kemper 2005d, 2005e, Rush 1999b.

### ***Sabulina nuttallii* var. *fragilis*** (Nuttall's sandwort)

Synonym: *Arenaria nuttallii* var. *fragilis*, *Minuartia nuttallii* var. *fragilis*

Legal Status: BLM Sensitive

Natural Heritage Rank: G5T4/S1; WA Threatened

Range: Occurs from southern Washington to California and Nevada. Found in Benton, Grant, and Kittitas counties in Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from three occurrences, all discovered since 1987 and most recently monitored in 2018.

Abundance: The largest population in Washington contained 800-1,500 plants when last visited in 2018. Two other extant populations contain a combined 70 plants.

Habitat: Rocky, gravelly, or talus areas of basalt in bitterbrush-rabbitbrush-bluebunch wheatgrass communities.

Threats: Trampling and habitat degradation from off-road vehicle recreation (Camp and Gamon 2011).

Trends: Poorly known. One occurrence has been revisited several times from 1987-2018 and appears to be increasing, although this increase may be an artifact of more thorough sampling.

Managed Areas: Columbia NWR, Sentinel Slope ACEC, Spokane BLM, Yakima TC.

Protection Status in Columbia Plateau & East Cascades: Inadequate. One of three occurrences in the state is protected in the Columbia NWR (Appendix A).

Potential Inventory or Conservation Areas: Saddle Mountain, YTC.

References: Camp and Gamon 2011.

### ***Sabulina pusilla*** (Annual sandwort)

Synonym: *Arenaria pusilla*, *Minuartia pusilla*

Legal Status: none

Natural Heritage Rank: G5/S1; WA Threatened

Range: Sporadic from eastern Washington and Oregon to southern California and northern Baja California. Found in Columbia, Grant, Klickitat, Spokane, Walla Walla, and Whitman counties in Washington.

WA Ecoregions: Columbia Plateau, East Cascades

Number of Occurrences: One extant occurrence in Washington, last observed in 2011. Also known from six historical populations, collected from 1894 to 1916. Some of the historical reports need confirmation.

Abundance: The single extant population in Washington contained several thousand plants in 2002 and 2011. Data are lacking for other populations.

Habitat: In Washington, found in hard-packed gravel in sparsely vegetated openings within sagebrush.

Threats: Trampling, loss of habitat to agriculture or development.

Trends: Not known, but probably downward during the past century.

Managed Areas: Columbia River Gorge NSA.

Protection Status in Columbia Plateau & East Cascades: Unprotected. All known populations are on status 3 or 4 lands (Appendix A).

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte.

References: Hitchcock and Cronquist 1964, 2018.

### ***Salix pseudomonticola*** (False mountain willow)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S1; WA Sensitive

Range: Alaska and western Canada south to Washington, Idaho, Wyoming, South Dakota, and Minnesota. In Washington, found in Chelan and Pend Oreille counties.

WA Ecoregions: Canadian Rockies, East Cascades

Number of Occurrences: Known from two occurrences in Washington, both observed since 2005.

Abundance: Populations are small and localized. The largest occurrence is at Halliday Fen on Colville NF and contains about 100 stems.

Habitat: Hummocks in calcareous fens, wet meadows, stream banks, lake shores, and floodplains from 900-1,680 m (2,950-5,500 ft).

Threats: Herbivory, changes in hydrology.

Trends: Not known.

Managed Areas: Alpine Lakes WA, Colville NF, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The single occurrence in the East Cascades ecoregion is protected in Alpine Lakes WA. Statewide, all occurrences are in protected areas.

Potential Inventory or Conservation Areas: Three Brothers-Teaway Range.

References: Camp and Gamon 2011.

### ***Salix sessilifolia*** (Soft-leaved willow)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Southern British Columbia to northern California. In Washington, found in Clark, Cowlitz, Klickitat, Skagit, Wahkiakum, and Whatcom counties.

WA Ecoregions: East Cascades, Pacific Northwest Coast, Puget Trough

Number of Occurrences: Known from seven extant and one historical occurrences in Washington. Only two populations have been documented since 2000.

Abundance: Populations in Washington are apparently very small, numbering from 2-75 plants.

Habitat: Riparian forests, sandy riverbanks, beaches, and moist lowland sites, often with *Salix sitchensis*, *S. lasiandra*, or *S. fluviatilis*.

Threats: Recreation, competition from invasive plants, loss of wetland habitat to human development, and dam construction/flooding.

Trends: Not known.

Managed Areas: Columbia River Gorge NSA, Edgewater Park, Ridgefield NWR, WA DFW.  
Protection Status in Columbia Plateau & East Cascades: Unprotected. The single occurrence in the East Cascades is unprotected (Appendix A). Statewide, two of eight occurrences are in Gap status 1 or 2 lands and the species is considered inadequately protected.  
Potential Inventory or Conservation Areas: Catherine Creek  
References: Camp and Gamon 2011.

***Salix vestita*** (Rock willow)

Legal Status: none  
Natural Heritage Rank: G4/SH; WA Extirpated  
Range: British Columbia to Nunavut and Newfoundland, south to Oregon and Montana. In Washington, known historically from Chelan and Whatcom counties.  
WA Ecoregions: East Cascades, North Cascades  
Number of Occurrences: Known from three historical populations in Washington, last observed in 1965.  
Abundance: Not known, populations are all historical and might not be extant.  
Habitat: Alpine streamsides, wet meadows, and seeps above 2,100m (7,000ft).  
Threats: Grazing, trampling.  
Trends: Downward, may be extirpated in Washington.  
Managed Areas: Enchantment SBA, Mt. Baker-Snoqualmie NF, Mt. Baker WA, Okanogan-Wenatchee NF  
Protection Status in Columbia Plateau & East Cascades: Completely protected. Although historical, the one occurrence in the East Cascades ecoregion is protected in the Enchantment SBA in Okanogan-Wenatchee NF. All other occurrences in Washington are protected within the Mt. Baker WA (Appendix A).  
Potential Inventory or Conservation Areas: Stuart Range  
References: Camp and Gamon 2011.

***Sandbergia perplexa*** (Puzzling rockcress)

Synonym: *Halimolobus perplexa* var. *perplexa*  
Legal Status: none  
Natural Heritage Rank: G4/S1; WA Endangered  
Range: Endemic to southern Idaho and central Washington (Douglas County).  
WA Ecoregions: Columbia Plateau  
Number of Occurrences: Known from one extant and one historical population in Washington. Most recently observed in 2013.  
Abundance: The single Washington population contains about 25 plants.  
Habitat: Sparsely vegetated rocky, clay-rich flats in Thymeleaf buckwheat-Sandberg bluegrass community at 530m (1,750 ft).  
Threats: Competition from invasive plants, trampling.  
Trends: Not known. The Sagebrush Flat population is small, but has been stable since being discovered in 2004.  
Managed Areas: Moses Coulee Preserve?, State of Washington.  
Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).  
Potential Inventory or Conservation Areas: Chester Butte.  
References: Camp and Gamon 2011.

***Saxifraga hyperborea*** (Pygmy saxifrage)

Synonym: *Saxifraga debilis*  
Legal Status: none  
Natural Heritage Rank: G5/S3; WA Sensitive

Range: Alaska to Greenland, south to California, Arizona, and New Mexico. In Washington, found in Chelan, Clallam, Jefferson, Okanogan, Pierce, Skagit, Snohomish, and Whatcom counties.

WA Ecoregions: East Cascades, North Cascades, Okanogan, Pacific Northwest Coast, West Cascades

Number of Occurrences: Known from 22 extant populations and seven historical occurrences. Three populations have been relocated since 2010.

Abundance: Populations range from one plant to about 500. At least 17 occurrences have less than 100 individuals.

Habitat: Rock crevices, talus fields, and damp, shady cliffs in subalpine or alpine areas at 1,600-2,700 m (5,200-8,800 ft).

Threats: Mining.

Trends: Not known.

Managed Areas: Buckhorn WA, Chelan-Sawtooth WA, Chopaka Mountain NAP, Glacier Peak WA, Lake Chelan NRA, Mt. Baker-Snoqualmie NF, Mt. Baker WA, Mount Rainier NP, North Cascades NP, Okanogan-Wenatchee NF, Olympic NF, Olympic NP, Pasayten WA, Silver Lake RNA.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The two populations from the East Cascades are protected in the Glacier Peak WA and North Cascades NP. Statewide, 22 of 29 populations are in Gap status 1 or 2 areas and the species is considered adequately protected (Appendix A).

Potential Inventory or Conservation Areas: Sawtooth Ridge to Lake Chelan.

References: Camp and Gamon 2011.

### ***Saxifragopsis fragarioides* (Strawberry saxifrage)**

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3?/S2; WA Threatened

Range: Southwestern Oregon to northern California and disjunct in north-central Washington (Chelan County).

WA Ecoregions: East Cascades

Number of Occurrences: Known from four extant occurrences in Washington, all discovered or revisited since 1994 (most recently in 2006).

Abundance: Washington populations range in size from three plants to over 1,000.

Habitat: Crevices in cliffs, rock outcrops, and talus within Ponderosa pine or Douglas-fir forests at 400-1,300 m (1,440-4,300 ft).

Threats: Low, some sites could be impacted by rock climbing.

Trends: Not known.

Managed Areas: Alpine Lakes WA, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Adequate. One of four occurrences is protected in the Alpine Lakes WA (Appendix A). All other populations are on Okanogan-Wenatchee NF lands managed for multiple use.

Potential Inventory or Conservation Areas: Three Brothers-Teaaway Range, Tumwater Mountain-Chumstick Mountain.

References: Camp and Gamon 2011.

### ***Schizachyrium scoparium* var. *scoparium* (Little bluestem)**

Legal Status: BLM Sensitive

Natural Heritage Rank: G5T5/S1; WA Threatened

Range: Southern British Columbia to Ontario, south to California, Arizona, Texas, Louisiana, Florida, and Mexico. In Washington, found in Chelan, Douglas, and Stevens counties.

WA Ecoregions: Canadian Rockies, Columbia Basin, East Cascades

Number of Occurrences: Known from four extant occurrences, all discovered or relocated since 2000 (most recently in 2017).

Abundance: Washington populations consist of at least 1,000 plants each.

Habitat: In Washington, this species occurs in native bunchgrass grasslands along the Columbia River (above and below the high-water line) on sand, silt, cobbles, and gravel.

Threats: Hydrologic changes from dam construction and reservoir maintenance, competition from invasive plants, and conversion of habitat to irrigated agriculture.

Trends: Not known.

Managed Areas: Spokane BLM, private.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Burch Mountain and Swakane Canyon

References: Camp and Gamon 2011, Roché et al. 2019.

### ***Schoenoplectus saximontanus*** (Rocky Mountain bulrush)

Synonym: *Scirpus saximontanus*

Legal Status: none

Natural Heritage Rank: G5/S1; WA Threatened

Range: California to Wyoming, South Dakota, Illinois, and Ohio, south to Utah, Texas, and Missouri. Disjunct in British Columbia and eastern Washington (Spokane County).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from a single occurrence in Washington, last observed in 1997.

Abundance: Curtis Björk observed 500-1,000 plants in 1997.

Habitat: Drying mudflats on moderately alkaline soil at 700m (2,300 ft).

Threats: Changes in hydrology, conversion of habitat to agriculture, and competition from *Phalaris arundinacea* and other invasive exotic plants.

Trends: Not known.

Managed Areas: Turnbull NWR.

Protection Status in Columbia Plateau & East Cascades: Completely protected. The single occurrence in Washington is protected in Turnbull NWR (Appendix A).

Potential Inventory or Conservation Areas: Fishtrap Lake-Miller Ranch.

References: Camp and Gamon 2011.

### ***Sclerolinon digynum*** (Northwestern yellowflax)

Legal Status: none

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Eastern Washington (Spokane and Whitman counties), Idaho, Oregon, and California.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from six extant occurrences and three historical populations. Only one population has been surveyed since 2011.

Abundance: Populations range in size from less than 50 to nearly 10,000 individuals.

Habitat: Edges of vernal pools, drying lakeshores, and seasonally wet gravelly sites, often on thin soil over basalt in biscuit scabland topography.

Threats: Cattle grazing, competition from invasive weeds, off-road vehicle recreation.

Trends: Not known. As an annual, population numbers can fluctuate from year to year, depending on moisture availability. At Fairchild Air Force Base, populations fluctuated from 672 to 0 to 712 plants over a three-year period (2009-2011).

Managed Areas: Fairchild AFB, Turnbull NWR, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two of the nine occurrences in the Columbia Plateau are protected in Turnbull NWR (Appendix A).

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte.

References: Camp and Gamon 2011, Caplow 2005b.

### ***Scribneria bolanderi*** (Scribner-grass)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S1; WA Threatened

Range: Occurs from southern Washington and western Oregon south through California to Baja California. In Washington, known from Klickitat and Pierce counties and an historical report from Skamania County.

WA Ecoregions: East Cascades, West Cascades

Number of Occurrences: Known from two extant occurrences (most recently observed in 2002 and 2010) and two historical populations from 1896-1899.

Abundance: Census data available from a single population, which contained 231 plants in 2002. The plant's low stature makes it easy to overlook, and may account for the paucity of observations or collections.

Habitat: Dry, sandy or rocky soils, vernal seeps, or roadsides.

Threats: Competition from invasive weeds, habitat destruction through road construction or changes in hydrology. Scribner-grass superficially resembles short-awned specimens of the aggressive agricultural pest *Aegilops cylindrica* (goatgrass) and might be vulnerable to weed control activities.

Trends: Not well known. One occurrence discovered in 1994 showed a population increase in 2002, but has not been revisited since.

Managed Areas: Columbia River Gorge NSA, Gifford Pinchot NF, Mt. Baker-Snoqualmie NF, Norse Creek WA, state of Washington?

Protection Status in Columbia Plateau & East Cascades: Unprotected. The three populations from the East Cascades ecoregion are unprotected. Statewide, one population is in a Gap status 1 or 2 area and the species is considered Adequately protected (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011, Roché et al. 2019, Smith 2007.

### ***Sericocarpus oregonensis ssp. oregonensis*** (Oregon white-top aster)

Synonym: *Aster oregonensis*

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5TNR/S1; WA Threatened

Range: Southern Washington (Skamania County), western Oregon, and northern California.

WA Ecoregions: East Cascades, West Cascades

Number of Occurrences: Known from one extant occurrence (last observed in 1988) and one historical population in Washington.

Abundance: Considered rare in the Columbia River Gorge by Jolley (1988).

Habitat: Mesic but well-drained open woodlands or rocky coniferous forests.

Threats: Conversion of habitat to agriculture or human settlement

Trends: Not known.

Managed Areas: Columbia River Gorge NSA.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

Comments: Previous reports of *Sericocarpus rigidus* in Skamania County and the East Cascades ecoregion are based on a misidentified collection of *S. oregonensis*. Subspecies *oregonensis* should be assigned a T rank of at least T3.

References: Camp and Gamon 2011, Jolley 1988.

### ***Sidalcea oregana var. calva*** (Wenatchee Mountains checkermallow)

Legal Status: USFWS Endangered

Natural Heritage Rank: G5T1/S1?; WA Endangered

Range: Endemic to the Wenatchee Mountains of central Washington in Chelan County. Additional reports from Kittitas County have not been relocated in surveys in 1981, 2001, 2007 and 2010 and may be extirpated or misidentified.

WA Ecoregions: East Cascades

Number of Occurrences: Known from five extant occurrences and seven historical or extirpated populations. One additional out-planted population has been established. Three occurrences were surveyed in 2019, but three historical populations could not be relocated.

Abundance: The largest population contains approximately 21,000 plants (Kleinknecht et al. 2019), while smaller occurrences have 8-300 individuals (US Fish and Wildlife Service 2004).

Habitat: Moist meadows with a high water table (or with surface water) well into summer. Also in openings in Douglas-fir forests and edges of shrub thickets. Found at elevations between 480-1,000 m (1,600-3,200 ft).

Threats: Conversion of habitat for agriculture or residential development, seed predation by weevils, succession due to absence of fire, competition from invasive exotics, and impacts of climate change (Kleinknecht et al. 2019).

Trends: Historically, trend has been downward. Over the past 20-30 years, at least two occurrences appear to be stable and one may be increasing (US Fish and Wildlife Service 2004).

Managed Areas: Camas Meadows NAP, Colockum SWA?, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Four populations (including the largest known occurrence) are protected in Camas Meadows NAP, Colockum SWA, and a private DNR registry site (Appendix A). At least eight populations are on Okanogan NF or private lands managed for multiple use.

Potential Inventory or Conservation Areas: Naneum and Mission Peak, Stuart Range, Tumwater Mountain-Chumstick Mountain.

References: Arnett 2011, Camp and Gamon 2011, Caplow 2003b, Fertig 2019, Gamon 1987b, Goldsmith 2003, Kleinknecht et al. 2019, USFWS 2004.

### ***Silene scouleri ssp. scouleri*** (Scouler's catchfly)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5T3T5/S1; WA Sensitive

Range: British Columbia to northern Idaho, south to northern California. In Washington, found in Chelan, Clallam, Ferry, Garfield, Island, Pierce, Spokane, Stevens, Thurston, Whitman, and Yakima counties.

WA Ecoregions: Blue Mountains, Canadian Rockies, Columbia Plateau, East Cascades, Okanogan, Puget Trough

Number of Occurrences: Known from seven extant and 15 historical occurrences in Washington. Three populations have been relocated or discovered since 2004 (most recently in 2019).

Abundance: Data lacking for nearly all populations (many historical sites may be extirpated). Reported as uncommon at Joint Base Lewis-McChord in 1993.

Habitat: Dry prairies, grassy bluffs, rocky ridges, timbered slopes, and upland meadows with scattered Douglas-fir and Subalpine fir from 60-2,100 m (190-6,900 ft).

Threats: Conversion of prairie habitat to agriculture or human development, fire suppression, competition from invasive plants, and grazing.

Trends: Downward.

Managed Areas: Asotin Creek SWA, Colville National Forest, Ebey's Landing Preserve (TNC), JB Lewis-McChord, Okanogan-Wenatchee NF, Steptoe Butte SP, William O. Douglas WA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Of eight occurrences in the Columbia Plateau and East Cascades ecoregions, two are protected in the proposed Steptoe Butte NAP and William O. Douglas WA (Appendix A). Statewide, four occurrences are protected.

Potential Inventory or Conservation Areas: Ahtanum, Burch Mountain and Swakane Canyon, Sawtooth Ridge to Lake Chelan, Tumwater Mountain-Chumstick Mountain.

References: Hitchcock et al. 1964, Hitchcock and Cronquist 2018.

### ***Silene seelyi*** (Seely's catchfly)

Legal Status: BLM Sensitive; USFS Sensitive



Natural Heritage Rank: G3/S3; WA Sensitive

Range: Endemic to the Wenatchee Mountains of north-central Washington in Chelan and Kittitas counties.

WA Ecoregions: East Cascades

Number of Occurrences: Known from 15 extant occurrences and one historical population. Twelve occurrences have been discovered or resurveyed since 2000 (most recently in 2019).

Abundance: Populations mostly small, ranging from 2 to 500 individuals.

Habitat: Shady crevices in cliffs or among boulders and talus mostly on granitic rocks (less frequently associated with ultramafic or basaltic substrates).

Threats: Relatively low, but may be impacted by road construction or rock climbing.

Trends: Poorly known due to lack of monitoring data for most occurrences.

Managed Areas: Alpine Lakes WA, Enchantment SBA, Lake Chelan NRA, North Cascades NP, Okanogan-Wenatchee NF, Tumwater SBA.

Protection Status in Columbia Plateau & East Cascades: Adequate. Five occurrences are protected in the Alpine Lakes WA, North Cascades NP, Enchantment SBA, and Tumwater SBA (Appendix A). All other populations are on Okanogan NF lands managed for multiple use.

Potential Inventory or Conservation Areas: Stuart Range, Three Brothers-Teaway Range, Tumwater Mountain-Chumstick Mountain.

References: Arnett and Gamon 1991, Camp and Gamon 2011.

### ***Silene spaldingii*** (Spalding's catchfly)

Legal Status: USFWS Threatened

Natural Heritage Rank: G2/S2; WA Threatened

Range: Southern British Columbia to western Montana, south to eastern Washington, northeastern Oregon, and north-central Idaho. In Washington, known from Adams, Asotin, Lincoln, Spokane, and Whitman counties.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from 46 extant occurrences and eight historical or extirpated populations in Washington. Thirty-six occurrences have been relocated or discovered since 2000, with 12 documented in 2018 (Fertig 2019). The criteria used to define *Silene spaldingii* occurrences was standardized in 2009, resulting in the number of accepted occurrences dropping from 71 to 51 (Arnett and Holt 2009). These can be aggregated into 11 "Key Conservation Areas" (KCA) divided among three main physiographic provinces: Canyon Grasslands, Channeled Scablands, and Palouse Grasslands (Arnett and Goldner 2017). KCAs are the main focus of recovery efforts for the species across its range.

Abundance: Hill and Gray (2004) estimated the entire Washington population to be 5,264 plants (out of a total of 24,365 individuals across its full range). A population discovered in 2008 at Asotin Creek Wildlife Area contained at least 6,000 plants. Current estimates suggest the state population could be between 12,000-25,000 plants. Individual occurrences in Washington mostly range from 1 to 2,000.

Habitat: Idaho fescue grasslands with sparse shrub cover or patchy grassland and Ponderosa pine. Sites typically have deep loamy soils. Washington populations occur at elevations of 470-1,160 m (1,550-3,800 ft). Populations are often restricted to small "eyebrows" of undisturbed habitat embedded within a matrix of agricultural fields.

Threats: Loss of habitat to agriculture or human settlements, competition with invasive exotic plants, wildfire, population and habitat fragmentation, grazing and trampling, herbicides, and off-road vehicle recreation (USFWS 2007).

Trends: Declining over the past century as habitat has been lost to agriculture and development. Numbers may vary each year within a population due to prolonged dormancy of some mature individuals (not all plants produce above-ground stems each year, but persist below ground).

Managed Areas: Asotin Creek SWA, Campus Prairie BS, Coal Creek ACEC, Fairchild AFB, Kramer Palouse BS, Nez Perce NHP, Smoot Hill BS, Spokane BLM, Steptoe Butte SP, Swanson Lakes SWA, Turnbull NWR, Umatilla NF

Protection Status in Columbia Plateau & East Cascades: Adequate. Twenty occurrences (38% of the state's total) are protected in Steptoe Butte SP and proposed NAP, Turnbull NWR, Asotin Creek and Swanson Lakes SWAs, Campus Prairie, Kramer Palouse, and Smoot Hill BSAs (Washington State University), Coal Creek ACEC, Nez Perce NHP, and DNR registry sites (Appendix A).

Potential Inventory or Conservation Areas: Bald Butte south of Pullman, Coal Creek-Lamona, Fishtrap Lake-Miller Ranch, Marcellus, Steptoe Butte, Swanson Lakes, Wawawai Canyon to Silcott

References: Arnett and Goldner 2017, Arnett and Holt 2009, Caplow 2002, Fertig et al. 2017, Fertig 2019, Gamon 1991b, Hill and Gray 2004, Lesica 1997, Niggemann and Fertig 2018, USFWS 2007.

***Sisyrinchium montanum var. montanum*** (Strict blue-eyed grass)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5T5/S1; WA Threatened

Range: Yukon to Newfoundland, south to northern Washington (Douglas and Pend Oreille counties), Montana, New Mexico, Kansas, Wisconsin, Indiana, and Pennsylvania.

WA Ecoregions: Canadian Rockies, Columbia Plateau

Number of Occurrences: Known from three extant occurrences, most recently observed in 2005.

Abundance: Populations in Washington range from 4 to 50 plants.

Habitat: Stream banks, moist meadows, and open Ponderosa pine forests.

Threats: Conversion of wetland habitat to agriculture or residential development, grazing, trampling.

Trends: Possibly downward. The Pend Oreille County population discovered in 1981 could not be relocated in 2014. The Douglas County population decreased from about 50 plants to 6 from 1999 to 2005.

Managed Areas: Colville NF, Kaniksu NF?, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Foster Creek.

References: Camp and Gamon 2011.

***Sisyrinchium sarmentosum*** (Pale blue-eyed grass)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G2/S2; WA Threatened

Range: Regional endemic of southern Washington (Klickitat and Skamania counties) and northern Oregon.

WA Ecoregions: East Cascades, West Cascades

Number of Occurrences: Known from 14 extant occurrences and two historical populations. Thirteen populations have been discovered or revisited since 2003 (most recently in 2018).

Abundance: Raven (2003) estimated the total population in Washington to consist of 33,000-39,000 plants.

Habitat: Wet meadows that are seasonally flooded in late spring but are drier during the flowering period in late June to early August. May be found in small, wet openings in conifer forests that have been logged.

Threats: Hybridization with *Sisyrinchium idahoense*, livestock grazing, changes in hydrology, competition from invasive plants, conifer encroachment, fire suppression, recreation impacts, development of habitat for agriculture or human habitation (Reagan 2018).

Trends: Seven occurrences cited by Raven (2003) have been resurveyed since 2004, with most populations remaining stable during that time. One exception is a population at Little Mosquito Creek that has declined from 50-100 plants to less than 20 (Fertig 2017). Trends are difficult to assess due to problems with identifying *S. sarmentosum* plants in dense vegetation when they are not in flower, or in populations that are intermixed with *S. idahoense* or F1 hybrids (Arnett 2014b).

Managed Areas: Columbia River Gorge NSA, Conboy Lake NWR?, Gifford Pinchot NF, Trout Lake NAP.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two occurrences (one historical) are protected in Conboy Lake NWR, Trout Lake NAP, and a DNR registry site (Appendix A).

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Arnett 2012c, Arnett 2014b, Fertig 2017, 2020; Gamon and Sprague 1986, Raven 2003, Reagan 2018, Ruchty 2011, Wilson et al. 2000.

### ***Spartina pectinata*** (Prairie cordgrass)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2; WA Sensitive

Range: Alberta to Newfoundland, south to Oregon, Utah, Texas, and Georgia. In Washington, found in Asotin, Douglas, Franklin, Garfield, Grant, Pend Oreille, Spokane, and Whitman counties.

WA Ecoregions: Blue Mountains, Canadian Rockies, Columbia Plateau, Okanogan

Number of Occurrences: Known from nine extant occurrences (most recently documented in 2015) and three historical populations.

Abundance: Data lacking for most occurrences in Washington. One population had approximately 200 ramets in 2003.

Habitat: In Washington, found primarily along river banks, often on alkaline soils.

Threats: Grazing, conversion of habitat to agriculture, competition from invasive weeds, changes in hydrology from dam or reservoir construction.

Trends: Not known.

Managed Areas: Chief Joseph SWA, Colville NF, Little Pend Oreille SWA, Palouse Falls SP, Riverside SP, Vale BLM, Wells SWA.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Two of the five occurrences in the Columbia Plateau ecoregion are protected in Bridgeport SWA, Palouse Falls SP, and West Foster Creek SWA (Appendix A). Statewide, seven populations are in Gap status 1 or 2 areas and the species is considered adequately protected.

Potential Inventory or Conservation Areas: Palouse Falls

References: Camp and Gamon 2011, Roché et al. 2019.

### ***Spiranthes diluvialis*** (Ute ladies' tresses)

Legal Status: USFWS Threatened

Natural Heritage Rank: G2G3/S1; WA Endangered

Range: Occurs from northern Washington and southern British Columbia to southwest Montana, eastern Idaho, eastern Nevada, northern and central Utah, eastern Wyoming, western Nebraska, and central Colorado (Fertig et al. 2005). In Washington, found in Chelan, Douglas, Grant, and Okanogan counties (Fertig 2019).

WA Ecoregions: East Cascades and Okanogan

Number of Occurrences: Known from three extant occurrences in Washington.

Abundance: Population size varies from year to year, depending on external factors (climate or disturbance) and biological conditions, such as prolonged dormancy (Fertig et al. 2005). The Okanogan County population has ranged in size from 15-200 plants and contained 92 in 2018. The Chelan/Douglas County population has averaged 411 plants from 2000-2019, but varied from 35 to 959 plants. Pope and Cordell (2019) documented 249 plants in 2019. The Grant County occurrence had 54 plants in 2019 and 23 when first discovered in 2017 (Fertig 2019).

Habitat: In Washington, found in alkaline flats around lakeshores where water levels may fluctuate widely between years, or in seasonally flooded shorelines of large reservoirs, or shallow basins associated with springs or storm runoff (Fertig 2019).

Threats: Changes in hydrology (permanent inundation under reservoirs or water withdrawal), loss of habitat to development or agriculture, herbicides, competition from invasive weeds, and succession. One small subpopulation along the Columbia River may be hybridizing with *S. romanzoffiana* (Pope and Cordell 2019).

Trends: Downward recently due to impacts of wildfire and high flood waters, but populations tend to be variable or oscillate in response to climate conditions. Trends are difficult to assess because plants are capable of prolonged dormancy underground and may not be counted in every census.

Managed Areas: Chelan County PUD, Colockum SWA, Grant County PUD, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Part of one occurrence is protected in the Colockum SWA (Appendix A).

Potential Inventory or Conservation Areas: Colockum and Quilomene, Hanford.

References: Arnett 2012d, Arnett and Goldner 2017, Camp and Gamon 2011, Fertig 2019, Fertig et al. 2005, 2017; Pope and Cordell 2019.

***Spiranthes porrifolia*** (Western ladies'-tresses)

Synonym: *Spiranthes romanzoffiana* var. *porrifolia*

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G4/S2; WA Sensitive

Range: Washington to Idaho, south to southern California and Nevada. In Washington, found in Chelan, Clark, Kittitas, Klickitat, Lincoln, Okanogan, and Skamania counties.

WA Ecoregions: Columbia Plateau, East Cascades, Okanogan, Puget Trough, West Cascades

Number of Occurrences: Known from 19 extant occurrences and four historical populations. Only five occurrences have been discovered or relocated since 2008.

Abundance: Populations range from two plants to nearly 1,500. At least 13 occurrences contain fewer than 50 plants. Like other *Spiranthes* species, *S. porrifolia* may exhibit prolonged dormancy, meaning that populations may be under-counted if subterranean individuals are missed.

Habitat: Wet meadows, streams, and bogs.

Threats: Grazing, competition from invasive plants, succession, trampling, changes in hydrology.

Trends: Trend data are lacking for nearly all occurrences. The few that have been monitored tend to have stable populations.

Managed Areas: Chelan-Sawtooth WA, Clark County Parks, Columbia Hills Historical SP, Columbia River Gorge NSA, Klickitat SWA, Okanogan-Wenatchee NF, Pasayten WA.

Protection Status in Columbia Plateau & East Cascades: Adequate. Six populations (33.4%) in the Columbia Plateau and East Cascades ecoregions are protected in the Chelan-Sawtooth WA and Klickitat SWA (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek, Klickitat River, Sawtooth Ridge to Lake Chelan, Wenas Wildlife Area.

References: Camp and Gamon 2011.

***Sporobolus compositus* var. *compositus*** (Composite dropseed)

Legal Status: BLM Sensitive

Natural Heritage Rank: G5T5/S1; WA Sensitive

Range: Manitoba to New Brunswick, south to Arizona, Texas, and Florida, with disjunct populations in southern British Columbia, Idaho, and Washington (Chelan, Franklin, and Kittitas counties).

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from three populations in Washington, all surveyed since 2008.

Abundance: Not known.

Habitat: In Washington, found along banks of the Columbia River that are unregulated and seasonally flooded, at an elevation of 235 m (770 ft.)

Threats: Dam and reservoir construction, conversion of habitat to agriculture.

Trends: Not known.

Managed Areas: Hanford ERP, Spokane BLM.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Hanford.

References: Peterson et al. 2003, Roché et al. 2019.

***Swertia perennis*** (Swertia)

Legal Status: BLM Sensitive, USFS Sensitive

Natural Heritage Rank: G5/S1; WA Threatened

Range: Eurasia, Alaska to British Columbia, east to Montana and Wyoming, south to California and Arizona. In Washington, found in Chelan and Snohomish counties.

WA Ecoregions: East Cascades, West Cascades

Number of Occurrences: Known from two extant occurrences (both observed since 2005) and one historical population (last recorded in 1935) in Washington.

Abundance: The Butterfly Butte population in Chelan County contained 92 plants in 2011. The other extant population in Washington contained a single plant in 2005.

Habitat: Streambanks and wet meadows in montane to subalpine zones.

Threats: Grazing, water diversion.

Trends: Not known.

Managed Areas: Glacier Peak WA, Henry Jackson WA, Mt. Baker-Snoqualmie NF, Okanogan-Wenatchee NF.

Protection Status in Columbia Plateau & East Cascades: Completely Protected. The single occurrence in the East Cascades ecoregion is protected in the Glacier Peak WA of Okanogan-Wenatchee NF (Appendix A). Statewide, two of three populations are in Gap status 1 or 2 lands and the species is considered adequately protected.

Potential Inventory or Conservation Areas: Stuart Range.

References: Hitchcock et al. 1959.

***Symphotrichum jessicae*** (Jessica's aster)

Synonym: *Aster jessicae*

Legal Status: none

Natural Heritage Rank: G2/S1S2; WA Endangered

Range: Endemic to eastern Washington (Spokane and Whitman counties) and north-central Idaho.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from eight extant populations, all relocated or discovered since 1990 (most recently in 2017).

Abundance: Accurate counts are difficult because individual genets have multiple stems and are hard to differentiate. Most populations contain 10-250 plants, although one site was reported as having several thousand stems (not individuals) in 2005 (Fertig 2020).

Habitat: Palouse grassland communities and the prairie/forest transition zone on banks, road cuts, slopes, eyebrows, and the rim of draws (Kemper 2005a). In Idaho, populations often occur along undisturbed roadsides bordering agricultural fields (Lorain 1991).

Threats: Road construction, conversion of prairie habitat to agriculture, herbicides, competition with weedy species (Kemper 2005e).

Trends: Not known, but probably declining over the long term.

Managed Areas: Rose Creek Preserve, Turnbull NWR, private.

Protection Status in Columbia Plateau & East Cascades: Inadequate. Three of eight occurrences are protected in the Rose Creek Preserve, Turnbull NWR, and a DNR registry site (Appendix A).

Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte, Wawawai Canyon to Silcott.

References: Fertig 2020, Kemper 2005a, 2005e, Lorain 1991.

***Thelypodium howellii* ssp. *howellii*** (Howell's thelypody)

Legal Status: none

Natural Heritage Rank: G1T1/SH; WA Extirpated

Range: Southern Washington (Yakima County) to eastern Oregon and NE California.  
WA Ecoregions: Columbia Plateau  
Number of Occurrences: Known from a single occurrence in Washington, last observed in 1898.  
Abundance: Not known, possibly extirpated in Washington.  
Habitat: River valleys and moist, often alkaline, flats (Hitchcock and Cronquist 1964).  
Threats: Loss of habitat to agriculture, grazing, impacts from recreational vehicles, and competition with invasive weeds (Fertig 2020).  
Trends: Downward, possibly extirpated.  
Managed Areas: private.  
Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).  
Potential Inventory or Conservation Areas: Ahtanum.  
References: Fertig 2020, Hitchcock and Cronquist 1964.

***Thelypodium sagittatum ssp. sagittatum*** (Arrow thelypody)

Legal Status: BLM Sensitive  
Natural Heritage Rank: G4T4/S1; WA Threatened  
Range: Occurs from northern Washington to Montana and Wyoming, south to Oregon, Nevada, and Colorado. In Washington, known currently only from Grant County, but with historic records from Douglas and Lincoln counties.  
WA Ecoregions: Columbia Plateau  
Number of Occurrences: Known from two extant occurrences (both relocated since 1998) and three historical populations.  
Abundance: Known from just 10-20 plants at each of two extant sites in Washington.  
Habitat: Moist alkaline meadows, seasonally wet salt flats, and moist swales in sagebrush grasslands.  
Threats: Grazing, conversion of habitat to agriculture  
Trends: Probably downward, as at least three occurrences have not been relocated since 1959.  
Managed Areas: Spokane BLM, private.  
Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).  
Potential Inventory or Conservation Areas: Banks Lake, Chester Butte, Trefry Canyon to Leahy.  
References: Camp and Gamon 2011.

***Trifolium douglasii*** (Douglas' clover)

Legal Status: BLM Sensitive; USFS Sensitive  
Natural Heritage Rank: G2/S1; WA Endangered  
Range: Regional endemic of eastern Washington, NE Oregon, and W Idaho. In Washington, currently known from Asotin and Garfield counties and historical reports from Spokane and Whitman counties.  
WA Ecoregions: Blue Mountains, Columbia Plateau  
Number of Occurrences: Known from two extant populations from the Blue Mountains (both documented since 2012) and three historical reports from the Columbia Plateau (last observed in 1952).  
Abundance: One population on Umatilla NF contains 1,000-1,300 plants.  
Habitat: Streambanks, forested wetlands, and wet meadows.  
Threats: Conversion of wetland habitat to agriculture, competition from invasive weeds.  
Trends: Probably downward, since 60% of known occurrences are considered historical.  
Managed Areas: Umatilla NF, private.  
Protection Status in Columbia Plateau & East Cascades: Unprotected. Populations in the Columbia Plateau are all known from private lands and are historical (Appendix A).  
Potential Inventory or Conservation Areas: Albion Road/Smoot Hill/Kamiak Butte.  
References: Camp and Gamon 2011, Fertig 2020.

***Trifolium thompsonii*** (Thompson's clover)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G3/S3; WA Threatened

Range: Endemic to Chelan and Douglas counties in central Washington.

WA Ecoregions: Columbia Plateau

Number of Occurrences: Known from five extant and one historical occurrences. Four populations have been revisited since 2008, most recently in 2019.

Abundance: Populations may be locally abundant, with as many as 430,000-570,000 individuals. The total population may number over 700,000 plants, but is restricted to a small geographic area.

Habitat: Edge of Ponderosa pine forests and bluebunch wheatgrass openings on steep, non-glaciated slopes of gneiss and schist or adjacent valley bottoms.

Threats: Conversion of habitat to agriculture, grazing, trampling, road construction, impacts from timber harvest, fire suppression.

Trends: Not known.

Managed Areas: Colockum SWA, Entiat Slopes NAP, Keystone Point ACEC, Okanogan-Wenatchee NF, Spokane BLM, Thompson Clover RNA.

Protection Status in Columbia Plateau & East Cascades: Adequate. Three of six known occurrences are protected in the Entiat Slopes NAP, Colockum SWA, Keystone Point ACEC, Thompson Clover RNA, and a DNR registry site (Appendix A).

Potential Inventory or Conservation Areas: Burch Mountain and Swakane Canyon, Colockum and Quilomene.

References: Camp and Gamon 2011, Gamon and Sprague 1988.

### ***Utricularia intermedia*** (Flat-leaved bladderwort)

Legal Status: BLM Sensitive; USFS Sensitive

Natural Heritage Rank: G5/S2S3; WA Sensitive

Range: Circumboreal; in North America south to California, northern Utah, northwest Wyoming, Indiana, and Delaware. Found in Clallam, King, Klickitat, Pend Oreille, Skamania, and Snohomish counties in Washington.

WA Ecoregions: Canadian Rockies, East Cascades, North Cascades, Pacific Northwest Coast, Puget Trough, West Cascades

Number of Occurrences: Known from 13 occurrences in Washington, of which 12 are extant and one is historical. Nine populations have been discovered or resurveyed since 2000 (most recently in 2016)

Abundance: Only three occurrences in Washington contain more than 600 plants.

Habitat: Shallow ponds and slow-moving streams or sloughs (rarely in saturated sedge or rush meadows). Plants submerged in water except for the emergent inflorescence.

Threats: Draining wetland habitats and competition from invasive exotics, such as reed canarygrass (*Phalaris arundinacea*).

Trends: Not known.

Managed Areas: Conboy Lake NWR, Gifford Pinchot NF, Olympic NP, Snoqualmie Bog NAP.

Protection Status in Columbia Plateau & East Cascades: Adequate. One of three occurrences in the East Cascades ecoregion is protected in Conboy Lake NWR (Appendix A). This population is historical, however (last observed in 1893). Statewide, eight populations are in Gap status 1 or 2 lands.

Potential Inventory or Conservation Areas: Panakanick Prairie.

References: Camp and Gamon 2011.

### ***Veratrum insolitum*** (Siskiyou false-hellebore)

Legal Status: none

Natural Heritage Rank: G3/S1; WA Endangered

Range: Regional endemic of SW Oregon and NW California; disjunct in southern Washington (Klickitat County).

WA Ecoregions: East Cascades

Number of Occurrences: Known from a single occurrence in Washington, last visited in 2018.

Abundance: 450 plants were observed in 2018.

Habitat: Rangewide, found in thickets and moist meadows. The single Washington population occurs on an open, dry slope with Douglas-fir, Bigleaf maple, and oceanspray.

Threats: May be threatened by habitat loss, herbicides, or over-harvest for horticulture.

Trends: The state population appeared to decline by almost 75% from 1982 to 2003, but has either rebounded since, or new subpopulations have been discovered.

Managed Areas: Columbia River Gorge NSA, WA DNR.

Protection Status in Columbia Plateau & East Cascades: Unprotected (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek.

References: Camp and Gamon 2011.

### ***Wyethia angustifolia*** (California mule's-ears)

Legal Status: none

Natural Heritage Rank: G4/S1; WA Sensitive

Range: Western Washington south to California, mostly west of the Cascades. In Washington, known from Clark, Klickitat (historical), Lewis, and Thurston counties.

WA Ecoregions: East Cascades, Puget Trough

Number of Occurrences: Known from seven extant occurrences and two historical populations. All extant locations have been discovered or relocated since 2005 (most recently in 2019).

Abundance: Poorly documented, but most populations appear to be small, with 30 or fewer plants.

Habitat: Dry to moist native prairie remnants or roadsides with Roemer's fescue, Tall oatgrass, and Upland larkspur.

Threats: Mowing, herbicides, competition from invasive weeds, habitat loss from forest encroachment or conversion of prairies to agriculture or home sites.

Trends: Poorly known, but probably downward.

Managed Areas: Columbia River Gorge NSA, Lacamas Prairie NAP, Scatter Creek SWA, private.

Protection Status in Columbia Plateau & East Cascades: Unprotected. The single population from the East Cascades is historical and not protected. Statewide, two populations are protected in Lacamas Prairie NAP and Scatter Creek SWA and the species is considered inadequately protected (Appendix A).

Potential Inventory or Conservation Areas: Catherine Creek, Panakanick Prairie.

Comments: The single occurrence in the East Cascades ecoregion is historical (last observed in 1881).

References: Camp and Gamon 2011.

### ***Zeltnera muehlenbergii*** (Monterey centaury)

Synonym: *Centaureum muehlenbergii*, *Z. muelenbergii*, *Centaureum curvistamineum*

Legal Status: none

Natural Heritage Rank: G5/S1; WA Threatened

Range: Southwestern British Columbia to central California and Nevada. In Washington, known from Klickitat, Spokane, and Whitman counties. Additional reports from Clallam, King, Kittitas, San Juan, and Thurston counties need confirmation.

WA Ecoregions: East Cascades. Reports from Columbia Plateau, Pacific Northwest Coast and Puget Trough need to be corroborated.

Number of Occurrences: Known from one historical occurrence, last observed in 1896. Another five extant and three historical occurrences have been determined as *Z. muehlenbergii* or *Centaureum curvistamineum*, but need to be confirmed.

Abundance: Not known. Verified populations in Washington may be extirpated.

Habitat: Wet meadows.

Threats: Conversion of habitat to agriculture or human developments and competition with non-native plants (including introduced *Centaureum* species).

Trends: Downward, possibly extirpated in Washington.



Managed Areas: Conboy Lake NWR? Probable, but unconfirmed, populations occur in Bald Hill NAP and Turnbull NWR.

Protection Status in Columbia Plateau & East Cascades: Completely protected in the East Cascades ecoregion in Conboy Lake NWR, but this population is historical and possibly extirpated.

Potential Inventory or Conservation Areas: Panakanick Prairie.

Comments: The taxonomy and identification of *Zeltnera muehlenbergii* and its close relatives is confusing and compounded by the introduction of look-alike taxa from Europe, such as *Centaureum tenuiflorum*. Most specimens traditionally ascribed to *Z. muehlenbergii* may be misidentified according to Curtis Björk.

References: Pringle 2010.